

Installation, User and Service Manual High-efficiency floor-standing gas boiler

Gas 220 Ace
160 - 200 - 250 - 300
HMI S-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.

Contents

1	Safety	6
1.1	General safety instructions	6
1.2	Recommendations	8
1.3	Specific safety instructions	10
1.3.1	Additional guidelines	10
1.4	Liabilities	10
1.4.1	Manufacturer's liability	10
1.4.2	Installer's liability	10
1.4.3	User's liability	11
2	About this manual	12
2.1	General	12
2.2	Additional documentation	12
2.3	Symbols used in the manual	12
3	Technical specifications	13
3.1	Homologations	13
3.1.1	Certifications	13
3.1.2	Unit categories	13
3.1.3	Factory test	13
3.2	Technical data	13
3.3	Dimensions and connections	16
3.4	Electrical diagram	17
4	Description of the product	18
4.1	Operating principle	18
4.1.1	Gas/air regulation	18
4.1.2	Combustion	18
4.1.3	Control system	18
4.1.4	Control	18
4.1.5	Regulating the water temperature	19
4.1.6	Protection against shortage of water	19
4.1.7	Water flow	19
4.1.8	Hydraulic pressure sensor	19
4.1.9	Air pressure differential switch	19
4.1.10	Circulating pump	19
4.1.11	Calorifier connection	20
4.2	Main components	20
4.3	Control panel description	21
4.3.1	What each key means	21
4.3.2	Meaning of the symbols on the display	21
4.3.3	Browsing in the menus	22
4.4	Standard delivery	23
4.5	Accessories and options	23
5	Before installation	24
5.1	Installation regulations	24
5.2	Choice of the location	24
5.2.1	Data plate	24
5.2.2	Location of the boiler	24
5.3	Transport	25
5.4	Unpacking & initial preparation	26
6	Installation	27
6.1	General	27
6.2	Preparation	27
6.2.1	Positioning the boiler	27
6.3	Hydraulic connections	27
6.3.1	Rinsing the system	27
6.3.2	Connecting the heating circuit	28
6.3.3	Connecting the condensate drain pipe	29
6.4	Gas connection	29
6.5	Air supply/flue gas outlet connections	30
6.5.1	Classification	30

6.5.2	Material	32
6.5.3	Dimensions of flue gas outlet pipe	33
6.5.4	Length of the air and flue gas pipes	33
6.5.5	Additional guidelines	35
6.5.6	Connecting the flue gas outlet	36
6.5.7	Connecting the air supply	36
6.5.8	Specific air and flue gas applications	37
6.6	Electrical connections	37
6.6.1	Recommendations	37
6.6.2	Control unit	37
6.6.3	Assembly of the control panel	38
6.6.4	Installation of the connection box	39
6.6.5	Connection options for the standard PCB	40
6.7	Filling the installation	43
6.7.1	Water treatment	43
6.7.2	Filling the siphon	43
6.7.3	Filling the system	44
7	Commissioning	45
7.1	Checklist before commissioning	45
7.1.1	Preparing the boiler for commissioning	45
7.1.2	Gas circuit	45
7.1.3	Hydraulic circuit	45
7.1.4	Electrical connections	45
7.2	Commissioning procedure	45
7.3	Gas settings	46
7.3.1	Adjusting to a different gas type	46
7.3.2	Checking/setting combustion	47
7.4	Final instructions	50
8	Operation	51
8.1	Use of the control panel	51
8.2	Shutdown	51
8.3	Frost protection	51
9	Settings	52
9.1	List of parameters	52
9.1.1	Parameters - FSB-WHB-HE-150-300	52
9.2	Changing the parameters	55
9.2.1	Configuring the installation parameters	55
9.3	Reading out measured values	56
9.3.1	Reading out counters	56
9.3.2	Reading out signals and software versions	57
9.3.3	Counters - FSB-WHB-HE-150-300	58
9.3.4	Signals - FSB-WHB-HE-150-300	58
9.3.5	Status and sub-status - FSB-WHB-HE-150-300	59
10	Maintenance	62
10.1	General	62
10.2	Maintenance message	62
10.2.1	Resetting the service messages	62
10.2.2	Starting a new service interval	63
10.3	Standard inspection and maintenance operations	63
10.3.1	Checking the water pressure	63
10.3.2	Checking the water quality	63
10.3.3	Checking the ionisation current	63
10.3.4	Check the flue gas outlet/air supply connections	64
10.3.5	Checking the combustion	64
10.3.6	Checking the PS air pressure differential switch	64
10.3.7	Checking the VPS gas leakage control	66
10.3.8	Checking the minimum gas pressure switch GPS	68
10.3.9	Checking the burner and cleaning the heat exchanger	69
10.3.10	Clean the condensate collector	70
10.3.11	Cleaning the siphon	70
10.4	Specific maintenance work	70
10.4.1	Replacing the ionisation/ignition electrode	71

10.4.2	Checking the non-return valve	71
10.4.3	Reassembling the boiler	72
10.5	Disposal	73
10.5.1	Removal/recycling	73
11	Troubleshooting	74
11.1	Error codes	74
11.1.1	Warning - FSB-WHB-HE-150-300	74
11.1.2	Blocking - FSB-WHB-HE-150-300	75
11.1.3	Lock-out - FSB-WHB-HE-150-300	77
11.2	Error memory	80
12	Removal/recycling	81
13	Spare parts	82
13.1	General	82
13.2	Parts	83
14	Appendix	85
14.1	ErP information	85
14.1.1	Product fiche	85
14.2	EC Declaration of Conformity	85
14.3	Checklist for commissioning	86
14.4	Checklist for annual maintenance	87

1 Safety

1.1 General safety instructions

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 installation to ensure that there are no leaks.

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 boiler 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 boiler 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 boiler settings, the temperature of the radiators can rise to over 60°C.

**Warning**

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

**Warning**

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

**Warning**

The condensation drain must not be changed 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 boiler is regularly serviced. Contact a qualified installer or arrange a maintenance contract for the servicing of the boiler.



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 and CO alarms at suitable places in your home.

**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 water pressure in the system regularly. If the water pressure is lower than 0.8 bar, the system must be topped up (recommended water pressure between 1.5 and 2 bar).

**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 Specific safety instructions

1.3.1 Additional guidelines

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.

1.4 Liabilities

1.4.1 Manufacturer's liability

Our products are manufactured in compliance with the requirements of the various Directives applicable. They are therefore delivered with the 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.

1.4.2 Installer's liability

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

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

1.4.3 User's liability

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

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

2 About this manual

2.1 General

This manual 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:

- Installation and user manual for control panel
- Water quality instructions

2.3 Symbols used in the manual

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

**Danger**

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

**Danger of electric shock**

Risk of electric shock.

**Warning**

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

**Caution**

Risk of material damage.

**Important**

Please note: important information.

**See**

Reference to other manuals or pages in this manual.

3 Technical specifications

3.1 Homologations

3.1.1 Certifications

Tab.1 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.	

3.1.2 Unit categories

Tab.2 Unit categories

Country	Category	Gas type	Connection pressure (mbar)
Great Britain	II _{2H3B/P}	G20 (H gas) G30/G31 (butane/propane)	20 30-50





3.1.3 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.

3.2 Technical data

Tab.3 General

Gas 220 Ace			160	200	250	300
Nominal output (Pn) 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 (Pn) Central heating operation (50/30°C)	min. - max.  ⁽¹⁾	kW	34.7 - 161.1 161.1	43.2 - 209.8 209.8	54.1 - 261.0 261.0	65.0 - 310.7 310.7
Nominal load (Qnh) Central heating operation (Hi) 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 (Qnh) CH operation (Hi) G31 (propane)	min. - max.	kW	40.0 - 156.0	40.0 - 200.0	50.0 - 250.0	70.0 - 299.0
Nominal load (Qnh) Central heating operation (Hs) 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 (Qnh) Central heating operation (Hs) G31 (propane)	min. - max.	kW	43.5 - 169.6	43.5 - 217.4	54.3 - 271.7	76.1 - 325.0
Full load central heating efficiency (Hi) (80/60 °C) (92/42/EEC)		%	97.5	97.2	97.3	97.3

3 Technical specifications

Gas 220 Ace			160	200	250	300
Full load central heating efficiency (Hi) (50°C/30°C) (EN15502)		%	103.6	104.9	104.4	103.9
Part load central heating efficiency (Hi) (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.4 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.	m ³ /h	3.4 - 16.5	4.2 - 21.2	5.3 - 26.5	6.3 - 31.6
Gas consumption G31 (propane)	min. - max.	m ³ /h	1.4 - 6.3	1.6 - 8.2	2.1 - 10.2	2.8 - 12.2
BREEAM NO _x		mg/kWh	36	40	38	35
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.5 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 (ΔT=20K)		mbar	190	100	150	200

Tab.6 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	Main PCU	A	6.3 1.6	6.3 1.6	6.3 1.6	6.3 1.6

Tab.7 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.8 Technical parameters

Gas 220 Ace			160	200	250	300
Condensing boiler			Yes	Yes	Yes	Yes
Low-temperature boiler ⁽¹⁾			No	No	No	No

Gas 220 Ace			160	200	250	300
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	-	-	-	-
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.						

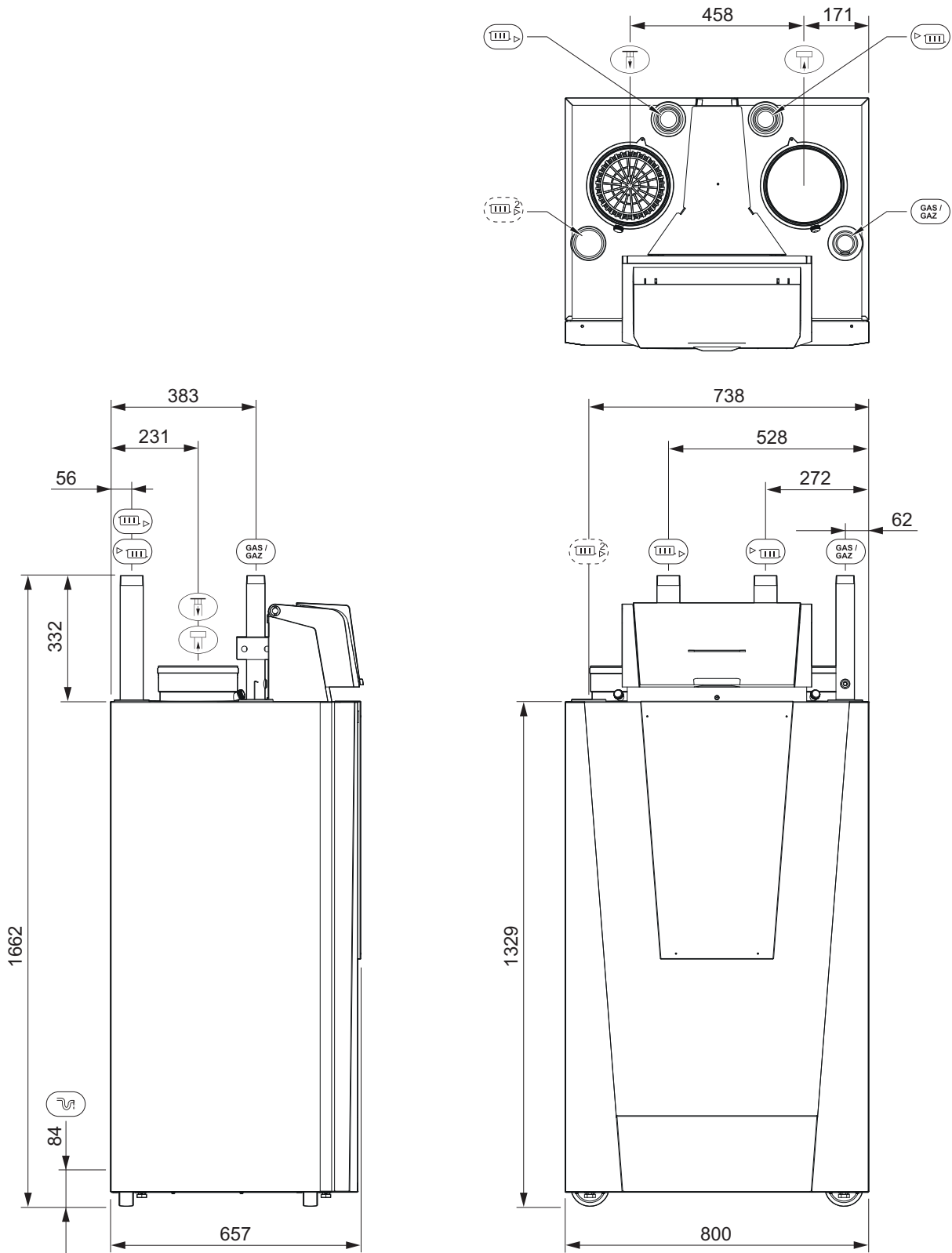


See

Refer to the back cover for contact details.

3.3 Dimensions and connections

Fig.1 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

- ⌋ Flow connection;
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 1½ inch male thread
- ▶⌋ Gas 220 Ace ; R 1¼ inch male thread

4 Description of the product

The Gas 220 Ace boiler is delivered with a combination of the control panel, control unit and extension PCB. The contents of this manual are based on the following software and navigation information:

Tab.9 Software and navigation information

	Name visible in display	Software version
Boiler Gas 220 Ace	FSB-WHB-HE-150-300	01.07
Control panel HMI S-control	HMI	02.01
PCB SCB-01	SCB-01	00.02

4.1 Operating principle

4.1.1 Gas/air regulation

The boiler is equipped with a casing that also serves as an air box. The fan draws in the combustion air. The gas is injected into the venturi and mixed with the combustion air. The fan speed is controlled on the basis of the settings, the heat demand and the prevailing temperatures measured by the temperature sensors. The gas/air ratio control ensures an accurate mixture of the required amounts of gas and air. This provides optimum combustion over the entire heat input range. The gas/air mixture goes to the burner, where it is ignited by the ignition electrode.



Important

The combustion air supply is checked before each burner start, and at least once every 24 hours. During continuous operation (e.g. supplying process water), please note that the boiler control will reset every 24 hours.

4.1.2 Combustion

The burner heats the central heating water flowing through the heat exchanger. If the temperature of the flue gases is lower than the dew point (approx. 55°C), the water vapour condenses in the heat exchanger. The heat released during this condensation process (referred to as the latent or condensation heat) is also transferred to the central heating water. The cooled flue gases are discharged through the flue gas discharge pipe. The condensed water is discharged through a siphon.

4.1.3 Control system

The **e-Smart** electronic control system ensures that your heating system is smart and reliable. This means that the boiler responds practically to negative environmental influences (such as limited water flow and air flow problems). In the event of such influences, the boiler will not go into lockout mode, but in the first instance will modulate back. Depending on the nature of the circumstances, a warning, blocking or lock-out may occur. The boiler continues to supply heat provided the situation is not dangerous. With this control system, your boiler is also equipped for remote control and monitoring.

4.1.4 Control

- **On/off control**

The heat input varies between the minimum and the maximum values on the basis of the flow temperature set on the boiler. It is possible to connect a 2-wire on/off thermostat or a power stealing thermostat to the boiler.

- **Modulating control**

The heat input varies between the minimum and the maximum values on the basis of the flow temperature determined by the modulating

controller. The boiler output can be modulated with an appropriate modulating controller.

- **Analogue control (0 - 10 V)**

The heat input varies between the minimum and the maximum values on the basis of the voltage present at the analogue input.

4.1.5 Regulating the water temperature

The boiler is fitted with an electronic temperature control with a flow and return temperature sensor. The flow temperature can be adjusted between 20°C and 90°C. The boiler modulates back when the set flow temperature is reached. The switch-off temperature is the set flow temperature + 5°C.

4.1.6 Protection against shortage of water

The boiler is fitted with low water level protection based on temperature measurements. By modulating back when the water flow threatens to become insufficient, the boiler remains operational as long as possible. The boiler issues a warning in the event of no or too little water. With an insufficient flow $\Delta T \geq 25$ K or too great an increase in the heat exchanger temperature sensor, the boiler goes into blocking mode.

4.1.7 Water flow

The modulating control of the boiler limits the maximum difference between the flow temperature and return temperature. In addition, a heat exchanger temperature sensor is mounted to monitor the minimum water flow. This limits the maximum increase in the heat exchanger temperature and monitors the maximum temperature difference between the flow, return and heat exchanger temperatures. As a result, the boiler is not affected by low water flow.

4.1.8 Hydraulic pressure sensor

The hydraulic pressure sensor records the water pressure in the boiler. Change the threshold value for the hydraulic pressure sensor using parameter **AP006**.

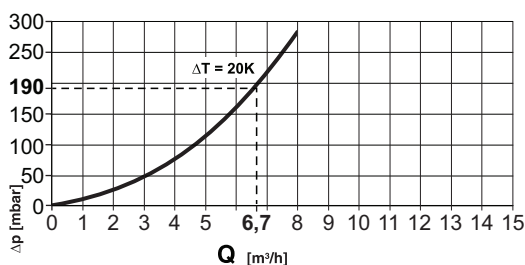
4.1.9 Air pressure differential switch

The air pressure differential switch is a protection against a blocked trap or blocked air supply/flue gas outlet.

Before start-up and when the boiler is in operation, the air pressure differential switch **APS** measures the difference in pressure between the measuring points on the condensate collector p^+ and the air box p^- . If the pressure difference is greater than 6 mbar, then the boiler will lock out. After eliminating the cause of the breakdown, the boiler can be unlocked.

4.1.10 Circulating pump

Fig.3 Hydraulic resistance Gas 220 Ace
160

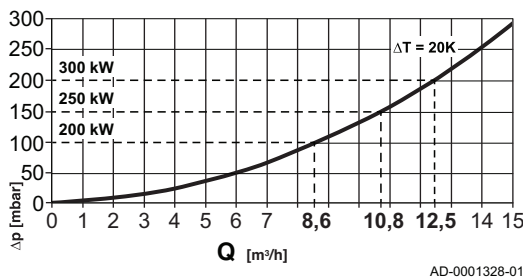


AD-0001329-02

ΔP Boiler resistance (mbar)

Q Flow rate (m³/h)

Fig.4 Hydraulic resistance Gas 220 Ace
200 - 250 - 300



- ΔP Boiler resistance (mbar)
- Q Flow rate (m³/h)

The boiler is supplied without a pump. Take the boiler resistance and system resistance into account when selecting a pump.



