United Kingdom
en

remeha

Installation, User and Service Manual

High-efficiency floor-standing gas boiler

Gas 210 ECO PRO

210-80 – 210-120 – 210-160 – 210-200

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

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 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 210 ECO PRO 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 0085BS0132**
Class NOx(1)	**6**
Type of connection	B_{23P}
	C_{13}, C_{33}, C_{53}, C_{63}, C_{93}
(1) EN 15502–1	

3.1.2 Unit categories

Tab.2 Unit categories

Country	Category	Gas type	Connection pressure (mbar)
Great Britain	II_{2H3P}	G20 (H gas) G31 (propane)	20 37-50

3.1.3 Directives

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

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

3.1.4 Factory test

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

- Electrical safety.
- Adjustment of (O_2/CO_2).
- Water tightness.
- Gas tightness.
- Parameter setting.

3.2 Technical data

Tab.3 General

Gas 210 ECO PRO			210-80	210-120	210-160	210-200
Nominal output (Pn) Central heating operation (80/60°C)	min-max (1)	kW	16 - 87 87	22 - 115 115.0	29 - 166 166	39 - 200 200
Nominal output (Pn) Central heating operation (50/30°C)	min-max (1)	kW	18 - 93 93	24 - 129 129	33 - 179 179	44 - 217 217
Nominal load (Qnh) Central heating operation (Hi)	min-max (1)	kW	17 - 89 89	23 - 123 123	31 - 170 170	41 - 205 205
Nominal load (Qnh) Central heating operation (Hs)	min-max (1)	kW	19 - 99 99	26 - 137 137	34 - 189 189	46 - 228 228

Gas 210 ECO PRO			210-80	210-120	210-160	210-200
Full load central heating efficiency (Hi) 80°C/60°C (92/42 EEC)		%	97.43	97.5	97.54	97.6
Full load central heating efficiency (Hi) 50/30°C (EN15502)		%	104.3	104.7	105.2	105.7
Central heating efficiency under low load (Hi) (Return temperature 60 °C)		%	92.7	94.0	95.1	95.5
Part load central heating efficiency (92/42 EEC) (Return temperature 30 °C)		%	108.6	108.1	108.3	108.4
(1) Factory setting						

Tab.4 Gas and flue gas data

Gas 210 ECO PRO			210-80	210-120	210-160	210-200
Gas inlet pressure G20 (H gas)	min-max	mbar	17 - 25	17 - 25	17 - 25	17 - 25
Gas inlet pressure G25 (L gas)	min-max	mbar	20 - 30	20 - 30	20 - 30	20 - 30
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	1.8 - 9.4	2.4 - 13	3.3 - 18	4.3 - 21.7
Gas consumption G25 (L gas)	min-max	m^3/h	2.1 - 11	2.8 - 15.1	3.8 - 20.9	2.1 - 25.2
Gas consumption G31 (propane)	min-max	m^3/h	1.0 - 3.6	1.0 - 4.8	1.6 - 7.0	1.8 - 8.4
NOx annual emission (BREEAM)		mg/kWh	-	-	-	-
Flue gas quantity	min-max	kg/h	27 - 150	37 - 197	39 - 287	65 - 345
Flue gas temperature	min-max	°C	30 - 63	30 - 64	30 - 62	30 - 64
Maximum counter pressure		Pa	130	130	130	130

Tab.5 Central heating circuit data

Gas 210 ECO PRO			210-80	210-120	210-160	210-200
Water content		l	12	16	20	24
Water operating pressure	min	bar	0.8	0.8	0.8	0.8
Water operating pressure (PMS)	max	bar	6.0	6.0	6.0	6.0
Water temperature	max	°C	110	110	110	110
Operating temperature	max	°C	90	90	90	90
Water resistance (ΔT=20K)		mbar	165	135	170	180
Minimum flow		l/h	1120	1486	2142	2585

Tab.6 Electrical data

Gas 210 ECO PRO			210-80	210-120	210-160	210-200
Supply voltage		V~	230	230	230	230
Power consumption – full load	max	W	125	193	206	317
Power consumption – low load	min	W	36	37	53	54
Power consumption – standby	min	W	4	4	4	4
Electrical protection index		IP	20	20	20	20

Gas 210 ECO PRO			210-80	210-120	210-160	210-200
Fuse – main fuse		(A)	6.3 AT	6.3 AT	6.3 AT	6.3 AT
Fuse – PCB		(A)	1.6 AT	1.6 AT	1.6 AT	1.6 AT

Tab.7 Other data

Gas 210 ECO PRO			210-80	210-120	210-160	210-200
Total weight (empty)		kg	115	135	165	188
Average acoustic level (1) at a distance of 1 metre from the boiler	Central heating operation	dB(A)	≤ 59	≤ 59	≤ 59	≤ 59
(1) Maximum						