Caution

Maximum power consumption may be 300 VA. Use an auxiliary relay for a pump with greater power.

4.1.11 Calorifier connection

A calorifier can be connected to the boiler. Our range includes various calorifiers.

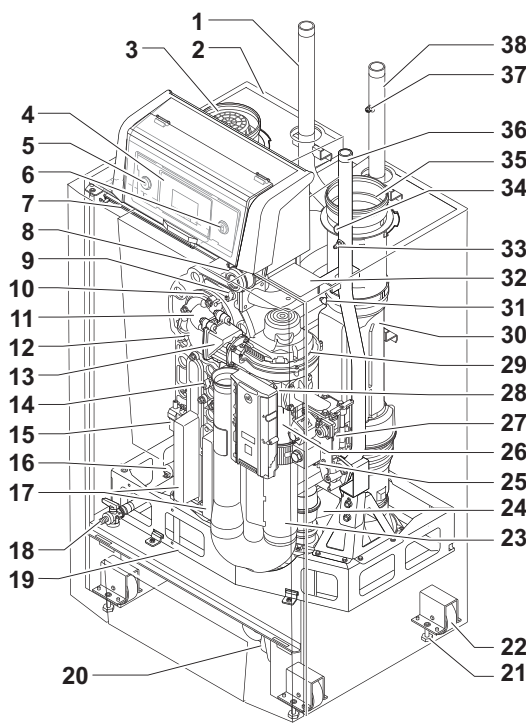


Important

Contact us for more information.

4.2 Main components

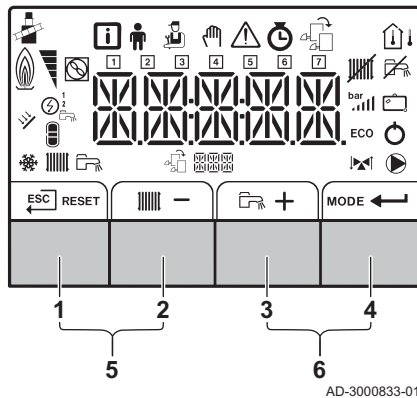
Fig.5 Main components



- 1 Central heating return pipe
- 2 Casing/air box
- 3 Air supply
- 4 Control panel
- 5 On/off switch
- 6 Service connector (PC connection)
- 7 LED interior light
- 8 Air pressure differential switch
- 9 Flow sensor
- 10 Burner
- 11 Adapter
- 12 Heat exchanger
- 13 Non-return valve
- 14 Temperature sensor for heat exchanger
- 15 Ignition transformer
- 16 Hydraulic pressure sensor
- 17 Heat exchanger inspection hatch
- 18 Filling/drain valve
- 19 Frame
- 20 Siphon
- 21 Adjustment bolt
- 22 Transport wheel
- 23 Air intake silencer
- 24 Condensate collector
- 25 Gas pressure measuring point
- 26 Venturi
- 27 Gas valve unit
- 28 Control unit (CU-GH)
- 29 Fan
- 30 Flue gas connection pipe
- 31 Flue gas sensor
- 32 Support
- 33 Gas pressure measuring point
- 34 Flue gas measuring point
- 35 Flue gas outlet
- 36 Gas connection
- 37 Manual air vent
- 38 Central heating supply pipe

4.3 Control panel description

Fig.6 Control panel



4.3.1 What each key means

- 1 ESCape: Back to the previous level.
RESET Reset: Manual reset.
- 2 CH flow temperature Access to set temperature.
- Min. key: Lowering the value.
- 3 DHW temperature: Access to set temperature.
+ Plus key: Raising the value.
- 4 MODE CH/DHW function: Toggles function ON/OFF
 Enter key: Confirms selection or value.
- 5 Chimney-sweeping keys



Important

Press the 1 and 2 keys simultaneously.

- 6 Menu keys



Important

Press the 3 and 4 keys simultaneously.

4.3.2 Meaning of the symbols on the display

Tab.10 Possible symbols in the display (depending on available devices or functions)

	Chimney sweep mode is enabled (forced full load or part load for O ₂ /CO ₂ measurement).
	Information menu: read out various current values.
	User menu: user-level parameters can be configured.
	Installer menu: installer level parameter can be configured.
	Manual mode menu: manual mode can be configured.
	Error menu: errors can be read out.
	Hour counter/timer program/time display menu.
	Control PCB menu: (optional) control PCBs can be read out.
	The outside temperature sensor is connected.
	The room temperature sensor is connected.
	The burner output level (1 to 5 bars, with each bar representing 20% output)
	The heat pump is switched on.
	Day display
	Central heating operation is switched off.
	DHW operation is switched off.
	The solar boiler is on and its heat level is displayed.
	System water pressure display.
	The holiday program is enabled.
	Frost protection operation is enabled.
	CH operation is enabled.
	DHW operation is enabled.
	Displaying the selected PCB.
	The three-way valve is switched on.
	The circulation pump is turning.

ECO	ECO mode operation is enabled.
	Switch the appliance off then on again.

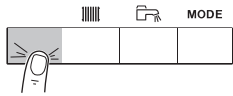
4.3.3 Browsing in the menus

Important

- Depending on the devices or control PCBs connected, the control panel shows selection options in some menus.
- First, select a device, control PCB or zone to view or amend a setting.

1. Press any key to activate the controller from the stand-by screen.

Fig.7 Step 1



MW-3000377-02

Fig.8 Step 2



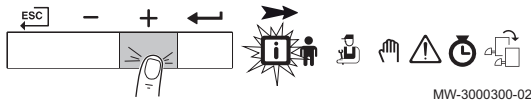
MW-3000299-01

2. Access the available menu options by pressing the two keys on the right simultaneously.

Tab.11 Possible menu choices

	Information Menu
	User menu
	Installer Menu
	Manual mode menu
	Failure Menu
	Hour Run Meters / Timer Program / Clock menu
	PCB menu ⁽¹⁾
(1) The icon is displayed only if an optional control PCB has been installed.	

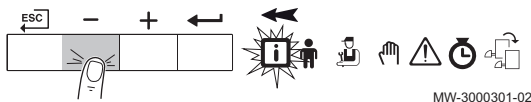
Fig.9 Step 3



MW-3000300-02

3. Press the + key to move the cursor to the right.

Fig.10 Step 4



MW-3000301-02

4. Press the - key to move the cursor to the left.

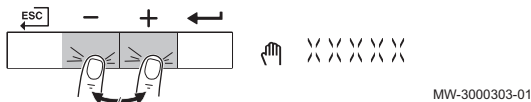
Fig.11 Step 5



MW-3000302-01

5. Press the ← key to confirm selection of the required menu or parameter.

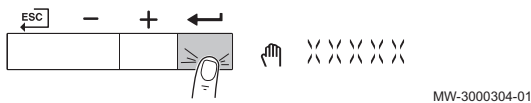
Fig.12 Step 6



MW-3000303-01

6. Press the + or - key to modify the value.

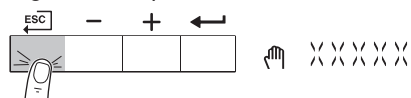
Fig.13 Step 7




MW-3000304-01

7. Press the ← key to confirm the value.

Fig.14 Step 8



MW-3000305-01

8. Press the  key to go back to the main display.

**Important**

The screen will return to stand-by if no key is pressed for three minutes.

4.4 Standard delivery

The delivery includes 2 packages:

- One package with:
 - The boiler, supplied with earthed mains plug
 - Documentation
 - Water quality instructions
- One package with:
 - Siphon with condensate drain hose
 - Sticker: This central heating unit is set for...
 - The connection box
 - The control panel with a corresponding manual

**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.

4.5 Accessories and options

Various accessories can be obtained for the boiler.

**Important**

Contact us for more information.

5 Before installation

5.1 Installation regulations



Warning

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

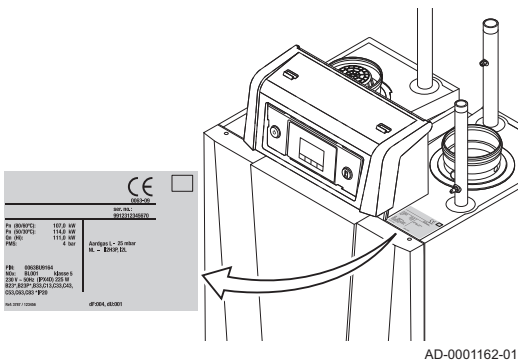


Important

Practical guidelines - see the latest version.

5.2 Choice of the location

Fig.15 Position of data plate



5.2.1 Data plate

The data plate on the boiler features the boiler serial number and important boiler specifications, for example the model and unit category. The factory setting codes CN 1 and CN 2 are also stated on the data plate.

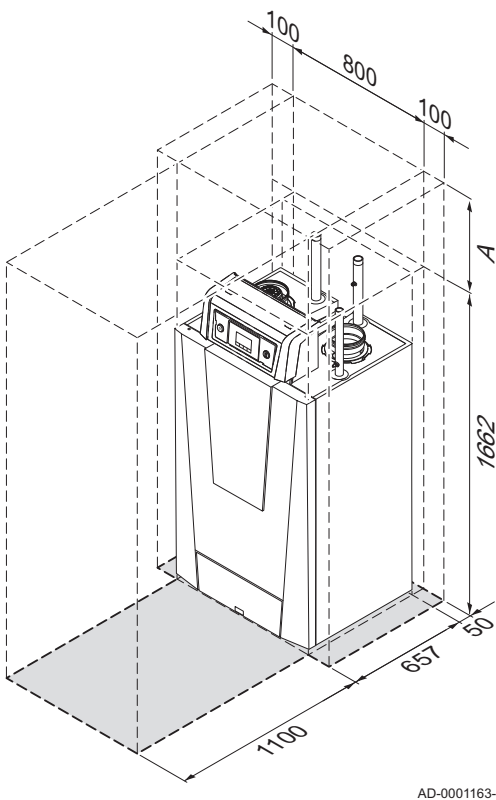
5.2.2 Location of the boiler

- 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.

Fig.16 Clearance required



**Danger**

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

**Caution**

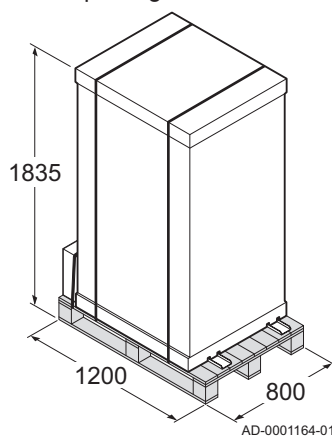
- The boiler must be installed in a frost-free area.
- The boiler must have an earthed electrical connection.
- A connection to the drain must be present for the condensate drain close to the boiler.
- A technical clearance of at least 1100 mm is required at the front (service side) of the boiler. We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

5.3 Transport

Fig.17 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.

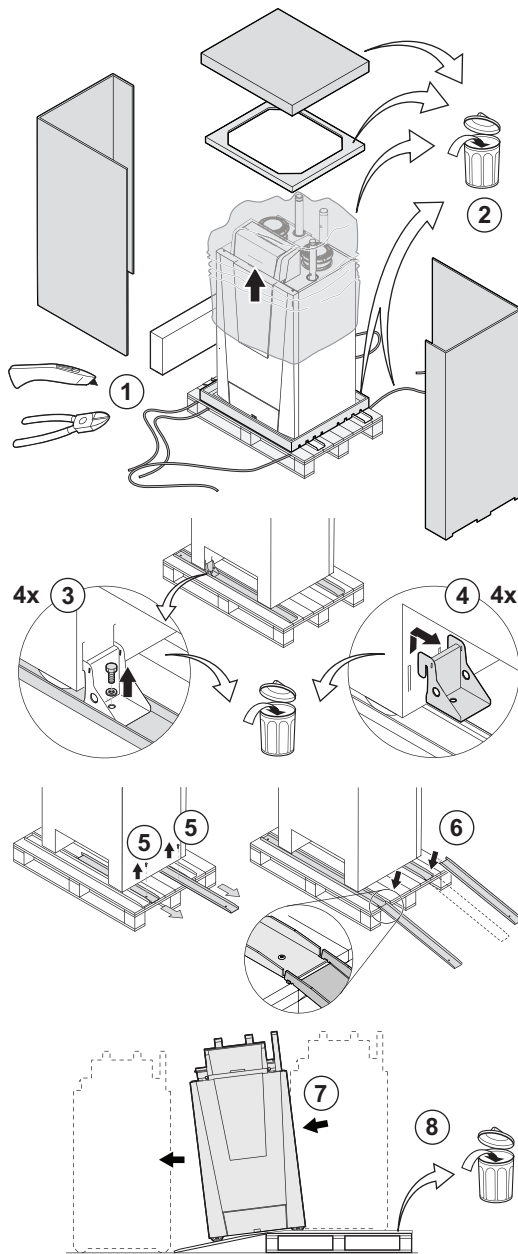


Caution

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

5.4 Unpacking & initial preparation

Fig.18 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.

AD-0001165-01

6 Installation

6.1 General



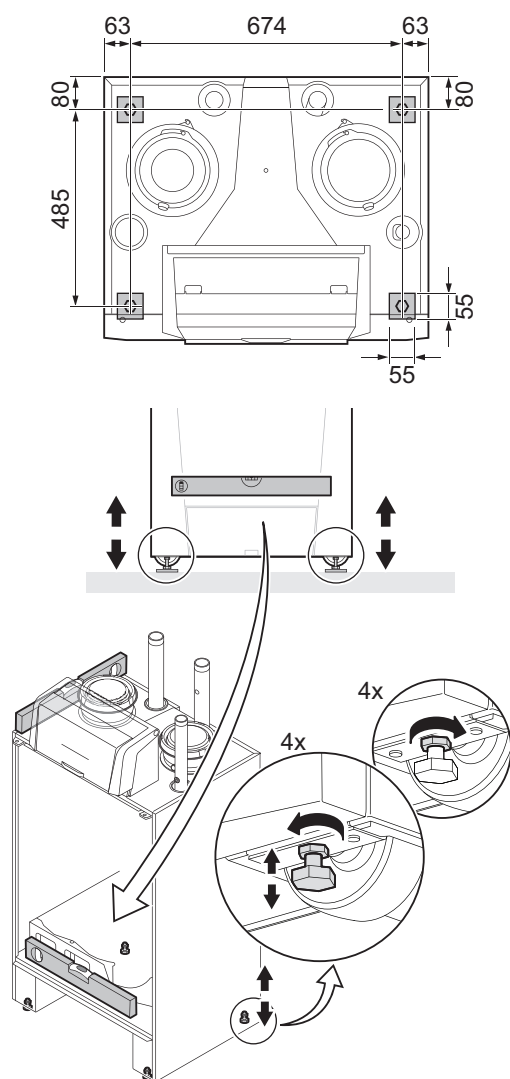
Warning

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

6.2 Preparation

6.2.1 Positioning the boiler

Fig.19 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).

6.3 Hydraulic connections

6.3.1 Rinsing the system

The installation must be cleaned and flushed in accordance with BS 7593 (2006) and BSRIA BG 33/2014.

Before a new boiler can be connected to an existing or new system, the entire system must be thoroughly cleaned and flushed. This step is absolutely crucial. The flushing helps to remove residue from the installation process (weld slag, fixing products etc.) and accumulations of dirt (silt, mud etc.)

i Important

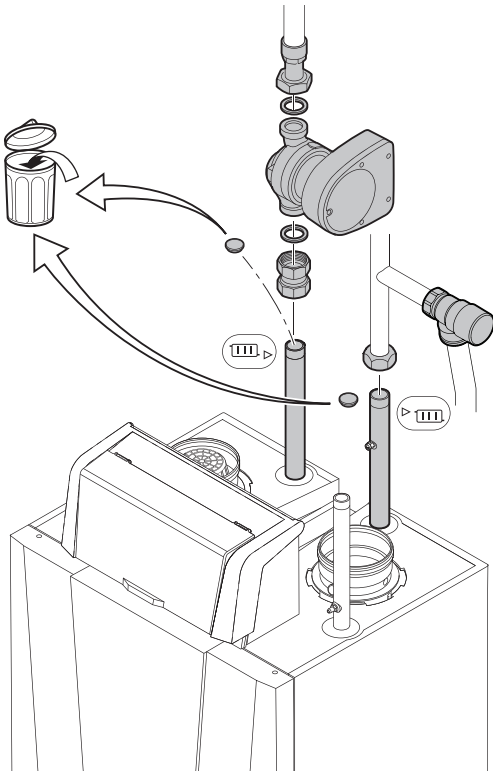
- Flush the system with a volume of water equivalent to at least three times the volume of the system.
- Flush the DHW pipes with at least 20 times the volume of the pipes.

i 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.

6.3.2 Connecting the heating circuit

Fig.20 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.

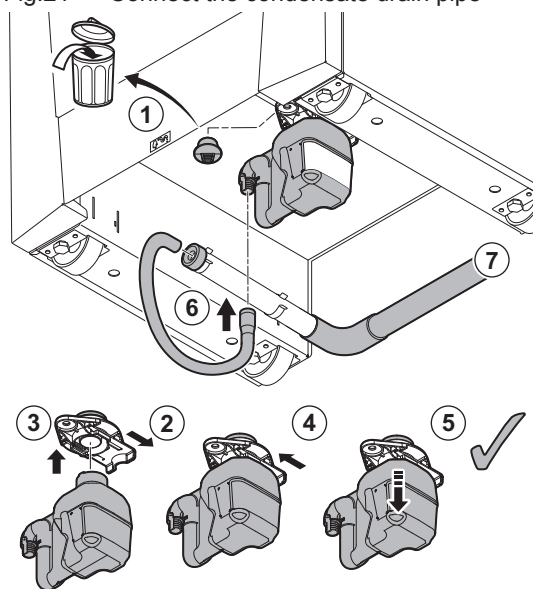
Always connect the boiler in a way that will guarantee the water flow through the unit during operation. When the boiler is used in a system with two return pipes, the return pipe must be used as a cold return. The second return pipe is then used as a hot return. Contact us for more information.