Tab.8 Technical parameters

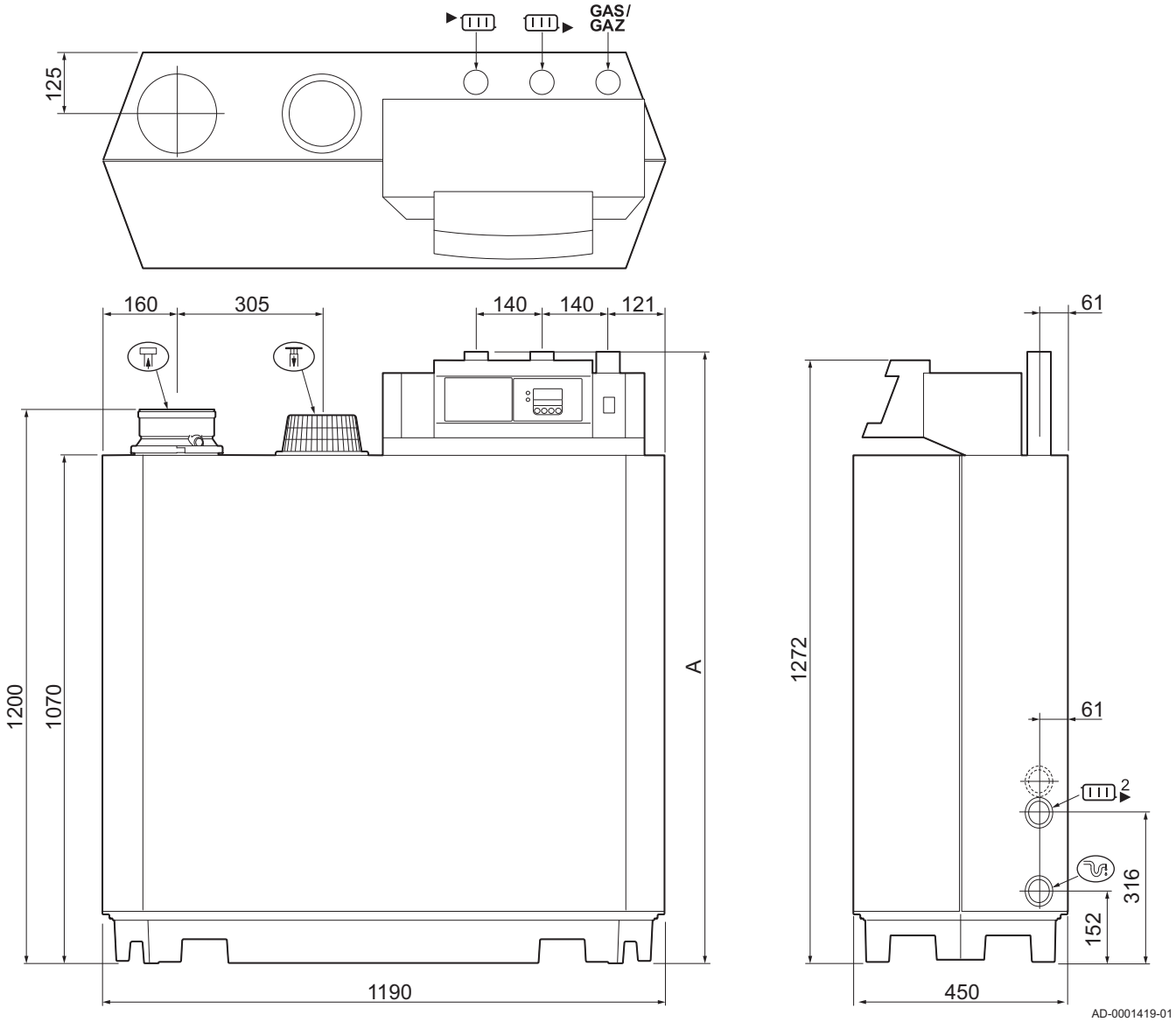
Gas 210 ECO PRO			210-80	210-120	210-160	210-200
Condensing boiler			Yes	Yes	Yes	Yes
Low-temperature boiler(1)			Yes	Yes	Yes	Yes
B1 boiler			No	No	No	No
Cogeneration space heater			No	No	No	No
Combination heater			No	No	No	No
Rated heat output	*Prated*	kW	87	115	166	200
Useful heat output at nominal heat output and high temperature operation(2)	P_4	kW	87	115	166	200
Useful heat output at 30% of rated heat output and low temperature regime(1)	P_1	kW	29.1	38.3	55.2	66.6
Seasonal space heating energy efficiency	η_s	%	-	-	-	-
Useful efficiency at rated heat output and high temperature regime(2)	η_4	%	87.7	87.8	87.8	87.8
Useful efficiency at 30% of rated heat output and low temperature regime(1)	η_1	%	97.7	97.5	97.3	97.6
Auxiliary electricity consumption						
Full load	*elmax*	kW	0.1	0.2	0.2	0.3
Part load	*elmin*	kW	0.0	0.0	0.1	0.1
Standby mode	P_{SB}	kW	0.004	0.004	0.004	0.004
Other items						
Standby heat loss	P_{stby}	kW	-	-	-	-
Ignition burner power consumption	P_{ign}	kW	-	-	-	-
Annual energy consumption	Q_{HE}	kWh GJ	-	-	-	-
Sound power level, indoors	L_{WA}	dB	67	67	67	67
Emissions of nitrogen oxides	NO_X	mg/kWh	56	49	44	52

(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

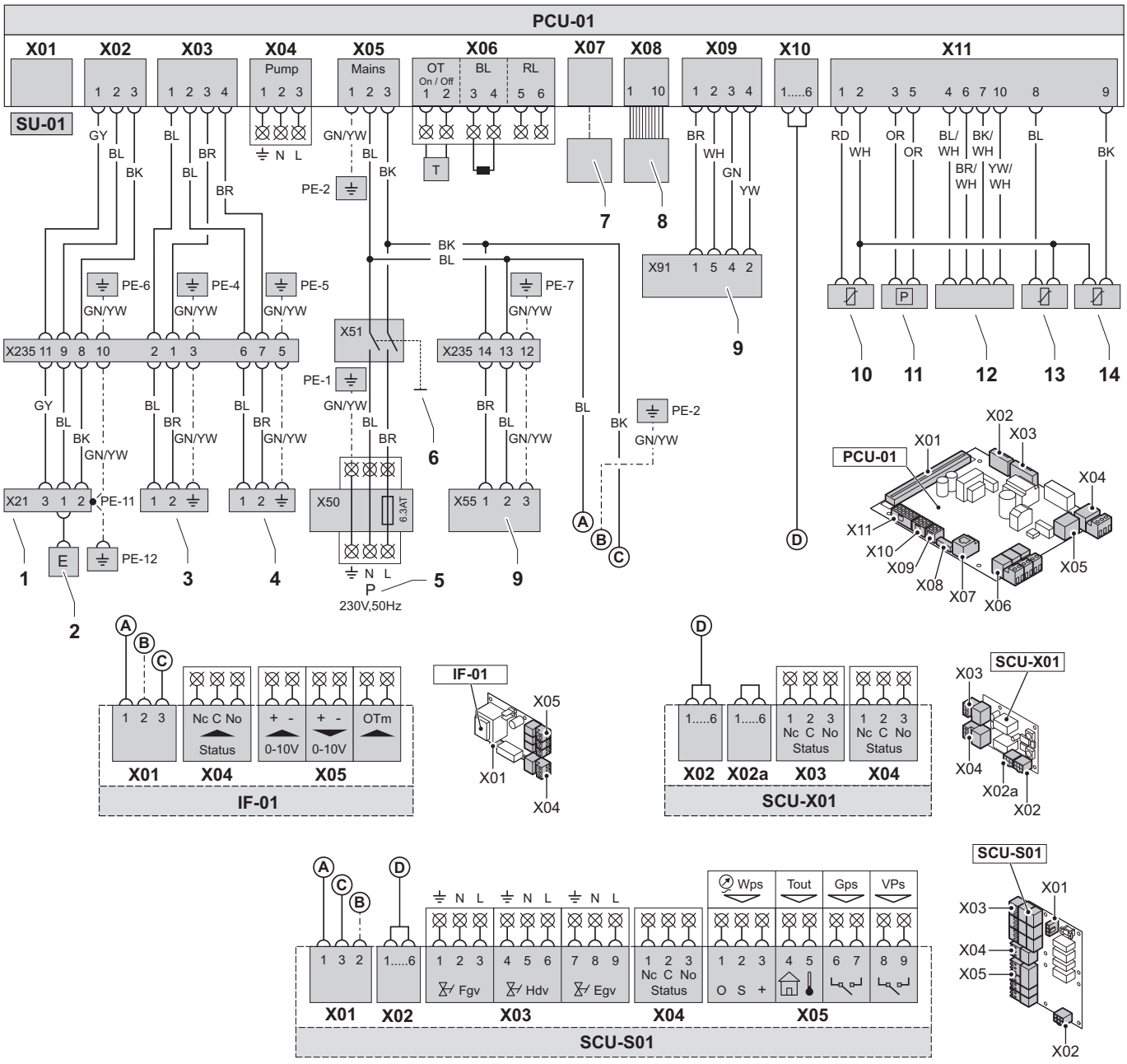


Tab.9 Drawings

Connection	210-80	210-120	210-160	210-200
Supply	1¼” male thread	1¼” male thread	1¼” male thread	1½” male thread attach supplied 1¼” > 1½” adapter
Return	1¼” male thread	1¼” male thread	1¼” male thread	1½” male thread attach supplied 1¼” > 1½” adapter
GAS/GAZ Gas connection	1¼” male thread	1¼” male thread	1¼” male thread	1¼” male thread
Condensate drain	Ø 32 mm external	Ø 32 mm external	Ø 32 mm external	Ø 32 mm external
Combustion air supply	Ø150 mm	Ø150 mm	Ø150 mm	Ø150 mm
Flue gas outlet	Ø150 mm	Ø150 mm	Ø150 mm	Ø150 mm
Height **A**	1309 mm	1309 mm	1309 mm	1324 mm
2 Second return (optional)	1¼” male thread	1¼” male thread	1¼” male thread	1¼” male thread

3.4 Electrical diagram

Fig.2 Electrical diagram



1 Ignition transformer (IT)
2 Ionisation/ignition electrode (E)
3 Safety valve (SV1)

> **Important**
> - For the 210-80 - 210-120, the gas valve unit connection is 230 VAC.
> - For the 210-160 - 210-200, the gas valve unit connection is 230 RAC.

4 Safety valve (SV2)

> **Important**
> - For the 210-80 - 210-120 boilers, the gas valve unit connection is 230 VAC.
> - For the 210-160 - 210-200 boilers, the gas valve unit connection is 230 RAC.

5 Power supply (P)
6 On/off switch (S)
7 Computer connection (PC)
8 Control panel (HMI)
9 Fan (FAN)
10 Flow sensor (FTS)
11 Pressure switch (PS)
12 Storage parameter (PSU)
13 Return sensor (RTS)
14 Heat exchanger sensor (HTS)

BK Black
BK/WH Black/White
BL Blue
BL/WH Blue/White
BR Brown

BR/WH	Brown/White
GN	Green
GN/YW	Green/Yellow
GY	Grey
OR	Orange
RD	Red
WH	White
YW	Yellow
YW/WH	Yellow/White

4 Description of the product

4.1 General description

The Gas 210 ECO PRO is a free-standing gas boiler with the following characteristics:

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

The following boiler types are available:

- Gas 210 ECO PRO - 210-80
- Gas 210 ECO PRO - 210-120
- Gas 210 ECO PRO - 210-160
- Gas 210 ECO PRO - 210-200

4.2 Operating principle

4.2.1 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.

4.2.2 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.