**Caution**

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


6.3.3 Connecting the condensate drain pipe

Fig.21 Connect the condensate drain pipe



AD-0001168-02

The siphon is supplied separately with the boiler as standard (including a flexible plastic siphon hose).

1. Remove the dust cap from the siphon connection  at the bottom of the boiler
2. Pull the retainer clip of the siphon backwards.
3. Push the siphon firmly in the holder.
4. Push the retainer clip of the siphon forwards.
5. Check whether the siphon is firmly fitted in the boiler.
6. Attach the flexible siphon hose supplied to the output of the siphon and insert the other end into the plastic drain pipe on the left underneath the boiler.
7. Fit a plastic drain pipe of \varnothing 40 mm or larger to this, terminating in the drain.

**Important**

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

**Danger**

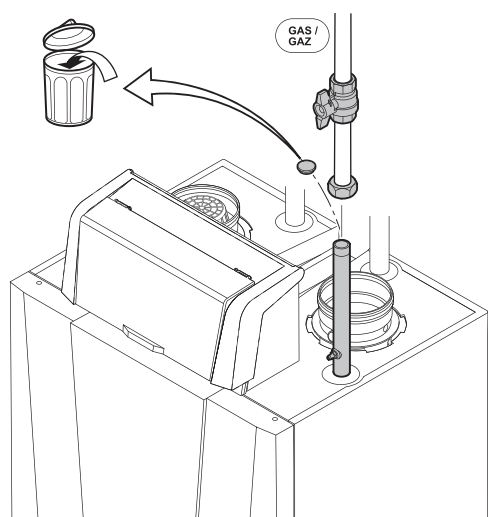
The siphon must always be filled with water. This prevents flue gases from entering the room.

**Caution**

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

6.4 Gas connection


Fig.22 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 .
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.

6.5 Air supply/flue gas outlet connections

6.5.1 Classification



Important

- The installer is responsible ensuring that the right type of flue gas outlet system is used and that the diameter and length are correct.
- Always use connection materials, roof terminal and/or outside wall terminal supplied by the same manufacturer. Consult the manufacturer for compatibility details.

Tab.12 Type of flue gas connection: B_{23P}

Principle	Description	Permitted 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 from the installation area. • 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
<p>(1) The material must also satisfy the material property requirements from the relevant chapter.</p>		

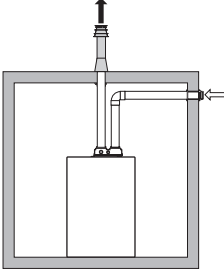
Tab.13 Type of flue gas connection: C₁₃

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

Tab.14 Type of flue gas connection: C₃₃

Principle	Description	Permitted manufacturers ⁽¹⁾
<p>AD-3001057-01</p>	<p>Room-sealed version</p> <ul style="list-style-type: none"> • Flue gas discharge via the roof. • Air supply opening is in the same pressure zone as the discharge (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
<p>(1) The material must also satisfy the material property requirements from the relevant chapter.</p>		

Tab.15 Type of flue gas connection: C₅₃

Principle	Description	Permitted manufacturers ⁽¹⁾
 <p style="text-align: center;">AD-3001058-02</p>	<p>Connection in different pressure zones</p> <ul style="list-style-type: none"> • Closed unit. • Separate air supply duct. • Separate flue gas discharge duct. • Discharging into various pressure areas. • The air supply and the flue gas outlet must not be placed on opposite walls. 	<p>Connection material and roof terminal:</p> <ul style="list-style-type: none"> • Muelink & Grol

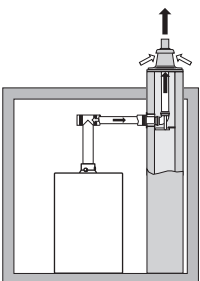
(1) The material must also satisfy the material property requirements from the relevant chapter.

Tab.16 Type of flue gas connection: C₆₃

Principle	Description	Permitted manufacturers ⁽¹⁾
	<p>This type of unit is supplied by the manufacturer without an air supply system and flue gas system.</p>	<p>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 supply and the flue gas outlet must not be placed on opposite walls. • Minimum permitted pressure difference between the air supply and the flue gas outlet is -200 Pa (including -100 Pa wind pressure).

(1) The material must also satisfy the material property requirements from the relevant chapter.

Tab.17 Type of flue gas connection: C₉₃

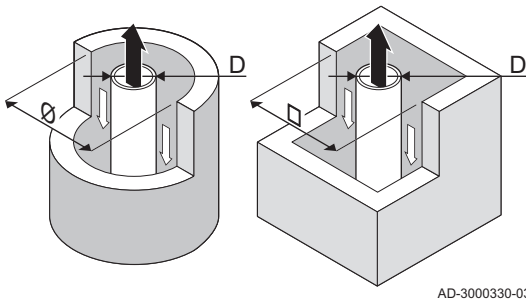
Principle ⁽¹⁾	Description	Permitted manufacturers ⁽²⁾
 <p style="text-align: center;">AD-3001059-01</p>	<p>Room-sealed version</p> <ul style="list-style-type: none"> • Air supply and flue gas discharge duct in shaft or ducted: <ul style="list-style-type: none"> - Concentric. - Air supply from existing duct. - Flue gas discharge via the roof. - Inlet opening for the air supply is in the same pressure zone as the discharge. 	<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.18 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	-	-

Fig.23 Minimum dimensions of shaft or duct C₉₃



AD-3000330-03



Important

The shaft must comply with the air density requirements of the local regulations.



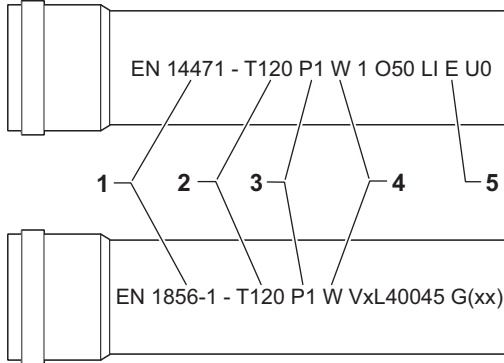
Important

- Always clean shafts thoroughly when using lining pipes and/or an air supply connection.
- It must be possible to inspect the lining duct.

6.5.2 Material

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

Fig.24 Sample string



AD-3001120-01

- 1 EN 14471 of EN 1856-1:** The material is 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 feed-throughs and common channels.
- The materials used must comply with the prevailing regulations and standards.
- Please contact us to discuss using flexible flue gas outlet material.

Tab.19 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 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 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				

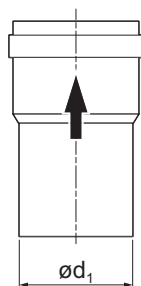
6.5.3 Dimensions of flue gas outlet pipe



Warning

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

Fig.25 Dimensions of open connection



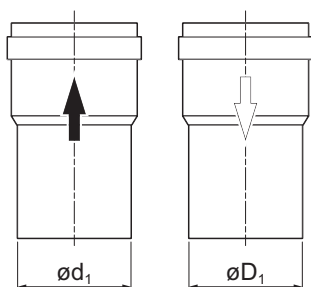
AD-3001094-01

d_1 External dimensions of flue gas outlet pipe

Tab.20 Dimensions of pipe

	d_1 (min-max)
150 mm	149 - 151 mm
200 mm	199 - 201 mm

Fig.26 Dimensions of parallel connection



AD-3000963-01

d_1 External dimensions of flue gas outlet pipe

D_1 External dimensions of air supply pipe

Tab.21 Dimensions of pipe

	d_1 (min-max)	D_1 (min-max)
150/150 mm	149 - 151 mm	149 - 151 mm

6.5.4 Length of the air and flue gas pipes

The maximum length of the flue gas outlet and air supply channel vary depending on the appliance type; consult the relevant chapter for the correct lengths.



Important

- When using bends, the maximum chimney length (L) must be shortened according to the reduction table.
- For adaptation to another diameter use approved transitions
- The boiler is also suitable for longer chimney lengths and diameters other than those specified in the tables. Contact us for more information.

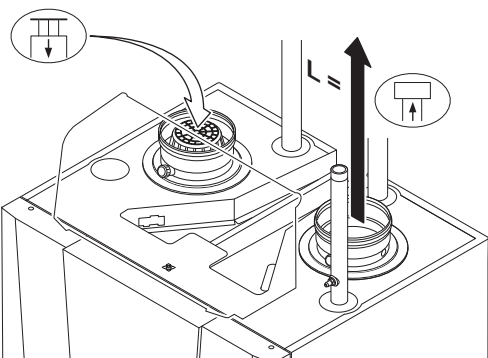
■ Room-ventilated model (B_{23P})

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

Flue gas outlet

Air supply

Fig.27 Room-ventilated version



AD-0001169-01

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.22 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)**

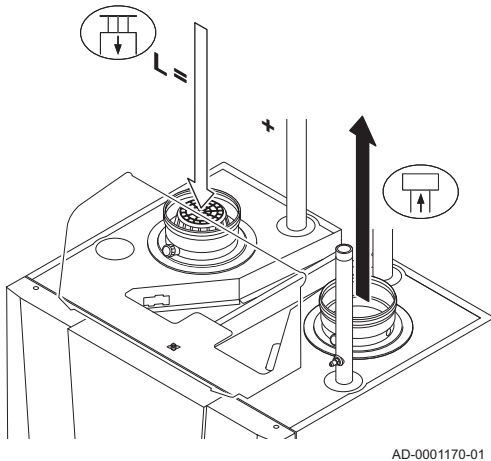
L Combined length of the flue gas outlet and air supply channel to the roof feed-through

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.

Fig.28 Room-sealed version

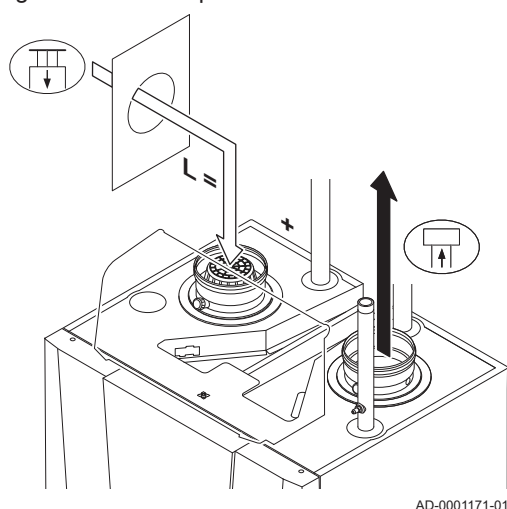


Tab.23 Maximum chimney length (L)



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.29 Different pressure zones



■ 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.24 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.25 Pipe reduction for each element used (parallel)

Diameter	80 mm	90 mm	100 mm	110 mm	130 mm	150 mm	250 mm	300 mm
45° bend	1.2 m	1.3 m	1.4 m	1.5 m	1.0 m	1.2 m	2.0	2.4
90° bend	4.0 m	4.5 m	4.9 m	5.4 m	1.8 m	2.1 m	3.5	4.2

Tab.26 Pipe reduction for each element used (concentric)

Diameter	80/125 mm	100/150 mm	130/200 mm	150/220 mm
45° bend	1.0 m	1.0 m	1.5 m	1.5 m
90° bend	2.0 m	2.0 m	3.0 m	3.0 m

6.5.5 Additional guidelines

■ 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

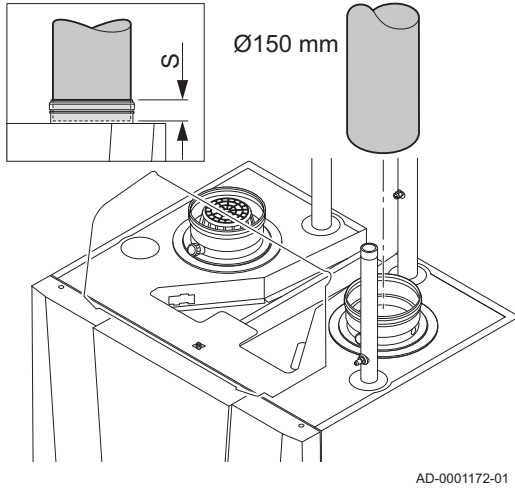
- Direct connection of the flue gas outlet to structural ducts is not permitted because of condensation.
- If condensate from a plastic or stainless steel pipe section can flow back to an aluminium part in the flue gas outlet, this condensate must be discharged via a collector before it reaches the aluminium.

**Important**

Contact us for more information.

6.5.6 Connecting the flue gas outlet

Fig.30 Connecting the flue gas outlet



S Insertion depth 30 mm

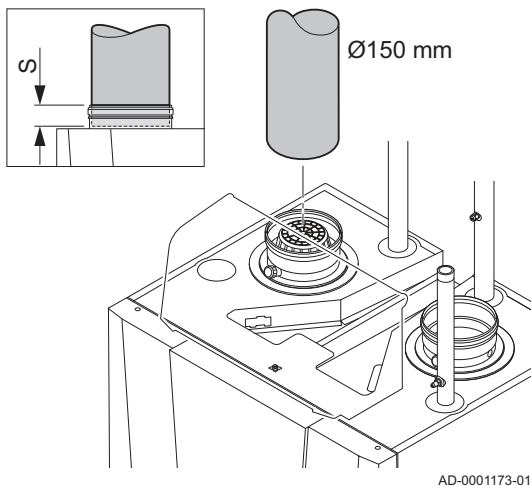
1. Fit the flue gas outlet pipe to the boiler.
2. Fit the successive flue gas outlet pipes seamlessly together.

**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.

6.5.7 Connecting the air supply

Fig.31 Connecting the air supply



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.

6.5.8 Specific air and flue gas applications



Important

If the boiler is used in a flue gas overpressure cascade, this must be stated on the sticker supplied: This central heating unit is set for... This sticker must be affixed next to the data plate of the boiler.

Contact us for more information.

6.6 Electrical connections

6.6.1 Recommendations



Warning

- 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.

Establish the electrical connections in accordance with:

- The instructions of the current standards.
- The instructions of the wiring diagrams supplied with the boiler.
- The recommendations in this manual.
- Separate the sensor cables from the 230 V cables

6.6.2 Control unit

The table gives important connection values for the control unit.

Tab.27 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

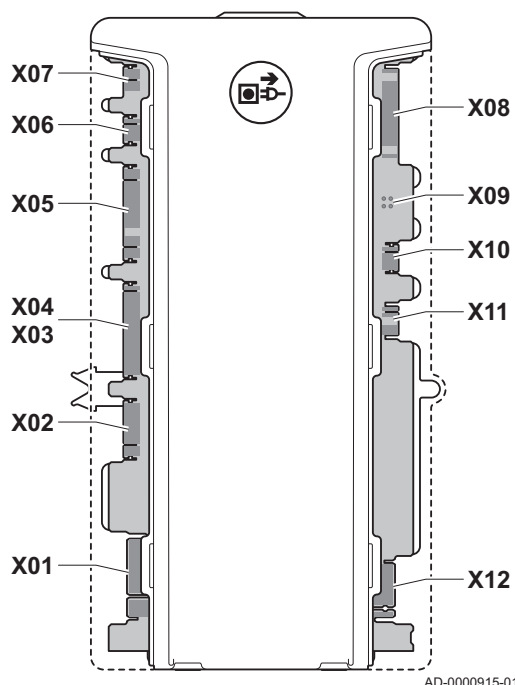
The following components of the boiler are connected to a 230 V power supply:

- 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

Fig.32 Connectors from the control unit CU-GH (front view)



AD-0000915-01

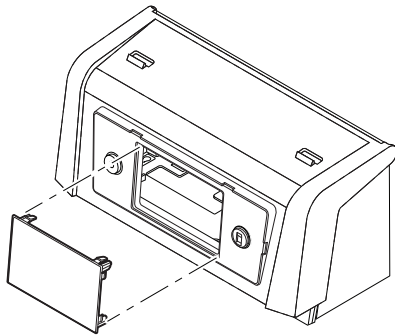
**Caution**

- 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.

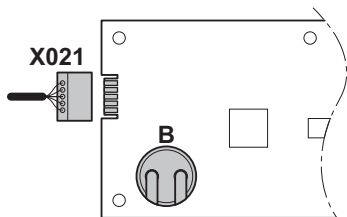
6.6.3 Assembly of the control panel

Fig.33 Control panel housing



AD-0001175-01

Fig.34 PCB



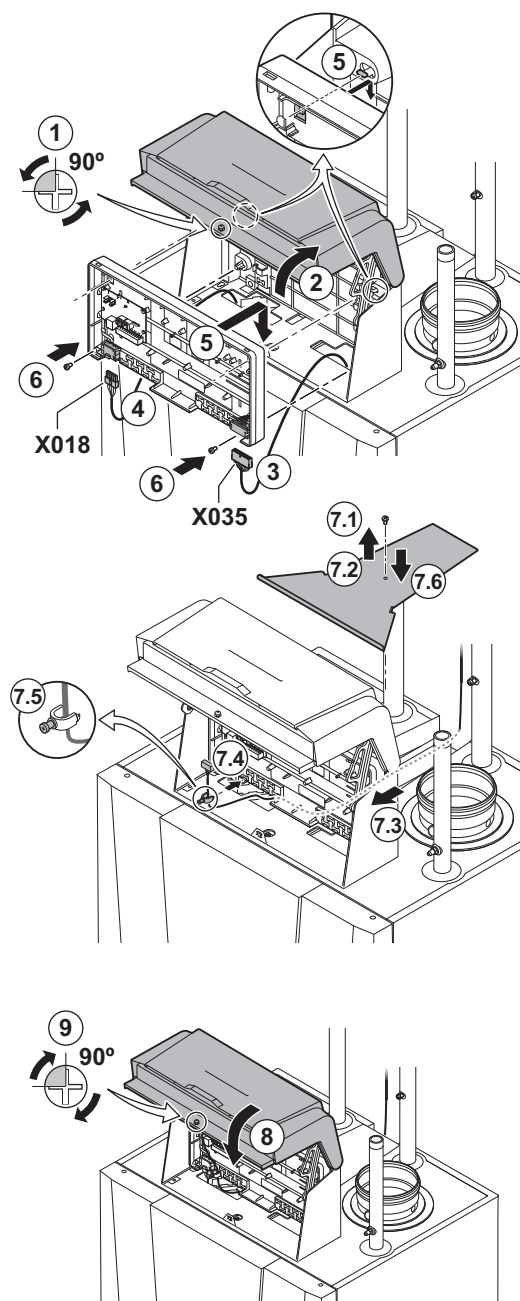
AD-0001300-01

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.