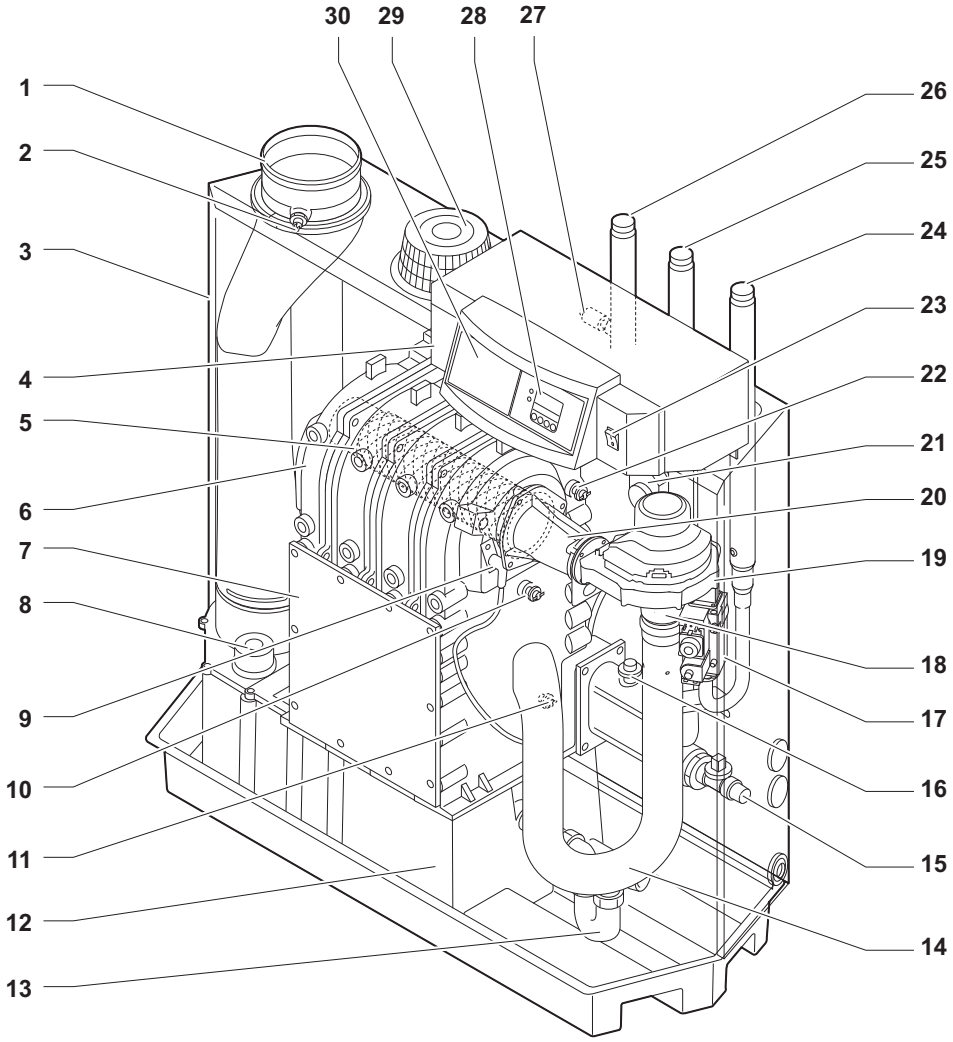
4.2.3 Circulation pump

The boiler does not have a built-in pump, but does have a built-in pump switch. A circulating pump can be installed on the connector of the standard control PCB. This can be an on/off pump or a modulating pump (with 0 - 10 V control).

The pump settings can be changed.

4.3 Gas 210 ECO PRO main components

Fig.3 Gas 210 ECO PRO



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1 Flue gas outlet
2 O_2/CO_2 measurement point
3 Air box
4 Control panel
5 Burner
6 Heat exchanger
7 Inspection hatch
8 Inspection hatch for condensate collector box
9 Ignition pin
10 Boiler block sensor
11 Return temperature sensor
12 Condensate collector
13 Siphon
14 Intake silencer
15 Filling and drain valve
16 Hydraulic pressure sensor
17 Gas multi-block
18 Venturi
19 Fan
20 Mixing bend
21 Flue gas pressure switch
22 Flow temperature sensor
23 On/off switch
24 Gas connection
25 Return connection
26 Flow connection
27 Sensor pocket
28 display
29 Air nozzle
30 Optional built-in regulator

4.4 Control panel description

The Gas 210 ECO PRO boiler is supplied with a separate control panel.

See
Manual for the control panel.

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

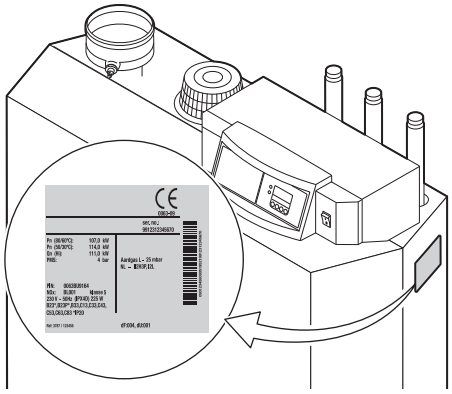
Warning
The installer must be registered with Gas Safe and have the correct ACS qualifications.

Important
Practical guidelines - see the latest version.

5.2 Choice of the location

5.2.1 Data plate

Fig.4 Position of data plate



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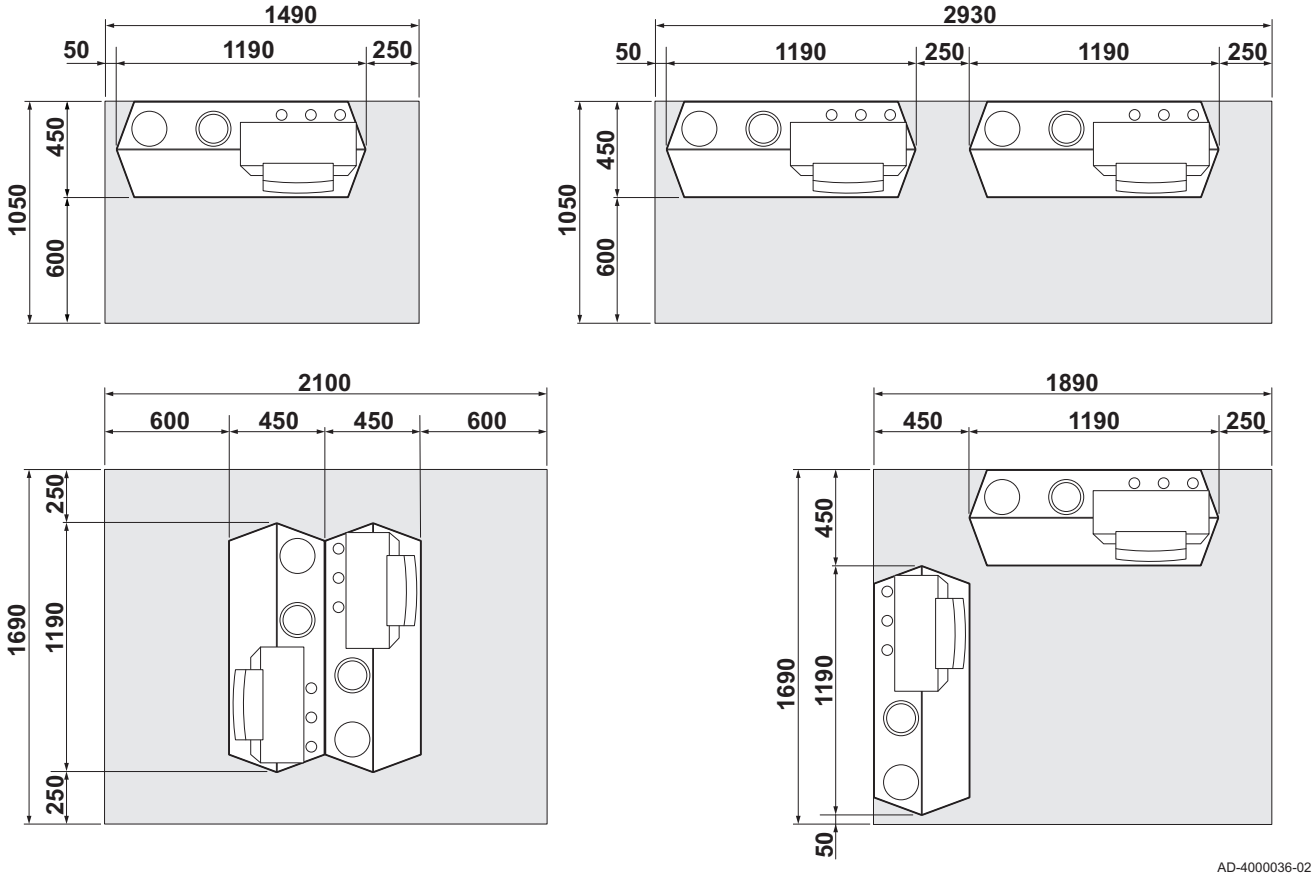
The type plate is adhered above, against the casing on the right-hand side.

5.2.2 Location of the boiler

Fig.5 Clearance required



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

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

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

Caution

- The boiler must be installed in a frost-free area.
- The boiler must have an earthed electrical connection.
- A connection to the drain must be present for the condensate drain close to the boiler.
- A technical clearance of at least 600 mm is required at the front (service side) of the boiler. However, we recommend that the clearance is at least 1000 mm. We recommend a clearance of at least 400 mm above the boiler. At least 50 mm on the left-hand side and 250 mm on the right-hand side.

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

The boiler comes completely assembled and is delivered in packaging on a pallet, dimensions 700 mm x 1300 mm and 1450 mm high. Without the packaging, the boiler will fit through all standard doorways.

Thanks to the specific compartments in the underframe, it is easy to move the boiler using a pallet truck or forklift truck.

5.4 Unpacking & initial preparation

1. Place the pallet with the boiler in the installation room.
2. Remove the retaining straps and other pieces of packaging.
3. Lift the boiler off the pallet.
4. Slide the boiler to the correct position using the handles in the underframe.
5. Make sure that the boiler is horizontal.

6 Installation

6.1 General

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

6.2 Hydraulic connections

6.2.1 Rinsing the system

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

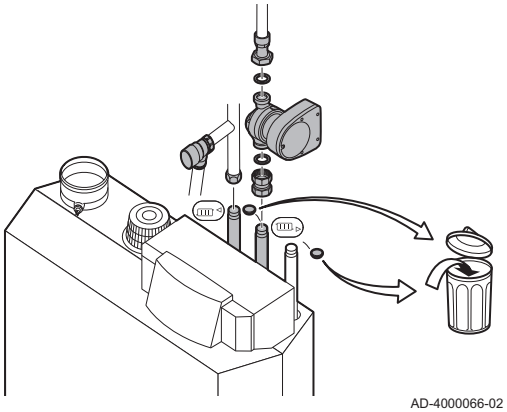
Before a new boiler can be connected to an existing or new system, the entire system must be thoroughly cleaned and flushed. This step is absolutely crucial. The flushing helps to remove residue from the installation process (weld slag, fixing products etc.) and accumulations of dirt (silt, mud etc.)

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 a volume of water equivalent to at least 20 times the volume of the pipes.

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

6.2.2 Connecting the heating circuit

Fig.6 Connecting the CH flow and CH return



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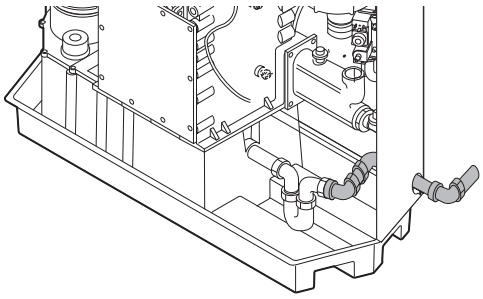
1. Remove the dust cap on the CH flow connection terminal.
2. Remove the dust cap on the central heating return connection.
3. Attach the outlet pipe for central heating water to the central heating flow.
4. Attach the inlet pipe for central heating water to the central heating return.
5. Connect a safety valve to the boiler's flow connection.
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.

6.2.3 Connecting the condensate discharge pipe

Fig.7 Connecting the condensate drain



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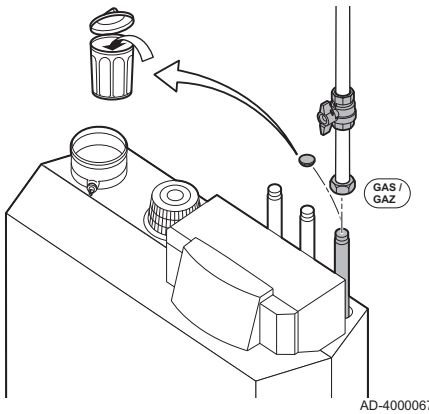
1. Fit a plastic drain pipe of Ø 32 mm or larger to the condensate drain, terminating in the drain.

Caution
- Use only plastic material for the discharge pipe due to the acidity (pH 2 to 5) of the condensate.
- Do not make a fixed connection in order to prevent an overpressure in the siphon.
- Never seal the condensate drain.
- Condensed water must not be discharged into a gutter.
- The drain pipe must slope down at least 5 - 10 mm per metre, the maximum horizontal length is 5 metres.

6.3 Gas connection

Fig.8 Connecting the gas pipe



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1. Before starting work on the gas pipes, turn off the main gas tap.
2. Before installing, check that the gas meter has sufficient capacity. Take into account the consumption of all appliances.
3. Notify the local energy company if the gas meter has insufficient capacity.
4. Remove the dust cap on the gas connection .
5. Fit the gas supply pipe.
6. Also fit a gas isolation valve in this pipe, near the boiler.

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

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

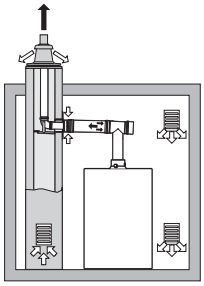
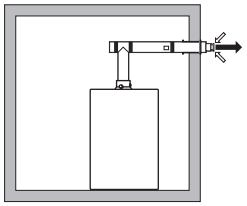
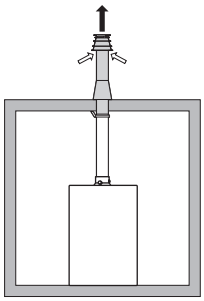
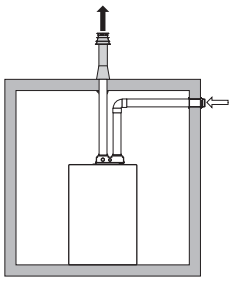
6.4 Air supply/flue gas connections

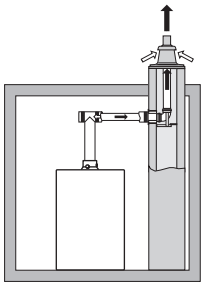
6.4.1 Classification

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 and roof terminal supplied by the same manufacturer. Consult the manufacturer for compatibility details.