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.

Fig.35 Installing and connecting the connection box



AD-0001176-01

6.6.4 Installation of 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.

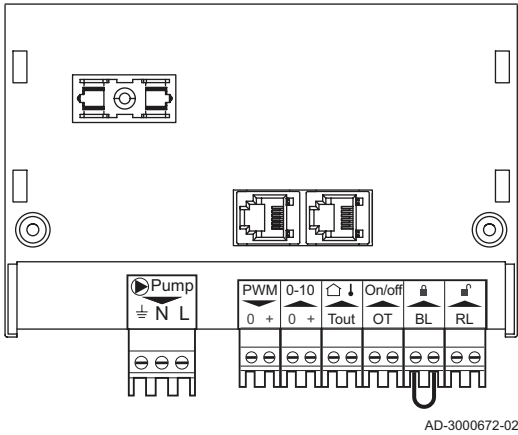
6.6.5 Connection options for the standard PCB

■ Standard PCB

The standard PCB can be found in the connection box. Various thermostats and regulators can be connected to the standard PCB.

Depending on the boiler version chosen, the standard control PCB can be equipped with additional control PCBs.

Fig.36 Standard PCB



AD-3000672-02

■ Connecting the system pump

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

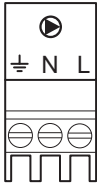


Important

The maximum power consumption is 300 VA.

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

Fig.37 System pump



AD-3001306-01

■ 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

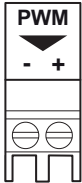
1. Connect the PWM pump to the **PWM** terminals of the connector.



Important

Contact us for more information.

Fig.38 PWM system pump



AD-3001307-01

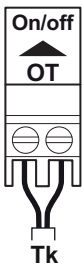
■ Connecting the on/off thermostat

Tk On/off thermostat

The boiler is suitable for connection to a 2-wire on/off thermostat. The boiler is also suitable for a power stealing thermostat.

1. In the case of a room thermostat: install the thermostat in a reference room.
2. Connect the two-wire cable of the thermostat to the **On/Off OT** terminals of the connector.

Fig.39 On/off thermostat

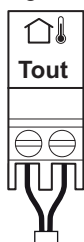


AD-3001308-01

■ Connecting an outdoor sensor

An outdoor sensor can be connected to the **Tout** terminals of the connector. In the case of an on/off thermostat, the boiler will control the temperature with the set point from the internal heating curve.

Fig.40 Outdoor sensor



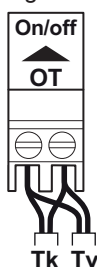
AD-3000973-02

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

**Important**

OpenTherm regulators can also use this outdoor sensor. In such cases, the desired heating curve must be set on the regulator.

Fig.41 Frost thermostat



AD-3001309-01

■ Frost protection combined with on/off thermostat

Tk On/off thermostat

Tv Frost thermostat

When an on/off thermostat is used, the pipes and radiators in a frost-sensitive room can be protected by a frost thermostat. The radiator valve in the frost-sensitive room must be open.

1. Place a frost thermostat (**Tv**) in a frost-sensitive room (e.g. a garage).
2. Connect the frost thermostat (**Tv**) parallel to the on/off thermostat (**Tk**) on the **On/Off OT** terminals of the connector.

**Important**

When an **OpenTherm** thermostat is used, it is not possible to connect a frost thermostat parallel to the **On/Off OT** terminals. In that case, implement frost protection of the central heating system in combination with an outside sensor.

■ Frost protection combined with outdoor sensor

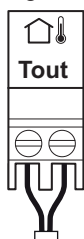
The central heating system can also be protected against frost in combination with an outdoor sensor. The radiator valve in the frost-sensitive room must be open.

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 $-10\text{ }^{\circ}\text{C}$: the circulation pump switches on.
- At outside temperatures above $-10\text{ }^{\circ}\text{C}$: the circulation pump continues to run and then switches off.

Fig.42 Outdoor sensor



AD-3000973-02

Fig.43 Modulating thermostat



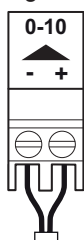
AD-3001310-01

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.

Fig.44 Analogue input



AD-3001304-01

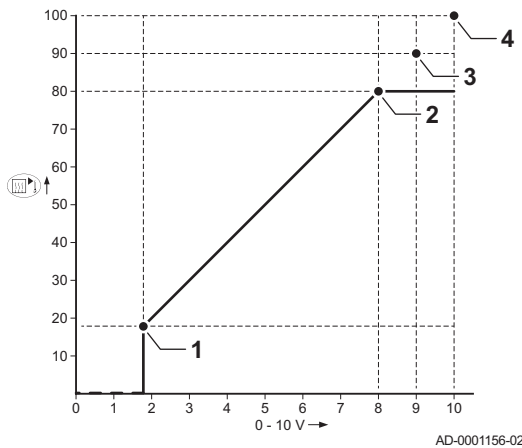
■ Analogue input

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**.

Fig.45 Temperature regulation



- Analogue temperature regulation (°C)

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

The 0–10 V signal controls the boiler supply temperature. 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 set point calculated by the controller.

Tab.28 Temperature regulation

Input signal (V)	Temperature °C	Description
0–1.5	0–15	Boiler off
1.5–1.8	15–18	Hysteresis
1.8–10	18–100	Desired temperature

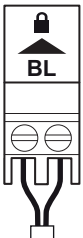
- Analogue output-based control

The 0 - 10 V signal controls the boiler output. This control modulates on the basis of the heat output. The minimum output is linked to the boiler's modulation depth. The output varies between the minimum and maximum value on the basis of the value defined by the controller.

Tab.29 Control based on heat output

Input signal (V)	Heat output (%)	Description
0–2.0	0	Boiler off
2.0–2.2	0	Heat demand
2.0–10	0–100	Desired heat output

Fig.46 Blocking input



AD-3000972-02

■ Blocking input

The boiler has a blocking input. This input is installed on the **BL** terminals of the connector.

Change the function of the input using parameter **AP001**.



Warning

Only suitable for potential-free contacts.



Important

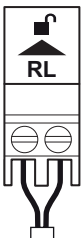
First remove the bridge if this input is used.

■ Release input

The boiler has a release input. This input relates to the **RL** terminals of the connector.

Change the function of the input using parameter **AP008**.

Fig.47 Release input

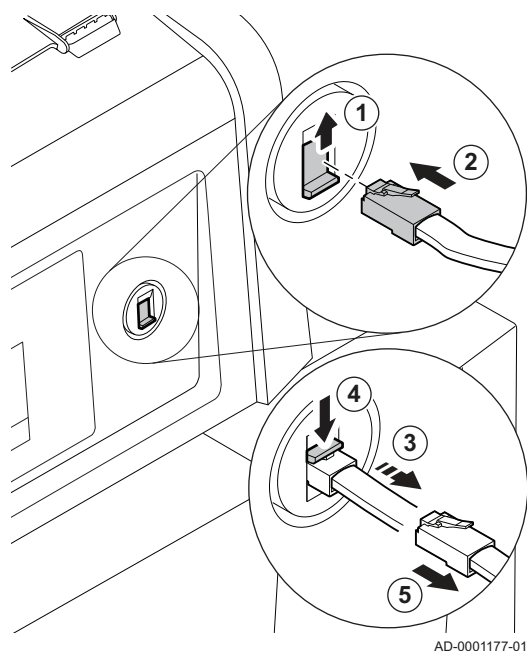


AD-3001303-01

**Warning**

Only suitable for potential-free contacts.

Fig.48 Connecting an interface connector



■ Connecting a PC/laptop

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.

6.7 Filling the installation

6.7.1 Water treatment

In many cases, the boiler and central heating system can be filled with normal tap water and water treatment will not be necessary.

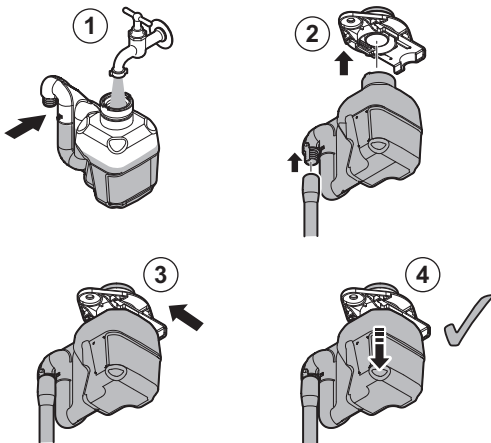
**Warning**

Do not add chemical agents to the central heating water without consulting Remeha. For example: antifreeze, water softeners, pH-increasing or lowering agents, chemical additives and/or inhibitors. Such agents can cause errors in the boiler and damage to the heat exchanger.


6.7.2 Filling the siphon

The siphon is supplied separately with the boiler as standard (including a flexible plastic drain hose). Fit the siphon under the boiler.

Fig.49 Fill the siphon



AD-4100153-01

1. Fill the siphon with water up to the mark.
2. Push the siphon firmly into the designated opening  behind the cover underneath the boiler and connect the siphon hose.
3. Push the retainer clip of the siphon forwards.
4. Check whether the siphon is firmly fitted in the boiler.

**Danger**

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

6.7.3 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.

7 Commissioning

7.1 Checklist before commissioning

7.1.1 Preparing the boiler for commissioning

Procedure to prepare the boiler for commissioning

1. Check the gas circuit.
2. Check the hydraulic circuit.
3. Check the water pressure in the central heating installation.
4. Check the electrical connections of the thermostat and the other external connections.
5. Check the other connections.
6. Test the boiler at full load. Check the setting of the gas/air ratio.
7. Test the boiler at part load. Check the setting of the gas/air ratio.
8. Final activities.

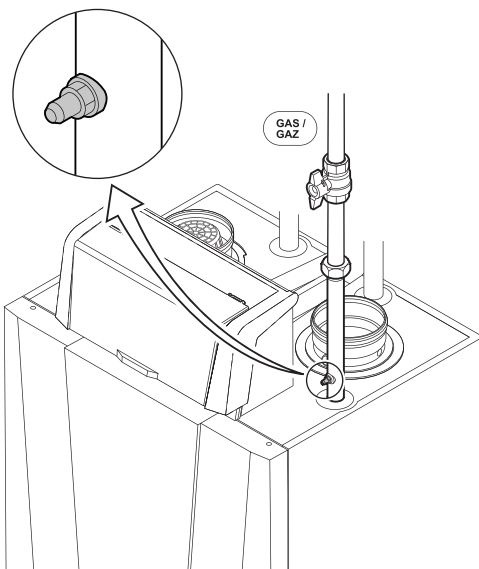


Important

Complete the checklist.

7.1.2 Gas circuit

Fig.50 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.



For more information, see

Unit categories, page 13

7.1.3 Hydraulic circuit

1. Check the siphon; it should be fully filled with clean water.
2. Check the water-side connections for tightness.

7.1.4 Electrical connections

1. Check the electrical connections.

7.2 Commissioning procedure

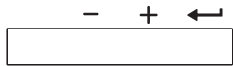


Warning

Initial commissioning must be done by a qualified professional.

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.

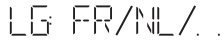
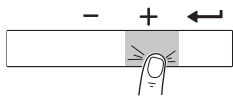
Fig.51



AD-4100151-01

4. At the end of the start-up program, the display will show: *LG:FR* (FR flashes in the picture)

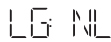
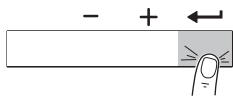
Fig.52



AD-4100149-01

5. With the key **+** select the desired language.

Fig.53



AD-4100150-01

6. Press the **←** key to confirm the selection.
⇒ *RESET ALL* will be displayed.

Fig.54



AD-4100148-01

7. To confirm, press the **←** key.
8. The selected language is now set-up and the main display will appear.
9. Set the components (thermostats, control) so that heat is demanded.

Error during start-up procedure:

In the event of a fault, a message with the corresponding code is displayed.

The meaning of the error codes can be found in the error table.

7.3 Gas settings

7.3.1 Adjusting to a different gas type



Warning

Only a qualified engineer may carry out the following operations.

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

Tab.30 Factory settings G20 (H gas)

Code	Description	Adjustment range	160	200	250	300
DP003	Maximum fan speed on Domestic Hot Water	1000 Rpm - 7000 Rpm	6700	4650	5700	5800
GP007	Maximum fan speed during Central Heating mode	1000 Rpm - 8500 Rpm	6700	4650	5700	5800
GP008	Minimum fan speed during Central Heating + Domestic Hot Water mode	900 Rpm - 8500 Rpm	1900	1450	1550	1650
GP009	Fan speed at appliance start	900 Rpm - 5000 Rpm	2200	2200	2200	2200

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

1. Fit the gas diaphragm in the gas valve unit if the boiler is modified for G30/G31 (butane/propane):

Tab.31 Gas diaphragm for G30/G31 (butane/propane)

Gas diaphragm for G30/G31 (butane/propane)	Ø (mm)
Gas 220 Ace 160	9.0
Gas 220 Ace 200	12.0
Gas 220 Ace 250	12.0
Gas 220 Ace 300	14.0

- Adjust the fan speed (if necessary) for the gas type used according to the table below. The setting can be changed with a parameter setting.

Tab.32 Adjustment for gas type G30/G31 (butane/propane)

Code	Description	Adjustment range	160	200	250	300
DP003	Maximum fan speed on Domestic Hot Water	1000 Rpm - 7000 Rpm	6400	4400	5400	5550
GP007	Maximum fan speed during Central Heating mode	1000 Rpm - 8500 Rpm	6400	4400	5400	5550
GP008	Minimum fan speed during Central Heating + Domestic Hot Water mode	900 Rpm - 8500 Rpm	2150	1400	1550	1700
GP009	Fan speed at appliance start	900 Rpm - 5000 Rpm	3000	2200	2200	2200

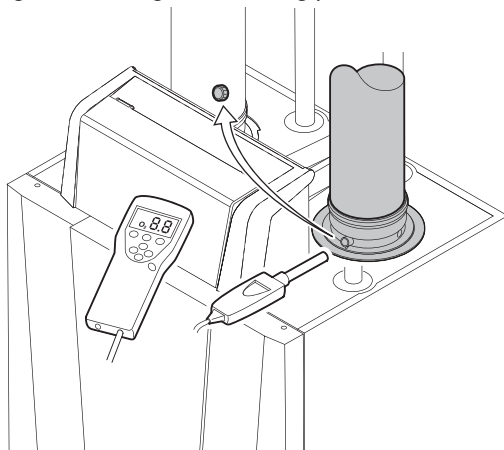
- Check the setting of the gas/air ratio.

**See**

Checking/setting combustion, page 47

7.3.2 Checking/setting combustion

Fig.55 Flue gas measuring point



AD-0001179-01

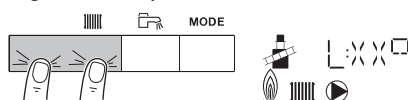
- Unscrew the cap from the flue gas measuring point.
- Insert the probe for the flue gas analyser into the measurement opening.

**Important**

- During measurement, seal the opening around the sensor fully.
- The flue gas analyser must have a minimum accuracy of $\pm 0.25\%$ O₂/CO₂.

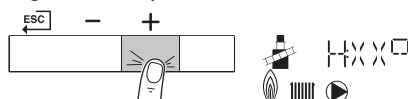
- Measure the percentage of O₂/CO₂ in the flue gases. Take measurements at full load and at part load.

Fig.56 Step 1



MW-3000325-01

Fig.57 Step 2



MW-3000326-01

■ Enable full load

- Press the two keys on the left simultaneously to select chimney sweep mode.
⇒ The device is now running at part load. Wait until **L:XX°** appears on the display.
- Press the **+** key twice.
⇒ The device is now running at full load. Wait until **H:XX°** appears on the display.

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

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

Tab.33 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 %
Gas 220 Ace 160	4.8 - 5.2 ⁽¹⁾	8.8 ⁽¹⁾ - 9.0
Gas 220 Ace 200	4.8 - 5.2 ⁽¹⁾	8.8 ⁽¹⁾ - 9.0

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

Tab.34 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 %
Gas 220 Ace 160	5.1 - 5.4 ⁽¹⁾	10.2 ⁽¹⁾ - 10.4
Gas 220 Ace 200	5.2 - 5.5 ⁽¹⁾	10.1 ⁽¹⁾ - 10.3
Gas 220 Ace 250	5.2 - 5.5 ⁽¹⁾	10.1 ⁽¹⁾ - 10.3
Gas 220 Ace 300	5.2 - 5.5 ⁽¹⁾	10.1 ⁽¹⁾ - 10.3
(1) nominal value		

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.

- If the measured value is outside of the values given in the table, correct the gas/air ratio.
- Using the adjusting screw **A**, set the percentage of O₂/CO₂ for the gas type being used to the nominal value. This should always be inside the highest and lowest setting limit.

i Important

The boilers are supplied with a variety of gas valve units. Compare the gas valve unit in the boiler with those in the drawings and see the drawing for the position of adjusting screw **A** for full load.