Tab.10 Types of flue gas connections

Type	Principle	Description	Permitted manufacturers(1)
B_{23P}	 AD-3001055-01	Room-ventilated version • Without down-draught diverter. • Flue gas discharge via the roof. • Air from the installation area.	Connection material and roof terminal: • Cox Geelen • Muelink & Grol • Skoberne
C_{13}	 AD-3001056-01	Room-sealed version • Discharge in the outside wall. • Inlet opening for the air supply is in the same pressure zone as the discharge (e.g. a combined outside wall feed-through). • Parallel not permitted	Outside wall terminal and connection material: • Remeha, combined with connection material from Muelink & Grol • Cox Geelen • Muelink & Grol
C_{33}	 AD-3001057-01	Room-sealed version • Flue gas discharge via the roof. • Inlet opening for the air supply is in the same pressure zone as the discharge (e.g. a concentric roof feed-through).	Roof terminal and connection material • Remeha, combined with connection material from Muelink & Grol • Cox Geelen • Muelink & Grol • Skoberne
C_{53}	 AD-3001058-02	Connection in different pressure zones • 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.	Connection material and roof terminal: • Cox Geelen • Muelink & Grol • Skoberne

Type	Principle	Description	Permitted manufacturers(1)
C_{63}		This type of unit is supplied by the manufacturer without a supply and discharge system.	When selecting the material, please note the following: • Condensed water must flow back to the appliance • The material must be resistant to the flue gas temperature of this appliance. • 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).
C_{93} (2)	 AD-3001059-01	Room-sealed version • Air supply and flue gas discharge duct in shaft or ducted: - 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.	Connection material and roof terminal: • Cox Geelen • Muelink & Grol • Skoberne

(1) The material must also satisfy the material property requirements from the relevant chapter.
(2) See table for shaft or duct requirements

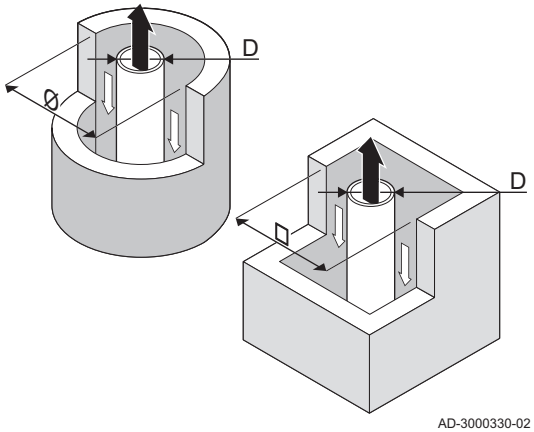
For more information, see
Material, page 29

6.4.2 Requirements for shaft for C_{93}

Tab.11 Minimum dimensions of shaft or duct

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

Fig.9 Minimum dimensions of shaft or duct



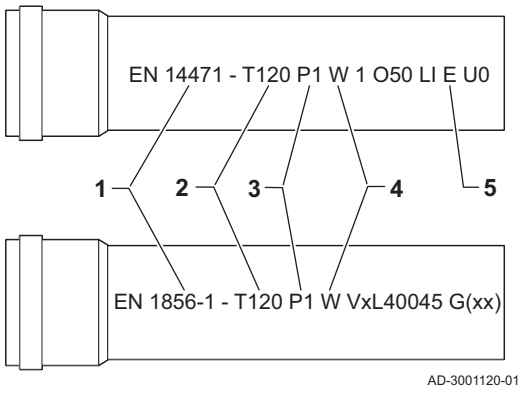
Important
The shaft must comply with the air density requirements of the local regulations.

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

6.4.3 Material

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

Fig.10 Sample string



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.12 Overview of material properties

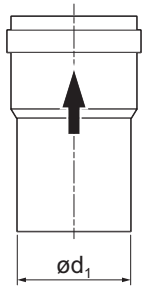
Version	Flue gas outlet		Air supply	
	Material	Material properties	Material	Material properties
Single-wall, rigid	• Plastic(1) • Stainless steel(2) • Thick-walled, aluminium(2)	• With CE marking • Temperature class T120 or higher • Condensate class W (wet) • Pressure class P1 or H1 • Fire resistance class E or better(3)	• Plastic • Stainless steel • Aluminium	• 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

6.4.4 Dimensions of flue gas outlet pipe

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

Fig.11 Dimensions of open connection



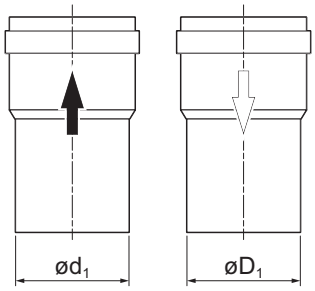
AD-3001094-01

d_1 External dimensions of flue gas outlet pipe

Tab.13 Dimensions of pipe

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

Fig.12 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.14 Dimensions of pipe

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

6.4.5 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.

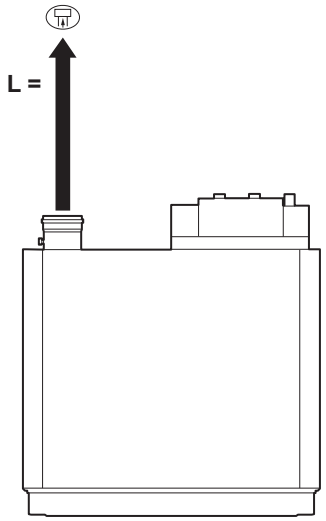
■ Room-ventilated model (B_{23P})

In an open design, the air input remains open; only the flue gas outlet will be connected. The boiler receives the necessary combustion air direct from the installation room.

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.

Fig.13 Room-ventilated version



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

Tab.15 Maximum length for open design

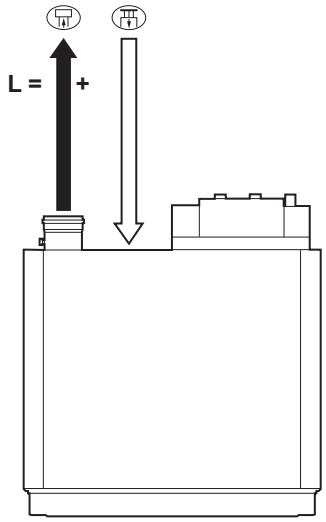
	Maximum length L(1)				
Pipeline diameter	**100 mm**	**110 mm**	**130 mm**	**150 mm**	**180 mm(2)**
Gas 210 ECO PRO 210-80	19 m	35 m	50 m(2)	50 m(2)	50 m(2)
Gas 210 ECO PRO 210-120		20 m	48 m	50 m(2)	50 m(2)
Gas 210 ECO PRO 210-160		8 m	22 m	45 m	50 m(2)
Gas 210 ECO PRO 210-200			14 m	31 m	50 m(2)

(1) Calculated with rigid tube and discharge without cover ("free" opening)
(2) With retention of the maximum flue length it is possible to apply an extra 5 times 90º or 10 times 45º elbows.