Fig.58 Position of adjusting screw A

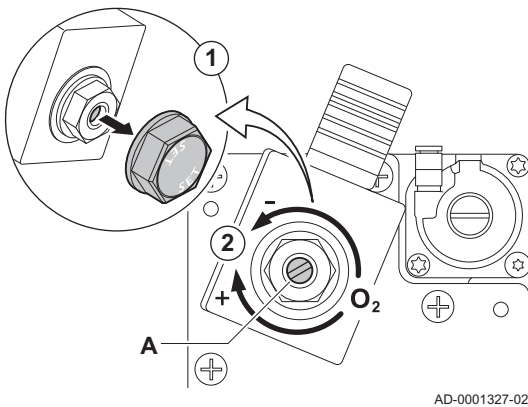
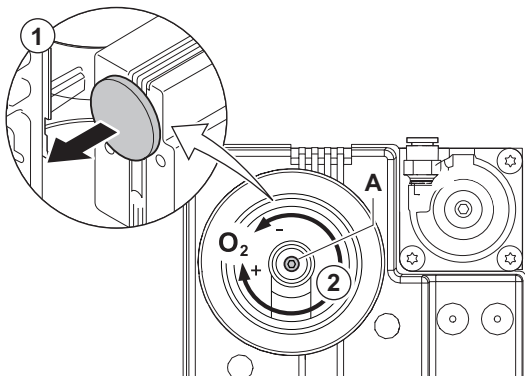
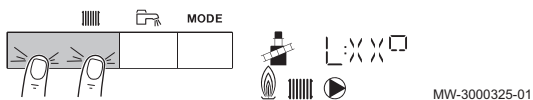


Fig.59 Step 1



■ **Enable part load**

- Press the two keys on the left simultaneously to select chimney sweep mode.
 - ⇒ The device is now running at part load. Wait until **L:XX°** appears on the display.
- Press the **ESC** key to go back to the main display.

■ Checking/setting values for O₂/CO₂ at low 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.35 Checking/setting values for O₂/CO₂ at low load for G20 (H gas)

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

Tab.36 Checking/setting values for O₂/CO₂ at low load for G30/G31 (butane/propane)

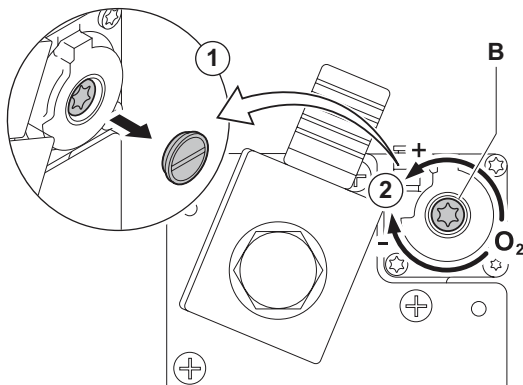
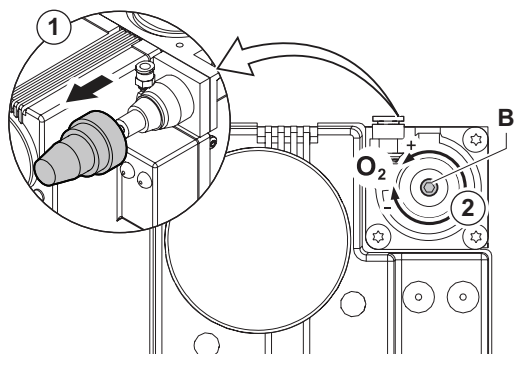
Values at low load for G30/31 (butane/propane)	O ₂ % ⁽¹⁾	CO ₂ %
Gas 220 Ace 160	5.4 ⁽¹⁾ - 5.7	10.0 - 10.2 ⁽¹⁾
Gas 220 Ace 200	5.5 ⁽¹⁾ - 5.8	9.9 - 10.1 ⁽¹⁾
Gas 220 Ace 250	5.5 ⁽¹⁾ - 5.8	9.9 - 10.1 ⁽¹⁾
Gas 220 Ace 300	5.5 ⁽¹⁾ - 5.8	9.9 - 10.1 ⁽¹⁾
(1) nominal value		



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.

Fig.60 Position of adjusting screw B



AD-0001326-02

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



Important

The boilers are supplied with a variety of gas valve units. Compare the gas valve unit in the boiler with those in the drawings and see the drawing for the position of adjusting screw **B** for low load.


4. Using the adjusting screw **B**, set the percentage of O₂/CO₂ for the gas type being used to the nominal value. This should always be within the maximum and the minimum setting limits.

7.4 Final instructions

1. Remove the measuring equipment.
2. Screw the cap on to the flue gas measuring point.
3. Seal the gas valve unit.
4. Put the front casing back.
5. Heat the central heating system up to approximately 70°C.
6. Switch the boiler off.
7. Vent the central heating system after approx. 10 minutes.
8. Turn on the boiler.
9. Check the water pressure. If necessary, top up the central heating system.
10. Fill in the following data on the sticker included, and attach it next to the data plate on the appliance.
 - If adapted to another gas, fill in the gas type;
 - The gas supply pressure;
 - If set to overpressure application, fill in the type;
 - The parameters modified for the changes mentioned above.
11. Instruct the user in the operation of the system, boiler and controller.
12. Inform the user of the maintenance to be performed.
13. Hand over all manuals to the user.
14. Confirm the commissioning with a signature and a company stamp.
 - ⇒ The boiler is now ready for operation.

Fig.61 Example filled-in sticker

<p>Adjusted for / Réglée pour / Ingesteld op / Eingestellt auf / Regolato per / Ajustado para / Ρυθμιζόμενο για / Nastawiony na / настроен для / Reglat pentru / настроен за / ayarlanmıştir / Nastavljen za / beállitva/ Nastaveno pro / Asetettu kaasulle / Justert for/ indstillet til/ ل تطبخض :</p> <p><input checked="" type="checkbox"/> Gas <u>G20</u></p> <p><u>20</u> mbar</p> <p><input checked="" type="checkbox"/> C_{(10)3(X)}</p> <p><input type="checkbox"/> C_{(12)3(X)}</p> <p><input type="checkbox"/></p>	<p>Parameters / Paramètres / Parameter / Parametri / Parámetros / Παράμετροι / Parametry / Параметри / Parametrii / Параметри / Parametreler / Paraméterek / Parametrit / Parametere / Parametre / تامل عمل :</p> <p><u>DP003 - 3300</u></p> <p><u>GP007 - 3300</u></p> <p><u>GP008 - 2150</u></p> <p><u>GP009 -</u></p>
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AD-3001124-01

8 Operation

8.1 Use of the control panel

The display on the control panel provides information about the operating status of the boiler and any errors.

**See**

The control panel manual for extra information about:

- Changing, creating and resetting settings.
- Reading out values.
- Functions of the panel.
- Clearing the error memory.

8.2 Shutdown

If the central heating is not due to be used for a long period of time, it is recommended that the boiler be disconnected from the power supply.

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

8.3 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 there is no heat demand, the boiler will only switch on to protect itself against frost.

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:

- At a water temperature lower than 7°C, the heating pump starts.
- If the water temperature is lower than 4°C, the boiler switches on.
- If the water temperature is higher than 10°C the boiler switches off and the circulation 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 outside sensor can be connected to the boiler.

9 Settings

9.1 List of parameters

The code of the parameters always contain two letters and three numbers. The letters stand for:

AP	Appliance related parameters
CP	Zone related parameters
DP	Domestic hot water related parameters
EP	Smart Solutions related parameters
GP	Gas-fired heat engine related parameters
PP	Central heating related parameters



Important


All possible options are indicated in the adjustment range. The display of the boiler only shows the relevant settings for the appliance.

9.1.1 Parameters - FSB-WHB-HE-150-300



Important

- All tables show the factory setting for the parameters.
- The tables also list parameters that are only applicable if the boiler is combined with other equipment such as an outdoor sensor.
- All possible options are indicated in the adjustment range. The display of the boiler only shows the relevant settings for the appliance.

Tab.37  > FSB-WHB-HE-150-300 - Factory settings at user level

Code	Description	Range	160	200	250	300
AP016	Enable central heating heat demand processing	0 = Off 1 = On	1	1	1	1
AP017	Enable domestic hot water heat demand processing	0 = Off 1 = On	1	1	1	1
CP080	Room setpoint temperature of the user zone activity	5 °C - 30 °C	16	16	16	16
CP081	Room setpoint temperature of the user zone activity	5 °C - 30 °C	20	20	20	20
CP082	Room setpoint temperature of the user zone activity	5 °C - 30 °C	6	6	6	6
CP083	Room setpoint temperature of the user zone activity	5 °C - 30 °C	21	21	21	21
CP084	Room setpoint temperature of the user zone activity	5 °C - 30 °C	22	22	22	22
CP085	Room setpoint temperature of the user zone activity	5 °C - 30 °C	20	20	20	20
CP200	Manually setting the room temperature setpoint of the zone	5 °C - 30 °C	20	20	20	20
CP320	Operating mode of the zone	0 = Scheduling 1 = Manual 2 = Antifrost 3 = Temporary	1	1	1	1
CP510	Temporary room setpoint per zone	5 °C - 50 °C	20	20	20	20
CP550	Fire Place mode is active	0 = Off 1 = On	0	0	0	0

Code	Description	Range	160	200	250	300
CP570	Time Program of the zone selected by the user	0 = Schedule 1 1 = Schedule 2 2 = Schedule 3 3 = Cooling	0	0	0	0
CP660	Choice icon to display this zone	0 = None 1 = All 2 = Bedroom 3 = Livingroom 4 = Study 5 = Outdoor 6 = Kitchen 7 = Basement 8 = Swimming Pool 9 = DHW Tank 10 = DHW Electrical Tank 11 = DHW Layered Tank 12 = Internal Boiler Tank 13 = Time Program	1	1	1	1
CP670	Configuration of pairing room unit per zone		-	-	-	-

Tab.38  > FSB-WHB-HE-150-300 - Factory settings at installer level

Code	Description	Range	160	200	250	300
AP001	Blocking input setting (1: Full blocking, 2: Partial blocking, 3: User reset locking)	1 = Full blocking 2 = Partial blocking 3 = User reset locking 4 = Backup Relieved 5 = Heat Pump Relieved 6 = HP & backup relieved 7 = High, Low Tariff 8 = Photovoltaic HP Only 9 = PV HP And backup 10 = Smart Grid ready 11 = Heating Cooling	1	1	1	1
AP006	Appliance will report low water pressure below this value	0 bar - 6 bar	0,7	0,7	0,7	0,7
AP008	The appliance will wait x sec (0=off) for the release contact to close in order to start the burner	0 Sec - 255 Sec	0	0	0	0
AP009	Burning hours before raising a service notification	100 Hours - 25500 Hours	17400	17400	17400	17400
AP010	The type of service needed based on burn and powered hours	0 = None 1 = Custom notification 2 = ABC notification	2	2	2	2
AP011	Hours powered to raise a service notification	100 Hours - 25500 Hours	17400	17400	17400	17400
AP056	Enable outdoor sensor	0 = No outside sensor 1 = AF60 2 = QAC34	1	1	1	1
AP073	Outdoor temperature: upper limit for heating	1.5 °C - 60 °C	22	22	22	22
AP074	The heating is stopped. Hot water is maintained. Force Summer Mode	0 = Off 1 = On	0	0	0	0

Code	Description	Range	160	200	250	300
AP079	Inertia of the building used for heat up speed	0 - 255	0	0	0	0
AP080	Outside temperature below which the antifreeze protection is activated	-32 °C - 10 °C	0	0	0	0
AP110	Parameter to activate the 2nd return sensor	0 = Inactive 1 = Active	0	0	0	0
CP000	Maximum Flow Temperature setpoint zone	0 °C - 90 °C	90	90	90	90
CP010	Zone flow temperature setpoint, used when the zone is set to a fixed flow setpoint.	0 °C - 90 °C	90	90	90	90
CP020	Functionality of the zone	0 = Disable 1 = Direct 2 = Mixing Circuit 3 = Swimming pool 4 = High Temperature 5 = Fan Convactor 6 = DHW tank 7 = Electrical DHW 8 = Time Program 9 = ProcessHeat 10 = DHW Layered 11 = DHW Internal tank 12 = DHW Commercial Tank 31 = DHW FWS EXT	1	1	1	1
CP040	Pump post runtime of the zone	0 Min - 20 Min	0	0	0	0
CP060	Wished room zone temperature on holiday period	5 °C - 20 °C	6	6	6	6
CP070	Max Room Temperature limit of the circuit in reduced mode, that allows switching to comfort mode	5 °C - 30 °C	15	15	15	15
CP210	Comfort footpoint of the temperature of heat curve of the circuit	15 °C - 90 °C	15	15	15	15
CP220	Reduced footpoint of the temperature of heat curve of the circuit	15 °C - 90 °C	15	15	15	15
CP230	Heating curve temperature gradient of the zone	0 - 4	2,5	2,5	2,5	2,5
CP240	Adjustment of the influence of the zone room unit	0 - 10	3	3	3	3
CP250	Calibration of Zone Room Unit	-5 °C - 5 °C	0	0	0	0
CP340	Type of reduced night mode, stop or maintain heating of circuit	0 = Stop heat demand 1 = Continue heat demand	0	0	0	0
CP470	Setting of the screed drying program of the zone	0 Days - 30 Days	0	0	0	0
CP480	Setting of the start temperature of the screed drying program of the zone	20 °C - 50 °C	20	20	20	20
CP490	Setting of the stop temperature of the screed drying program of the zone	20 °C - 50 °C	20	20	20	20
CP730	Selection of heat up speed of the zone	0 = Extra Slow 1 = Slowest 2 = Slower 3 = Normal 4 = Faster 5 = Fastest	0	0	0	0

Code	Description	Range	160	200	250	300
CP740	Selection of cool down speed of the zone	0 = Slowest 1 = Slower 2 = Normal 3 = Faster 4 = Fastest	0	0	0	0
CP750	Maximum zone preheat time	0 Min - 65000 Min	0	0	0	0
CP780	Selection of the control strategy for the zone	0 = Automatic 1 = Room Temp based 2 = Outdoor Temp based 3 = Outdoor&Room based	1	1	1	1
DP003	Maximum fan speed on Domestic Hot Water	1000 Rpm - 7000 Rpm	6700	4650	5700	5800
EP014	Smart Control Board function 10 Volt PWM input	0 = Off 1 = Temperature control 2 = Power control	0	0	0	0
GP007	Maximum fan speed during Central Heating mode	1000 Rpm - 8500 Rpm	6700	4650	5700	5800
GP008	Minimum fan speed during Central Heating + Domestic Hot Water mode	900 Rpm - 8500 Rpm	1900	1450	1550	1650
GP009	Fan speed at appliance start	900 Rpm - 5000 Rpm	2200	2200	2200	2200
GP010	Gas Pressure Switch check on/off	0 = No 1 = Yes	0	0	0	0
GP021	Modulate back when delta temperature is large then this treshold	5 °C - 25 °C	25	25	25	25
GP024	Valve Proofing System check on / off	0 = No 1 = Yes	0	0	0	0
PP015	Central heating pump post run time	1 Min - 99 Min	1	1	1	1
PP016	Maximum central heating pump speed (%)	20 % - 100 %	100	100	100	100
PP018	Minimum central heating pump speed (%)	20 % - 100 %	20	20	20	20
PP023	Hysteresis to start burner in heating mode	1 °C - 25 °C	10	10	10	10

9.2 Changing the parameters

The boiler's control unit is set for the most common central heating systems. These settings will ensure that virtually every central heating system operates effectively. The user or the installer can optimise the parameters as required.



Caution

Changing the factory settings may adversely affect the operation of the boiler.

9.2.1 Configuring the installation parameters


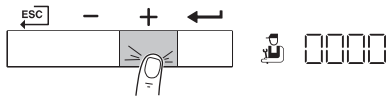
1. Navigate to the Installer menu.
2. Press the  key to open the menu.

Fig.62 Step 2



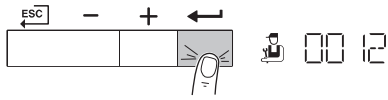
Fig.63 Step 3



MW-3000313-01

3. Keep pressing the **+** key until the code **0012** is displayed.

Fig.64 Step 4



MW-3000314-01

4. Press the **←** key to confirm opening the menu.

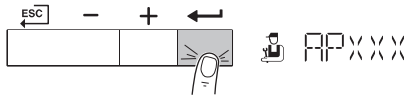
Fig.65 Step 5



MW-3000406-02

5. Keep pressing the **+** key until the required device, control PCB or zone is displayed.

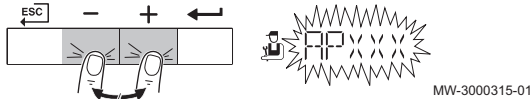
Fig.66 Step 6



MW-3000407-01

6. Press the **←** key to confirm the selection.

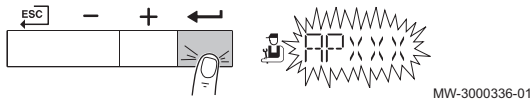
Fig.67 Step 7



MW-3000315-01

7. Keep pressing the **+** or **-** key until the required parameter is displayed.

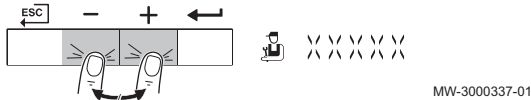
Fig.68 Step 8



MW-3000336-01

8. Press the **←** key to confirm the selection.

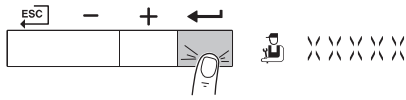
Fig.69 Step 9



MW-3000337-01

9. Press the **+** or **-** key to modify the value.

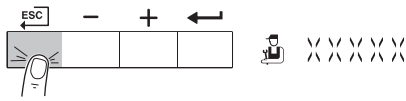
Fig.70 Step 10



MW-3000338-01

10. Press the **←** key to confirm the value.

Fig.71 Step 11



MW-3000316-01

11. Press the **ESC** key multiple times to go back to the main display.

9.3 Reading out measured values

9.3.1 Reading out counters

You can read out the counters of the appliance and the connected control boards, sensors and so on.

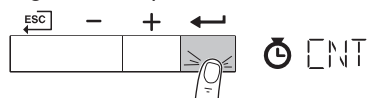
1. Navigate to the Counter menu.
2. Press the **←** key to open the menu.

Fig.72 Step 2



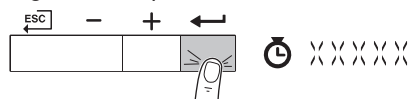
MW-3000320-01

Fig.73 Step 3



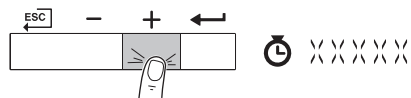
MW-3000422-01

Fig.74 Step 4



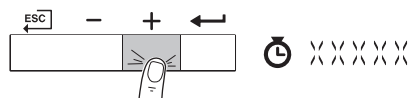
MW-3000453-01

Fig.75 Step 5



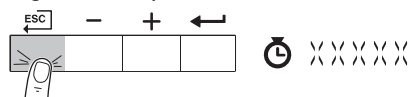
MW-3000439-01

Fig.76 Step 6



MW-3000439-01

Fig.77 Step 7



MW-3000441-01

3. Press the ← key to confirm the selection.
⇒ The text **CODE** flashes in the display.

4. Press the ← key to confirm the selection.

5. Keep pressing the + key until the code **0012** is displayed.

6. Keep pressing the + key until the required value is displayed.

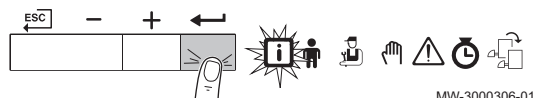
7. Press the ESC key multiple times to go back to the main display.

9.3.2 Reading out signals and software versions

You can read out the signals and software versions of the appliance and the connected control boards, sensors and so on.

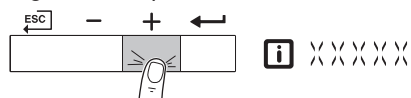
1. Navigate to the Information menu.
2. Press the ← key to open the menu.

Fig.78 Step 2



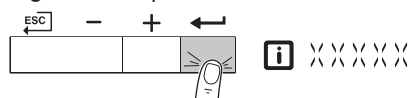
MW-3000306-01

Fig.79 Step 3



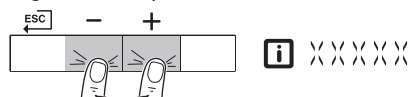
MW-3000451-01

Fig.80 Step 4



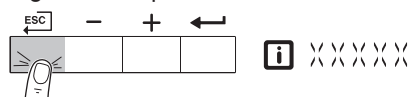
MW-3000452-01

Fig.81 Step 5



MW-3000307-01

Fig.82 Step 6



MW-3000308-01


3. Keep pressing the + key until the required device, control PCB or zone is displayed.

4. Press the ← key to confirm the selection.

5. Keep pressing the + or - key until the required value is displayed.
At the end of the cycle, the software version and parameter version of the selected appliance or control PCB are displayed.

6. Press the ESC key multiple times to go back to the main display.

9.3.3 Counters - FSB-WHB-HE-150-300


Tab.39  > FSB-WHB-HE-150-300 - Counters at user level

Code	Description	Range
AC001	Number of hours that the appliance has been on mains power	0 Hours - 65534 Hours
DC002	Numbers of Domestic Hot Water diverting valve cycles	0 - 4294967295
DC003	Number of hours during which the diverting valve is in DHW position	0 Hours - 4294967295 Hours
DC004	Number of burner starts for Domestic Hot Water	0 - 4294967295
DC005	Number of burning hours in Domestic Hot Water	0 Hours - 4294967295 Hours
PC003	Total number of burning hours. For heating and domestic hot water	0 Hours - 65534 Hours

Tab.40  > FSB-WHB-HE-150-300 - Counters at installer level

Code	Description	Range
DC001	Total power consumption used by Domestic Hot Water	0 kW - 4294967295 kW
PC002	Total number of burner starts. For heating and domestic hot water	0 - 65534
PC004	Number of burner flame loss	0 - 65534

9.3.4 Signals - FSB-WHB-HE-150-300

Tab.41  > FSB-WHB-HE-150-300 - Signals at user level

Code	Description	Range
AM001	Is the appliance currently in domestic hot water production mode?	0 = Off 1 = On
AM010	The current pump speed	0 % - 100 %
AM012	Current main status of the appliance.	DeviceState
AM014	Current sub status of the appliance.	DeviceSubStatus
AM015	Is the pump running?	0 = Inactive 1 = Active
AM016	Flow temperature of appliance.	-25 °C - 150 °C
AM017	The temperature of heat exchanger	-25 °C - 150 °C
AM018	Return temperature of appliance. The temperature of the water entering the appliance.	-25 °C - 150 °C
AM019	Water pressure of the primary circuit.	0 bar - 25.5 bar
AM022	On / Off heat demand	0 = Off 1 = On
AM024	Actual relative power of the appliance	0 % - 655.35 %
AM027	Instantaneous outside temperature	-60 °C - 60 °C
AM028	Value of the 0 to 10 Volt input. Meaning is dependant on the current input function setting.	0 V - 25 V
AM037	Status of the three way valve	0 = CH 1 = DHW
AM040	Temperature used for hot water control algorithms.	-25 °C - 150 °C
AM101	Internal system flow temperature setpoint	0 °C - 120 °C
AP078	Outside sensor detected in the application	0 = No 1 = Yes
GM001	Actual fan RPM	0 Rpm - 8500 Rpm
GM002	Actual fan RPM setpoint	0 Rpm - 8500 Rpm
GM006	Gas Pressure Switch status	0 = Open 1 = Closed 2 = Off
GM008	Actual flame current measured	0 µA - 25 µA

Code	Description	Range
GM012	Release signal for the CU	0 = No 1 = Yes
GM015	Valve Proving System switch open / closed	0 = Open 1 = Closed 2 = Off

Tab.42 **i** > FSB-WHB-HE-150-300 - Signals at installer level

Code	Description	Range
AM011	Is service currently required?	0 = No 1 = Yes
AM033	Next service indication	0 = None 1 = A 2 = B 3 = C 4 = Custom
AM036	Temperature of the exhaust gas leaving the appliance	0 °C - 250 °C
AM044	Number of sensors supported by the device	0 - 255
AM045	Water pressure sensor present?	0 = No 1 = Yes
AM091	Seasonal mode active (summer / winter)	0 = Winter 1 = Frost protection 2 = Summer neutral band 3 = Summer
GM004	Gas valve 1	0 = Open 1 = Closed 2 = Off
GM005	Gas valve 2	0 = Open 1 = Closed 2 = Off
GM010	Available power in % of maximum	0 % - 100 %
GM044	Possible reason for Controlled Stop	0 = None 1 = CH Blocking 2 = DHW Blocking 3 = Wait for burner 4 = TFlow > absolute max 5 = TFlow > start temp. 6 = Theat exch. > Tstart 7 = Avg Tflow > Tstart 8 = TFlow > max setpoint 9 = T difference too big 10 = TFlow > stop temp. 11 = Avg Tflow > Tstop
PM002	External winning Central Heating setpoint	0 °C - 125 °C

9.3.5 Status and sub-status - FSB-WHB-HE-150-300

Tab.43 Status numbers

Status	
0	Standby
1	Heat Demand
2	Burner Start
3	Burning CH
4	Burning DhW
5	Burner Stop
6	Pump Post Run
7	Cooling Active

Status	
8	Controlled Stop
9	Blocking Mode
10	Locking Mode
11	Load test min
12	Load test CH max
13	Load test DHW max
15	Manual Heat Demand
16	Frost Protection
17	DeAiration
18	Control unit Cooling
19	Reset In Progress
20	Auto Filling
21	Halted
200	Device Mode

Tab.44 Sub-status numbers

Sub-status	
0	Standby
1	AntiCycling
2	CloseHydraulicValve
3	ClosePump
4	WaitingForStartCond.
10	CloseExtGasValve
11	StartToGlueGasValve
12	CloseFlueGasValve
13	FanToPrePurge
14	WaitForReleaseSignal
15	BurnerOnCommandToSu
16	VpsTest
17	PreIgnition
18	Ignition
19	FlameCheck
20	Interpurge
30	Normal Int.Setpoint
31	Limited Int.Setpoint
32	NormalPowerControl
33	GradLevel1PowerCtrl
34	GradLevel2PowerCtrl
35	GradLevel3PowerCtrl
36	ProtectFlamePwrCtrl
37	StabilizationTime
38	ColdStart
39	ChResume
40	SuRemoveBurner
41	FanToPostPurge
42	OpenExt&FlueGasValve
43	StopFanToFlueGVRpm
44	StopFan
45	LimitedPwrOnTflueGas
60	PumpPostRunning
61	OpenPump
62	OpenHydraulicValve

Sub-status	
63	SetAntiCycleTimer
200	Initialising Done
201	Initialising Csu
202	Init. Identifiers
203	Init.BL.Parameter
204	Init. Safety Unit
205	Init. Blocking

10 Maintenance

10.1 General

The boiler does not require a lot of maintenance. Nevertheless, the boiler must be inspected and maintained periodically. To determine the best time for servicing, the boiler is equipped with an automatic service message. The control unit determines when this service message appears. Depending on boiler use, the first service message appears no later than 3 years after installation of the boiler.



Caution

- Maintenance operations must be completed by a qualified installer.
- Replace defective or worn parts with original spare parts.
- An annual inspection is mandatory.



Important

Adjust the frequency of inspection and service to the conditions of use. This applies especially to boilers in constant use (for specific processes).

10.2 Maintenance message

The boiler display will clearly indicate that a service is required at the appropriate time.



See

Manual for the control panel

Use the automatic service 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 your spare parts supplier.



Important

- A service message must be followed up within 2 months. Therefore, call your installer as soon as possible.
- If the iSense modulating controller is connected to the boiler, this maintenance message can also be forwarded to the iSense. Consult the manual for the regulator.



Caution

Reset the maintenance message following every service.

10.2.1 Resetting the service messages

A service message on the boiler display must be reset by a qualified installer within two months after the indicated maintenance service has been carried out using the relevant service set and after this has been entered in the checklist. Proceed as follows:

1. Perform the service with the specified service kit (A, B or C).
2. Note the service in the corresponding checklist.



See

Appendix, page 85

3. Reset the service message.

10.2.2 Starting a new service interval

For an interim service it is advisable to read out in the boiler service menu what maintenance service should be carried out. Use the indicated Remeha service kits (A, B or C). This service message must be prevented by carrying out a reset. Start the next service interval. Proceed as follows:

1. In the Service menu of the boiler, read which service should be performed.
2. Perform the service with the specified service kit (A, B or C).
3. Note the service in the corresponding checklist.



See
Appendix, page 85

4. Reset the service message.
⇒ This prevents this service message from appearing automatically after all.
5. Start the next service interval.

10.3 Standard inspection and maintenance operations



Warning

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

For a service, always perform the following standard inspection and maintenance operations.



Caution

- Check whether all gaskets have been positioned properly (absolutely flat in the appropriate groove means they are gas tight).
- During the inspection and maintenance operations, water (drops, splashes) must never come into contact with the electrical parts.

10.3.1 Checking the water pressure

1. Check the water pressure.



Important

The water pressure is shown on the display of the control panel.

- ⇒ The water pressure must be at least 0.8 bar
2. If the water pressure is lower than 0.8 bar, top up the central heating system.

10.3.2 Checking the water quality

1. Fill a clean bottle with some water from the system/boiler from the filling and drain cock.
2. Check the quality of this water sample or have it checked.



See

More information is available in our **Water quality instructions**. This manual forms part of the set of documents supplied with the boiler. Always adhere to the instructions in the aforementioned document.

10.3.3 Checking the ionisation current

1. Check the ionisation current at full load and at low load.
⇒ The value is stable after 1 minute.
2. Clean or replace the ionisation/ignition electrode if the value is less than 4 µA.



For more information, see
Replacing the ionisation/ignition electrode, page 71

10.3.4 Check the flue gas outlet/air supply connections

1. Check the flue gas outlet and air supply connections for condition and tightness.

10.3.5 Checking the combustion

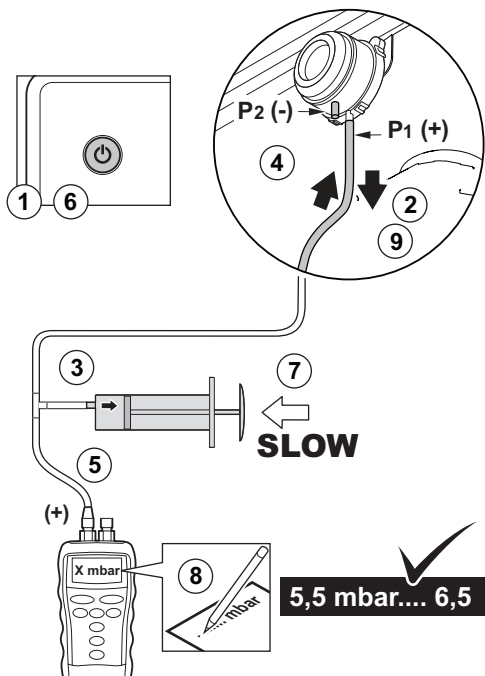
Combustion is checked by measuring the O₂/CO₂ percentage in the flue gas outlet duct.

10.3.6 Checking the PS air pressure differential switch

■ Checking the air pressure differential switch + side

1. Switch off the boiler.
2. Disconnect the silicon hose on the + side (P1) of the air pressure differential switch.
3. Take a large plastic syringe or bellows and connect a T piece with a hose connected.
4. Connect the + side of the air pressure differential switch to one end of the T piece with a hose.
5. On the other end of the T piece, connect the + side of a pressure gauge.
6. Turn on the boiler
7. Push the syringe or bellows in very slowly until the boiler goes into failure mode.
8. Make a note of the pressure indicated by the pressure gauge at that point. A switch pressure of between 5.5 and 6.5 mbar is fine. A lower or higher switch pressure indicates a problem with the air pressure differential switch.
9. After taking a measurement, detach the silicon hose from the T piece on the + side and reconnect the hose that was previously removed.

Fig.83 Check the air pressure differential switch + side

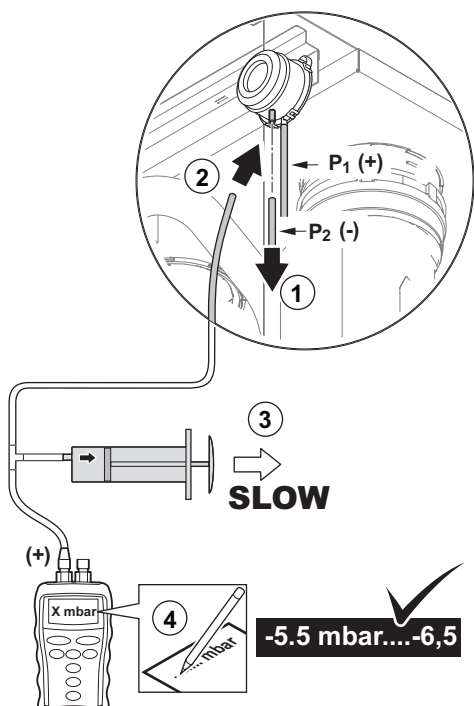


Caution

Please note: The + side (P1) is the rear connector nipple of the air pressure differential switch.

10. Remove any soiling from all connection points for hoses and the air pressure differential switch.
11. Check the condition and tightness of the hoses of the air pressure differential switch. Replace the hoses if necessary.

Fig.84 – side of the air pressure differential switch



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■ Checking the air pressure differential switch – side

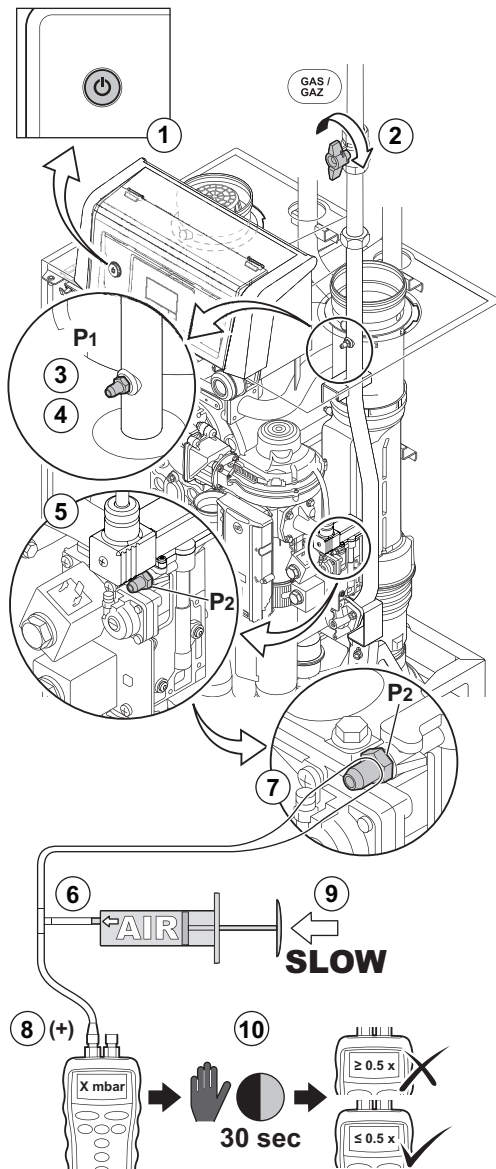
1. Disconnect the short, dark-coloured silicon hose on the – side (P_2) of the air pressure differential switch.
2. Connect the – side of the air pressure differential switch to one end of the T piece with a hose.
3. Pull out the syringe until the boiler goes into failure mode.
4. Make a note of the pressure indicated by the pressure gauge at that point.
 - ⇒ A switch pressure of between - 5.5 and - 6.5 mbar is fine. A lower or higher switch pressure indicates a problem with the air pressure differential switch.
5. After taking a measurement, detach the silicon hose from the T-piece on the – side and reconnect the coloured hose that was previously removed.
6. Remove any soiling from all connection points for hoses and the air pressure differential switch.
7. Check the condition and tightness of the hoses of the air pressure differential switch.
 - ⇒ Replace the hoses if necessary.