■ Room-sealed model (C_{13}, C_{33}, C_{63}, C_{93})

With a room-sealed version, both the flue gas outlet and the air supply openings are connected (in parallel).

Fig.14 Room-sealed version



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

Flue gas outlet

Tab.16 Maximum chimney length for room-sealed operation

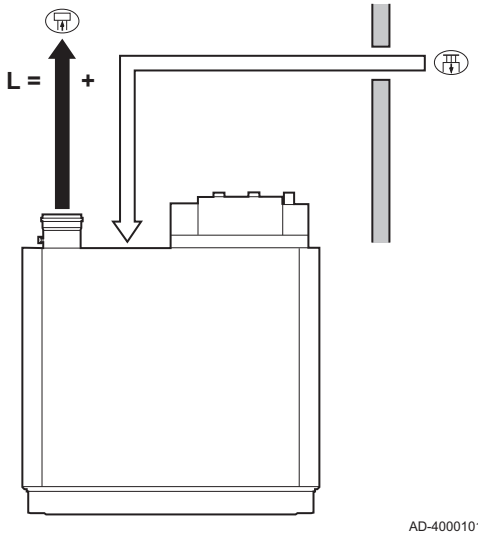
	Maximum length L(1)				
Pipeline diameter	**100 mm**	**130 mm**	**130 mm**	**150 mm**	**180 mm**
Diameter of concentric roof terminal	**100 mm**	**130 mm**	**150 mm**	**150 mm**	**150 mm**
Gas 210 ECO PRO 210-80	14 m	50 m	60 m	60 m(2)	60 m(2)
Gas 210 ECO PRO 210-120	4 m	38 m	44 m	60 m	60 m
Gas 210 ECO PRO 210-160		15 m	22 m	44 m	60 m
Gas 210 ECO PRO 210-200		6 m	8 m	24 m	60 m
(1) Calculated with rigid tube and discharge without cover ("free" opening)					

■ Connection in different pressure areas (C_{53})

The supply of combustion air and discharge of flue gas is possible in different areas of pressure.

Important
The maximum permitted height difference between the combustion air supply and the flue gas outlet is 36 m.

Fig.15 Different pressure zones



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

Flue gas outlet

Tab.17 Maximum chimney length in the various pressure zones

	Maximum length L
Pipeline diameter	**150 mm**
Gas 210 ECO PRO 210-80	60 m(1)
Gas 210 ECO PRO 210-120	60 m
Gas 210 ECO PRO 210-160	32 m
Gas 210 ECO PRO 210-200	19 m
(1) With retention of the maximum flue length it is possible to apply an extra 5 times 90° or 10 times 45° elbows.	

Reduction table

Tab.18 Pipe reduction for each element used

Diameter	Pipe reduction (in metres)	
	45° bend	90° bend
100 mm	1.4	4.9
110 mm	1.5	5.4
130 mm	1.0	1.8
150 mm	1.2	2.1
180 mm	1.4	2.5

6.4.6 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.

6.4.7 Air/flue gas adapter

The boilers can be used in room-ventilated or room-sealed operation. The air supply terminal set must be used for a closed arrangement (available as an accessory).

6.4.8 Connecting the flue gas outlet

Proceed as follows to connect the flue gas outlet:

1. Remove the cap from the flue gas outlet opening.
2. Fit the flue gas outlet pipe to the boiler.
3. Fit the subsequent flue gas outlet pipes in accordance with the manufacturer's instructions.

Caution

- The pipes must be flue gas-tight and corrosion-resistant.
- The materials used must comply with the prevailing regulations and standards.
- 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 or flue gas adapter.
- Fit the horizontal parts sloping down towards the boiler, with a slope of 50 mm per metre.
- Maximum bracket spacing for vertical pipes is 2 m.
- Maximum tilt of vertical pipes is 20 mm per meter.
- Use a bracket at each connection for horizontal pipes.

6.4.9 Connecting the air supply

1. Remove the dirt trap filter from the air supply opening
2. Fit the air supply connection kit (accessory).
3. Fit the air supply pipe to the boiler.
4. Fit the air supply pipes seamlessly together.
5. Fit the subsequent air supply pipes in accordance with the manufacturer's instructions.

Caution

- The pipes must be airtight and waterproof.
- The air supply pipe must be smooth and deburred.
- Connect the pipes so that they are stress-free.
- Maximum bracket spacing for vertical pipes is 2 m.
- Maximum tilt of vertical pipes is 20 mm per meter.
- The pipes must not be resting on the boiler or air supply adapter.
- Fit the horizontal parts sloping down towards the air supply outlet, (with a slope of 50 mm per metre).
- Use a bracket at each connection for horizontal pipes.

6.5 Electrical connections

6.5.1 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.
- Make sure you establish an earth connection before connecting the electricity.

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.

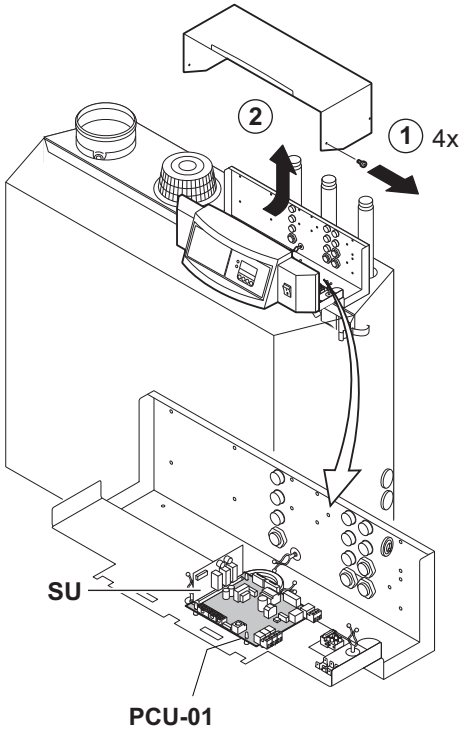
6.5.2 Control unit

Connection voltage	230 V / 50 Hz
Safety delay	3.5 seconds.
Anti-tripping time	Can be adapted by 1-10 minutes.
Pump finishing time	Adjustable from 0 to 98 minutes or continuously (= 99 minutes), standard setting is 3 minutes.