10.3.7 Checking the VPS gas leakage control

■ Checking the VPS for leaks

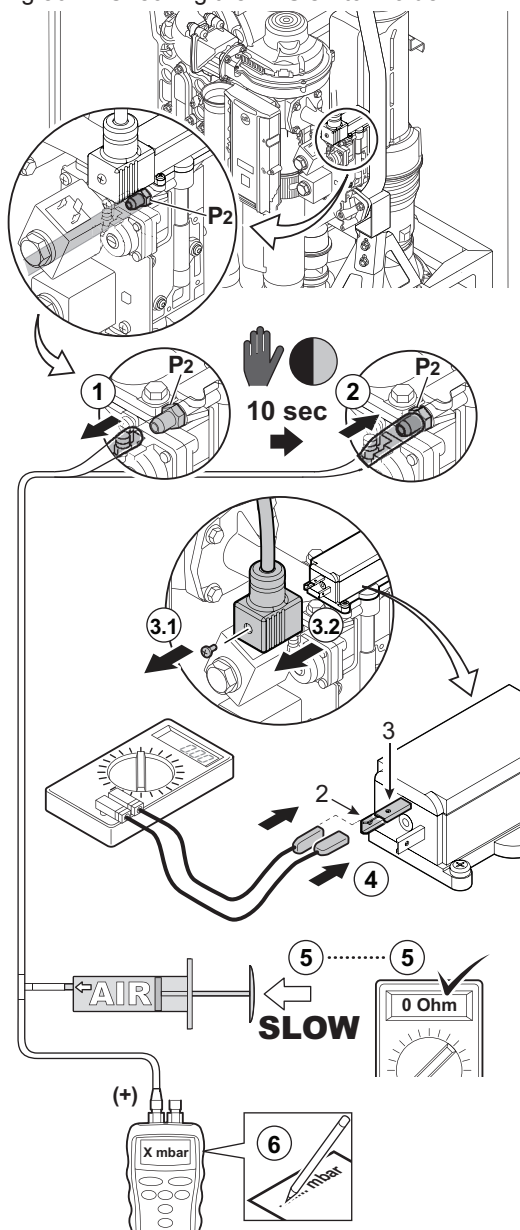
1. Switch off the boiler.
2. Close the boiler gas tap.
3. Remove the pressure from the gas pipe by unscrewing the screw in measuring point **P1**.
4. As soon as the gas pipe is pressure-free, re-tighten the screw.
5. Open the screw at measuring point **P2** on the gas valve unit (on the other side of the **VPS** pressure switch).
6. Take a large plastic syringe and connect a T piece with a hose connected to the mouth.
7. Connect one end of the T piece to measuring point **3** of the gas valve unit.
8. Connect the other end of the T piece to a pressure gauge.
9. Push the syringe in very slowly until the pressure gauge indicates the minimum inlet gas pressure value.
10. Check the measured pressure for about 30 seconds. If pressure decreases by more than half, this indicates a gas leak.
11. Replace the gas valve unit or the **VPS** if necessary.

Fig.85 Checking the VPS for leaks



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Fig.86 Checking the VPS switch value



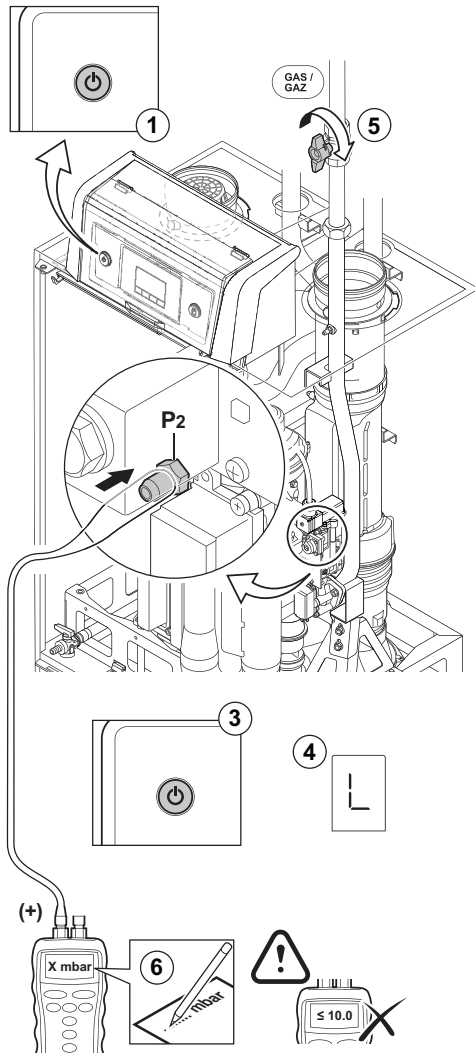
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■ Checking the VPS switch value

1. Remove the pressure from the gas valve unit; first remove the hose that is attached to measuring point 3 of the gas valve unit (on the other side of the **VPS** pressure switch).
2. Wait approximately 10 seconds and reconnect the disconnected hose to measuring point **P2** of the gas valve unit.
3. Remove the connecting plug from the **VPS** gas leakage control.
4. Connect an ohmmeter to terminals 2 and 3 of the **VPS**.
5. Push the syringe in very slowly until the ohmmeter indicates 0 Ohm.
6. Make a note of the pressure indicated by the pressure gauge at that point. If the measured pressure differs by more than 2 mbar from the **VPS** set-up value, set the pressure switch to the correct value or replace it.

10.3.8 Checking the minimum gas pressure switch GPS

Fig.87 Checking the GPS



1. Switch off the boiler.
2. Open the screw in measuring point 2 of the gas valve unit.
3. Connect a pressure gauge to measuring point 2 of the gas valve unit.
4. Turn on the boiler.
5. Set the boiler to low load.
6. Close the boiler gas tap very slowly until the boiler goes into blocking mode.
7. Make a note of the pressure indicated by the pressure gauge at that point. Compare the measured values with the checking values in the table. If the measured pressure is lower, set the gas pressure switch to the correct value or replace it.

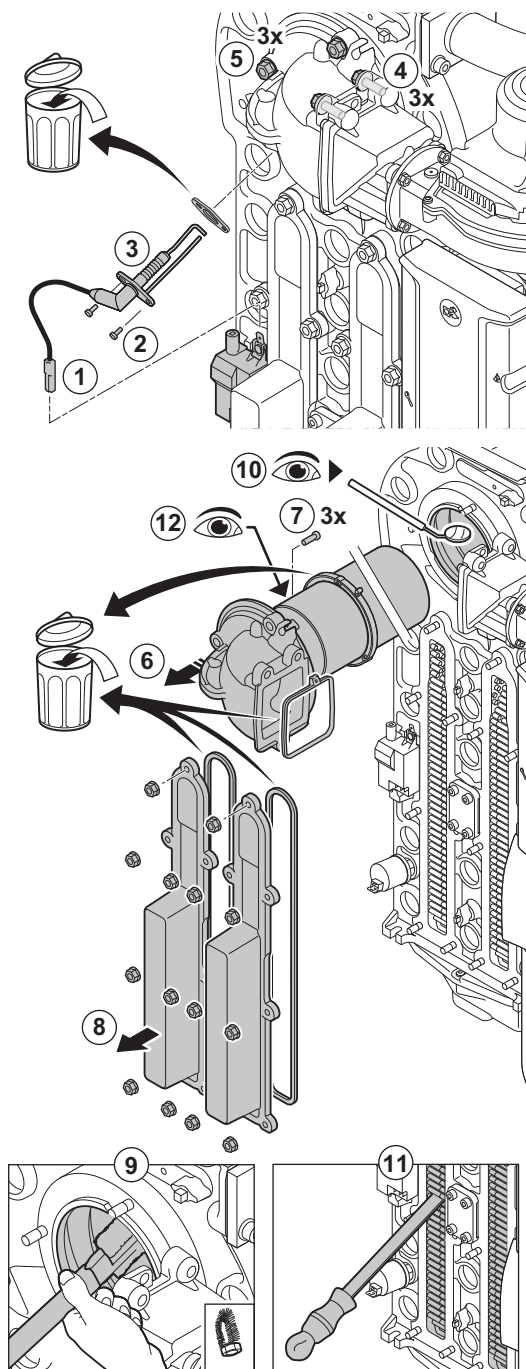
Tab.45 Minimum gas pressure switch value

	Minimum value (mbar)
Gas 220 Ace 160	14
Gas 220 Ace 200	14
Gas 220 Ace 250	14
Gas 220 Ace 300	13

AD-0001184-01

10.3.9 Checking the burner and cleaning the heat exchanger

Fig.88 Checking the burner



AD-0001185-01

1. Disconnect the plug of the ionisation/ignition electrode from the ignition transformer.

**Caution**

The ignition cable is fixed to the ionisation/ignition electrode and therefore may not be removed.

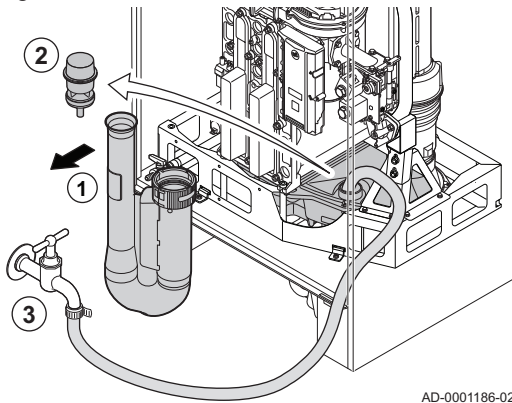
2. Loosen the 2 screws of the ionisation/ignition electrode.
3. Remove the ionisation/ignition electrode with the seal from the heat exchanger.
4. Undo the 3 bolts from the adapter on the non-return valve holder (15 Nm torque).
5. Undo the 3 nuts from the adapter on the heat exchanger (15 Nm torque).
6. Carefully remove the adapter with burner from the heat exchanger.
7. Remove the 3 bolts from the burner on the adapter and dismantle the burner and seal.
8. Undo the nuts on the inspection ports (7.5 Nm torque).
⇒ Remove the inspection ports to reach the heat exchanger.
9. Use a vacuum cleaner to clean the top part of the heat exchanger (furnace).
10. Check (e.g. using a mirror) whether any visible contamination has been left behind. If it has, remove it with the vacuum cleaner.
11. Clean the lower section of the heat exchanger with the special cleaning knife.
12. Burner maintenance is almost never required; it is self-cleaning:
 - 12.1. If necessary, carefully clean the cylinder-shaped burner with compressed air.
 - 12.2. Check that the burner cover of the dismantled burner is free from cracks and/or damage. If not, replace the burner.
13. Reassemble the unit in the reverse order.
14. Open the gas supply and insert the plug in the socket again.

**Caution**

- Use the specified torques when fitting nuts and bolts.
- Make sure the gaskets are in place when fitting nuts and bolts.

10.3.10 Clean the condensate collector

Fig.89 Clean the condensate collector



1. Remove the air intake silencer.
2. Remove the sealing cap from the condensate collector.
3. Rinse the condensate collector thoroughly with a water flow that is as large as possible.



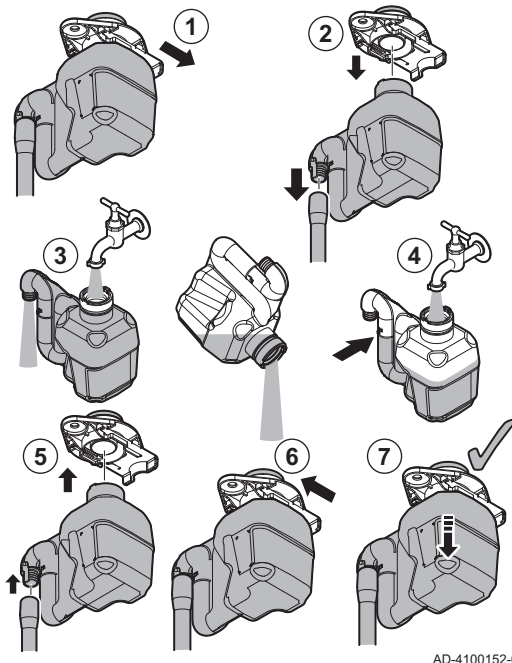
Warning

When flushing, prevent water from getting into the boiler.

4. Disconnect the silicon hose of the air pressure differential switch from the connection nipple on the condensate collector.
5. Clean the opening of the connection nipple thoroughly (by blowing air or pushing an object through it).
6. Reconnect the silicon hose.
7. Put the air intake silencer and the sealing cap back on the condensate collector.

10.3.11 Cleaning the siphon

Fig.90 Cleaning the siphon



1. Pull the retainer clip of the siphon backwards.
2. Carefully pull the siphon and siphon hose downwards.
3. Clean the siphon with water.
4. Fill the siphon with water up to the mark.
5. Push the siphon firmly into the designated opening behind the cover underneath the boiler and install the siphon hose.
6. Push the retainer clip of the siphon forwards.
7. Check whether the siphon is firmly fitted in the boiler.



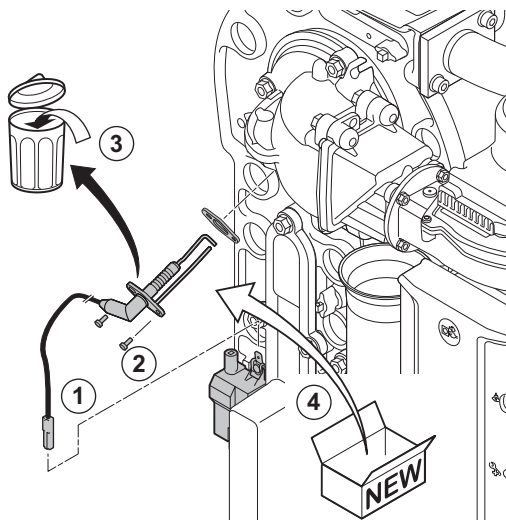
Danger

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

10.4 Specific maintenance work

Perform the specific maintenance work if this proves to be necessary following the standard inspection and maintenance work. To conduct the specific maintenance work:

Fig.91 Replacing the ionisation/ignition electrode



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10.4.1 Replacing the ionisation/ignition electrode

The ionisation/ignition electrode must be replaced if:

- The ionisation current is $< 4 \mu\text{A}$.
- The electrode is damaged or worn.
- The electrode is included in the service kit.

1. Remove the plug of the electrode from the ignition transformer.



Important

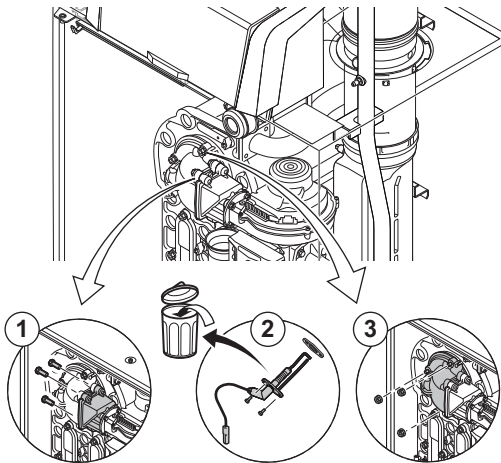
The ignition cable is fixed to the electrode and therefore may not be removed.

2. Unscrew the two screws on the electrode.
3. Remove the entire component.
4. Fit the new ionisation/ignition electrode.
5. Reassemble the unit in reverse order.

10.4.2 Checking the non-return valve

Check the condition of the non-return valve. Replace the non-return valve if it is defective, there is one in the service kit, or if there are traces of condensation on the inside of the fan. Do this as follows:

Fig.92 Checking the non-return valve

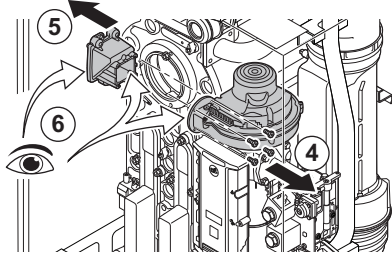
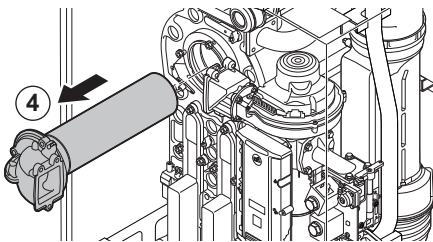


1. Undo the 3 bolts from the adapter on the non-return valve holder (15 Nm torque).
2. Remove the ionisation/ignition electrode.
3. Undo the 3 nuts from the adapter on the heat exchanger (15 Nm torque).
4. Carefully remove the adapter with burner from the heat exchanger.
5. Remove the 4 bolts from the fan and remove the non-return valve holder (5.5 Nm torque).
6. Check whether traces of condensation are visible on the inside of the fan.
⇒ Always replace the non-return valve along with the holder in the event of visible traces of condensation or damage.
7. Reassemble in the reverse order.



Caution

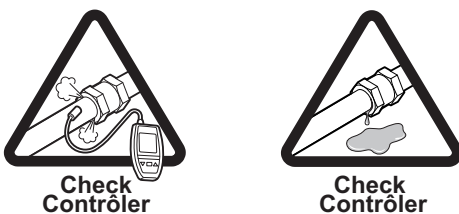
- Use the specified torques when fitting nuts and bolts.
- Make sure the gaskets are in place when fitting nuts and bolts.



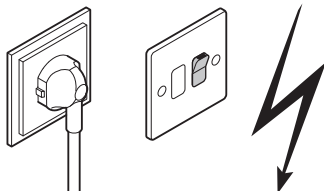
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10.4.3 Reassembling the boiler

Fig.93 Putting the boiler into operation



1. Fit all removed parts in the reverse order.
2. During inspection or maintenance work, always replace all gaskets of the disassembled parts.
3. Check the tightness of the gas and water connections.
4. Put the boiler back into operation.



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10.5 Disposal

10.5.1 Removal/recycling

**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. Switch off the boiler's electrical connection.
2. Shut off the gas supply.
3. Shut off the water supply.
4. Drain the system.
5. Remove the siphon.
6. Remove the air supply/flue gas outlet pipes.
7. Disconnect all pipes on the boiler.
8. Remove the boiler.

11 Troubleshooting

11.1 Error codes

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

Error codes are displayed at three different levels:

- Warning (**A00.00**)



Important

The boiler continues to operate but the cause of the warning must be investigated. A warning can change into a blocking or lock-out.

- Blocking (**H00.00**)



Important

The boiler starts up again automatically when the cause of the blocking has been rectified. A blocking can become a lock-out.

- Lock out (**E00.00**)



Important

The boiler starts up again only when the cause of the lock-out has been rectified and reset manually.

The meaning of the code can be found in the various error code tables. Make a note of the code displayed.



Important

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

11.1.1 Warning - FSB-WHB-HE-150-300

Tab.46 Warning codes

Code	Description	Solution
A01.21	Maximum Dhw Temperature Gradient Level3 Exceeded	Temperature warning: <ul style="list-style-type: none"> • Check the flow.
A02.06	Water Pressure Warning active	Water pressure warning: <ul style="list-style-type: none"> • Water pressure too low; check the water pressure
A02.18	Object Dictionary Error	Configuration error: <ul style="list-style-type: none"> • Reset CN1 and CN2 See The data plate for the CN1 and CN2 values.
A02.37	Uncritical device has been disconnected	SCB PCB not found: <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors • Faulty SCB PCB: Replace SCB PCB
A02.45	Full Can Connection Matrix	SCB PCB not found: <ul style="list-style-type: none"> • Carry out an auto-detect
A02.46	Full Can Device Administration	SCB PCB not found: <ul style="list-style-type: none"> • Carry out an auto-detect

Code	Description	Solution
A02.49	Failed Initialising Node	SCB PCB not found: <ul style="list-style-type: none"> • Carry out an auto-detect
A03.17	Periodically safety check ongoing	Safety check procedure active: <ul style="list-style-type: none"> • No action

11.1.2 Blocking - FSB-WHB-HE-150-300

Tab.47 Blocking codes

Code	Description	Solution
H00.36	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.
H00.37	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.
H01.00	Communication Error occurred	Communication error with the security kernel: <ul style="list-style-type: none"> • Restart the boiler • Replace the CU-GH PCB
H01.06	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 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.
H01.07	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.
H01.08	Delta T Max 3	Maximum heat exchanger temperature increase has been 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 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


Code	Description	Solution
H01.09	Gas Pressure Switch	Gas pressure too low: <ul style="list-style-type: none"> No flow or insufficient flow: <ul style="list-style-type: none"> Check that the gas valve is fully opened Check the gas supply pressure Wrong setting on the GPS gas pressure switch: <ul style="list-style-type: none"> Check that the GPS switch has been fitted properly Replace the GPS switch if necessary
H01.13	Heat Exchanger temperature has exceeded the maximum operating value	Maximum heat exchanger temperature exceeded: <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.
H01.14	Flow temperature has exceeded the maximum operating value	Flow temperature sensor above normal range (high-limit thermostat): <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
H01.15	Flue gas temperature has exceeded the maximum operating value	Maximum flue gas temperature exceeded: <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
H02.00	Reset In Progress	Reset procedure active: <ul style="list-style-type: none"> No action
H02.02	Waiting For Configuration Number	Configuration error or unknown configuration number: <ul style="list-style-type: none"> Reset CN1 and CN2
H02.03	Configuration Error	Configuration error or unknown configuration number: <ul style="list-style-type: none"> Reset CN1 and CN2
H02.05	CSU does not match CU type	Configuration error: <ul style="list-style-type: none"> Reset CN1 and CN2
H02.09	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
H02.10	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
H02.12	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
H02.36	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.

Code	Description	Solution
H03.00	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 PCB
H03.01	No valid data from CU to GVC received	Communication error with the CU-GH PCB: <ul style="list-style-type: none"> Restart the boiler
H03.02	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
H03.05	Gas Valve Control internal blocking occurred	Security kernel error: <ul style="list-style-type: none"> Restart the boiler Replace the CU-GH PCB

11.1.3 Lock-out - FSB-WHB-HE-150-300

Tab.48 Lock out codes

Code	Description	Solution
E00.00	Flow temperature sensor is either removed or measures a temperature below range	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. Faulty sensor: replace the sensor.
E00.01	Flow temperature sensor is either shorted or measures 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.
E00.04	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
E00.05	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
E00.08	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.
E00.09	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.

Code	Description	Solution
E00.20	Flue gas temperature sensor is either removed or measures a temperature below range	Open circuit in flue gas sensor: <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.
E00.21	Flue gas temperature sensor is either shorted or measures a temperature above range	Flue gas 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.
E00.40	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.
E00.41	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.
E01.04	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
E01.12	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
E02.04	Parameter Error	Configuration error: <ul style="list-style-type: none"> • Reset CN1 and CN2  See The data plate for the CN1 and CN2 values.
E02.13	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
E02.15	External CSU Timeout	CSU time out: <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors • Faulty CSU: Replace CSU
E02.17	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 PCB
E02.35	Safety critical device has been disconnected	Communication fault <ul style="list-style-type: none"> • Carry out an auto-detect

Code	Description	Solution
E02.47	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 PCB
E04.00	Safety parameters Level 5 are not correct or missing	Replace the CU-GH PCB.
E04.01	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
E04.02	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
E04.03	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
E04.04	Flue temperature sensor is either shorted or measuring a temperature above range	Flue gas 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
E04.05	Flue temperature sensor is either removed or measuring a temperature below range	Flue gas 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
E04.07	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
E04.08	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 - Siphon blocked or empty - Check that the air supply inlet and flue gas outlet are not blocked - Check the cleanliness of the heat exchanger
E04.09	Deviation in flue sensor 1 and flue sensor 2 detected	Flue gas temperature sensor deviation: <ul style="list-style-type: none"> • Bad connection: check the connection • Faulty sensor: replace the sensor

Code	Description	Solution
E04.10	5 Unsuccessful burners starts detected	<p>Five failed burner starts:</p> <ul style="list-style-type: none"> • No ignition spark: <ul style="list-style-type: none"> - Check the wiring between the CU-GH PCB and the ignition transformer - Check the ionisation/ignition electrode - Check breakdown to earth - Check the condition of the burner cover - Check the earthing - SU PCB faulty: replace the SU PCB • 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 PCB • 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.
E04.11	VPS Gas Valve proving failed	<p>Gas leakage control fault:</p> <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors • Gas leakage control VPS faulty: Replace the GPS • Gas valve unit faulty: Replace the gas valve unit
E04.12	False flame detected before burner start	<p>False flame signal:</p> <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
E04.13	Fan speed has exceeded normal operating range	<p>Fan fault:</p> <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
E04.15	The flue gas pipe is blocked	<p>Flue gas outlet is blocked:</p> <ul style="list-style-type: none"> • Check that the flue gas outlet is not blocked • Restart the boiler
E04.17	The driver for the gas valve is broken	<p>Gas valve unit fault:</p> <ul style="list-style-type: none"> • Bad connection: check the wiring and connectors • Faulty gas valve unit: Replace the gas valve unit
E04.23	Gas Valve Control internal locking	<ul style="list-style-type: none"> • Restart the boiler • Replace the CU-GH PCB

11.2 Error memory

The boiler control unit has an error memory. It stores the last 32 errors that have occurred.

12 Removal/recycling

**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. Switch off the boiler's electrical connection.
2. Shut off the gas supply.
3. Shut off the water supply.
4. Drain the system.
5. Remove the siphon.
6. Remove the air supply/flue gas outlet pipes.
7. Disconnect all pipes on the boiler.
8. Remove the boiler.

13 Spare parts

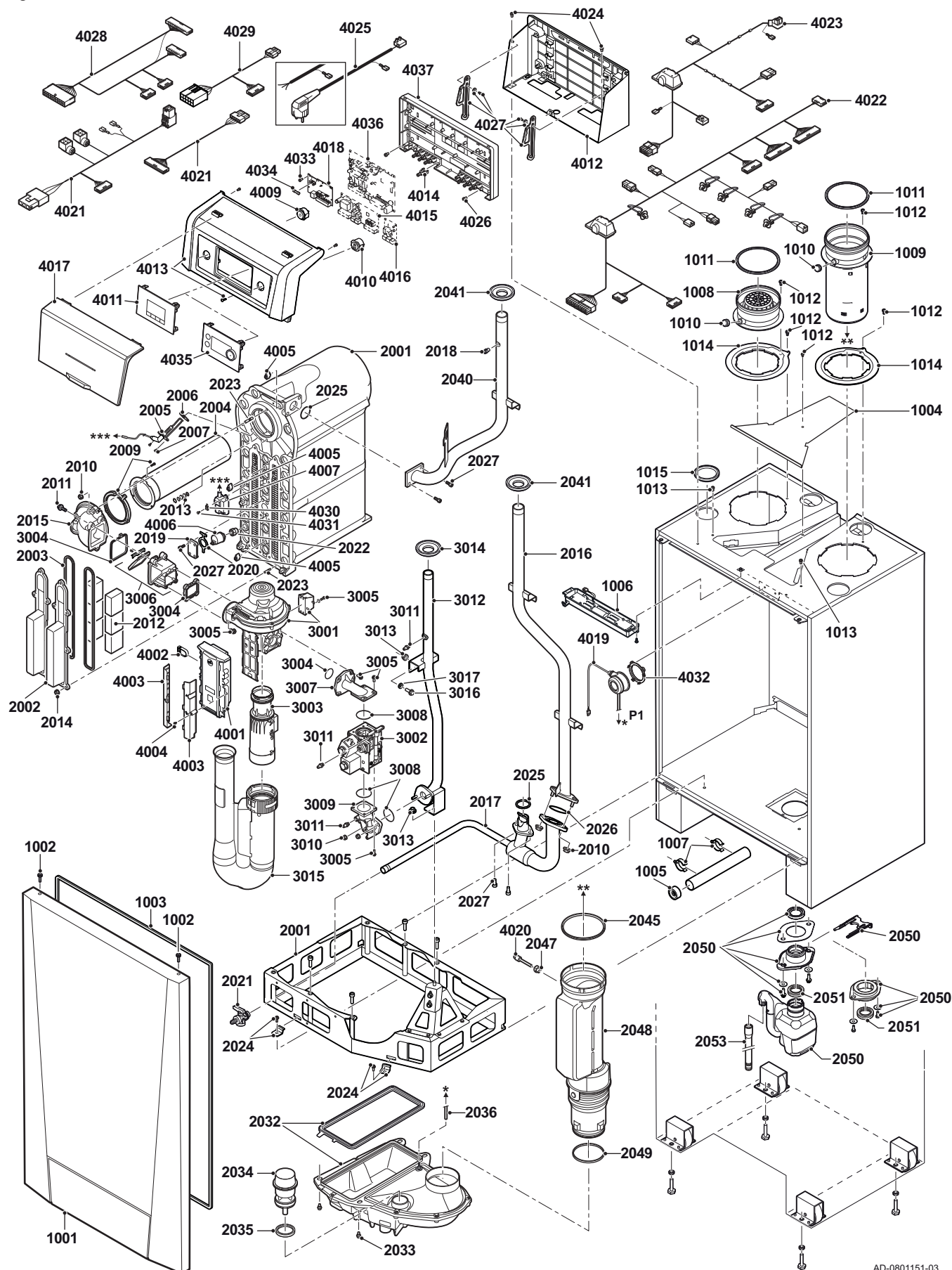
13.1 General

Only replace defective or worn boiler parts with original parts or recommended parts.

Send the part to be replaced to the Remeha Quality Control department if the relevant part is covered by the guarantee (see the General Terms of Sale and Delivery).

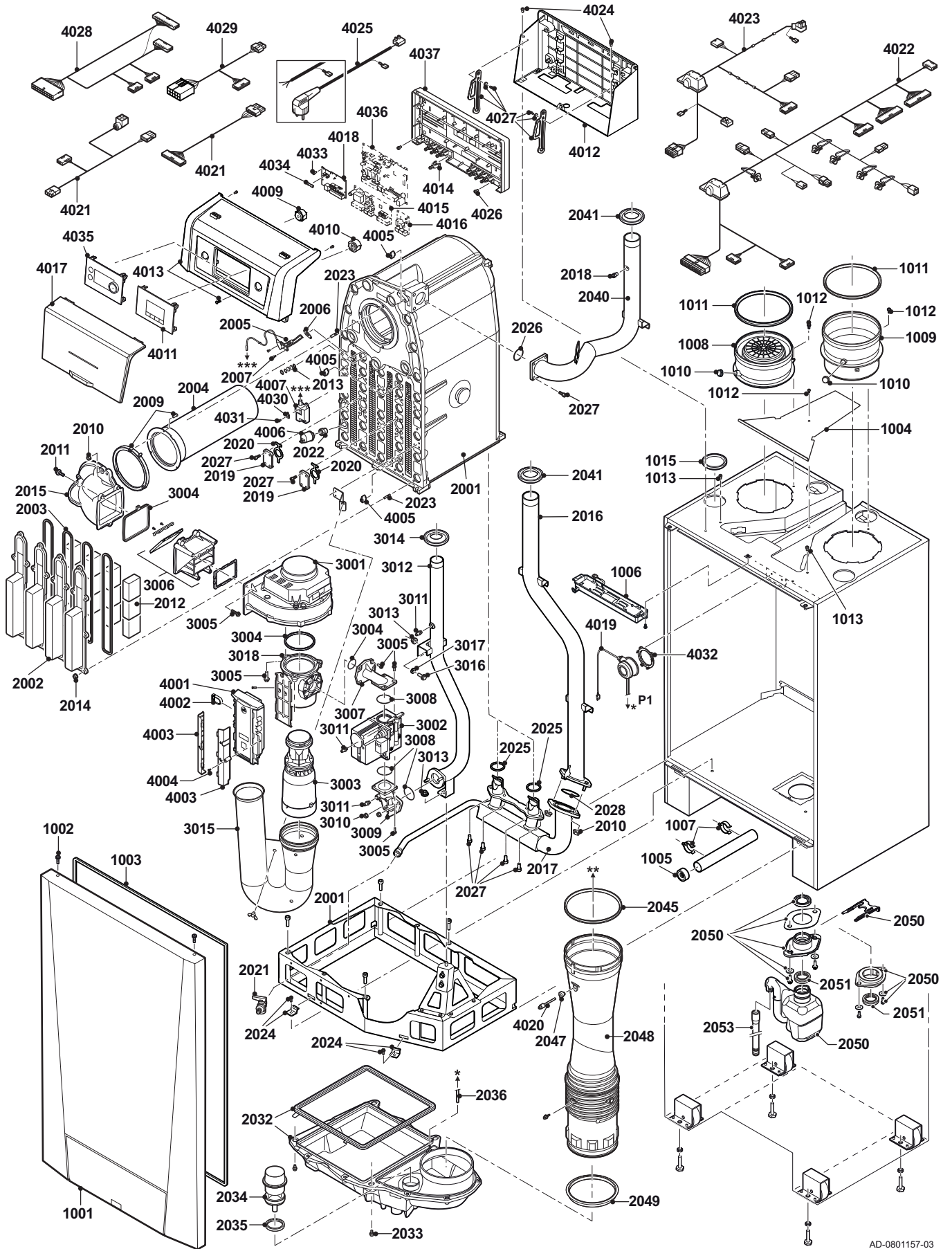
13.2 Parts

Fig.94 Gas 220 Ace 160



AD-0801151-03

Fig.95 Gas 220 Ace 200 - 250 - 300



AD-0801157-03

14 Appendix

14.1 ErP information

14.1.1 Product fiche

Tab.49 Product fiche

Remeha - Gas 220 Ace		160	200	250	300
Seasonal space heating energy efficiency class		-	-	-	-
Rated heat output (<i>Prated or 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

14.2 EC Declaration of Conformity

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

The original declaration of conformity is available from the manufacturer.

14.3 Checklist for commissioning

Tab.50 Checklist

No.	Commissioning tasks	Confirmation
1	Fill the system with water and check the water pressure	
2	Fill the siphon with water	
3	Vent the central heating system	
4	Check water-side connections for tightness	
5	Check type of gas offered. Is the boiler suitable for the type of gas supplied?	
6	Check the gas supply pressure	
7	Check the capacity of the gas meter	
8	Enter the gas type on the data plate	
9	Check the gas tightness of the connections and gas pipes	
10	Vent the gas supply pipe	
11	If installed: check the setting of the Gps minimum gas pressure switch.	
12	If installed: check the setting of the Vps pressure switch for gas leakage control.	
13	Check the electrical connections	
14	Check the flue gas outlet/air supply connections	
15	Check the function and operational status of the boiler	
16	Check the air-gas ratio	
17	Remove the measuring equipment and close the measuring points	
18	Set the boiler regulator to the desired values	
19	Instruct the user and hand over the necessary documents	
20	Confirm the commissioning	
	Date	dd-mm-yy
	.	
	.	
	Company name, signature of engineer	
	.	
	.	

14.4 Checklist for annual maintenance

Tab.51 Checklist for annual maintenance

No.	Inspection and/or servicing work	Confirmation		
1	Check the water pressure			
2	Check the water quality			
3	Check the ionisation current			
4	Check the air supply/flue gas discharge connections			
5	Check the combustion (O ₂ /CO ₂) at full load and low load			
6	Check the PS air pressure differential switch			
7	Check the VPS gas leakage control (if installed)			
8	Check the GPS minimum gas pressure switch (if installed)			
9	Check the burner and clean the heat exchanger.			
10	Clean the condensate collector			
11	Clean the siphon			
12	Replace the ionisation/ignition electrode			
13	Check the non-return valve			
14	Install the boiler (replace all gaskets removed)			
15	Put the boiler back into operation			
16	Confirmation of inspection			
	Date	dd-mm-yy	dd-mm-yy	dd-mm-yy
	Company name, signature of engineer			

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