Maximum recorded power of external pump	300 VA.		
Recorded power in:	Standby	Part load	Full load
210-80	4 W	36 W	125 W
210-120	4 W	37 W	193 W
210-160	4 W	53 W	206 W
210-200	4 W	54 W	317 W

6.5.3 Accessing the terminal connectors and control PCBs

Fig.16 Standard control PCB (PCU-01) with security PCB (SU)



The control panel casing contains the standard control PCBPCU-01, the security PCB SU and the optional PCB(s) for the external terminals.

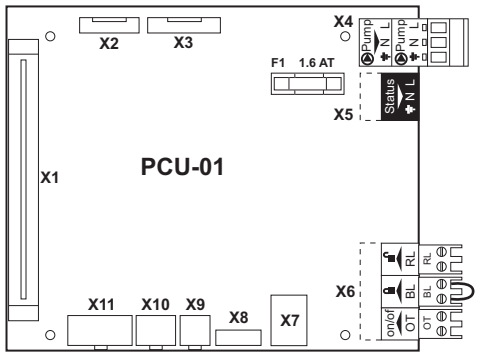
Accessing the control PCB and terminal connectors::

1. Unscrew the four screws on the casing cover.
2. Remove the cover

6.5.4 Connection options for the standard control PCB (PCU-01)

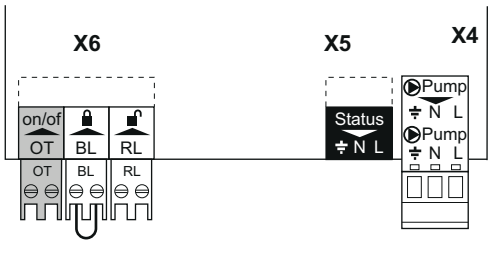
Various thermostats and regulators can be connected to the standard control PCB (PCU-01), as well as the circulation pump or a PC.

Fig.17 Standard control PCB (PCU-01)



On/off regulator (OT)

Fig.18 Connecting the on/off thermostat

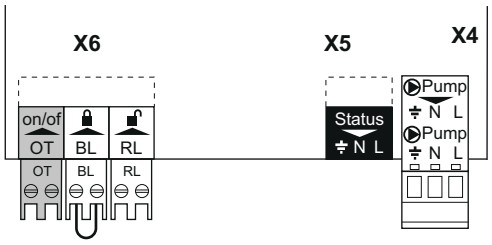


The boiler is suitable for connecting an on/off regulator.

1. Connect the regulator to the On/off - OT terminals on the terminal block X6 (it doesn't matter which wire is connected to which wiring terminal).

Connecting the modulating regulator

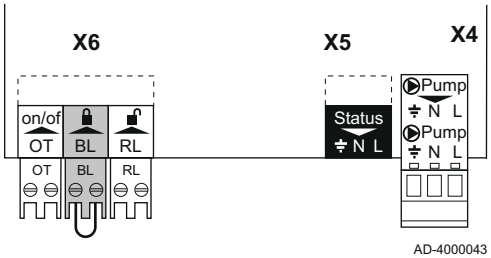
Fig.19 Connecting the modulating regulator



The boiler is ready to communicate via the OpenTherm protocol. Modulating regulators can be connected in accordance with the OpenTherm protocol. The connection is created using a two-wire cable on the On/off - OT terminals on the terminal block X6 (it doesn't matter what wire is connected in what wiring terminal).

Blocking input

Fig.20 Blocking input



The boiler has a blocking input. If this contact is opened, the boiler will be blocked or locked out. This input can be found on the BL terminals on the terminal block X6.

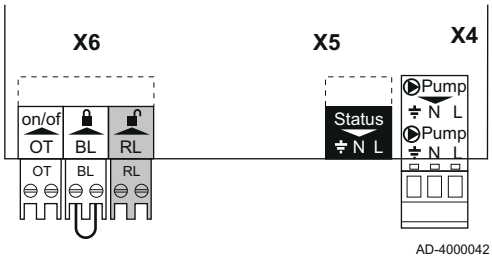
Important
First remove the bridge if this input is used.

A parameter setting can be used to change the function of the input.

See
Manual for the control panel.

Release input

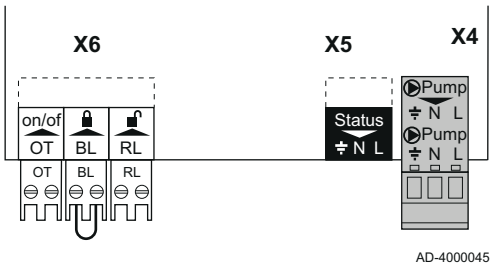
Fig.21 Release input



The boiler also comes with a release input that can be used to release/ block the burner. This input can be used in conjunction with flue gas valve end switches, hydraulic shut-off valves etc., for example. This input can be found on the RL terminals on the terminal block X6.

Connecting the circulation pump

Fig.22 Connecting the circulation pump



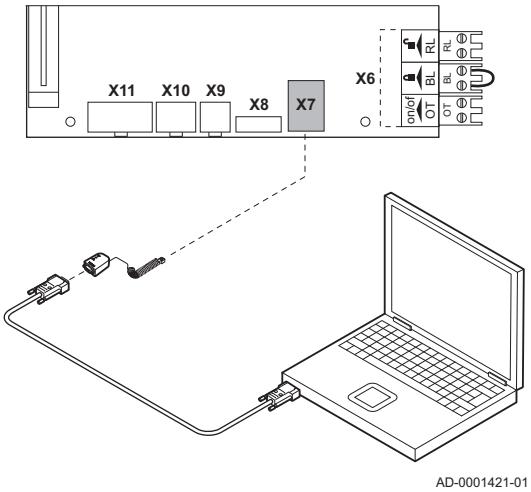
A pump with the following specifications can be connected:

- On/off pump with a supply voltage of 230 VAC (50Hz) and 300 VA.

Attach the pump to the Pump terminals on the terminal block X4. By selecting a programme at user level, the finishing time for the circulation pump can be set to when heat demand has ended.

Connecting a PC

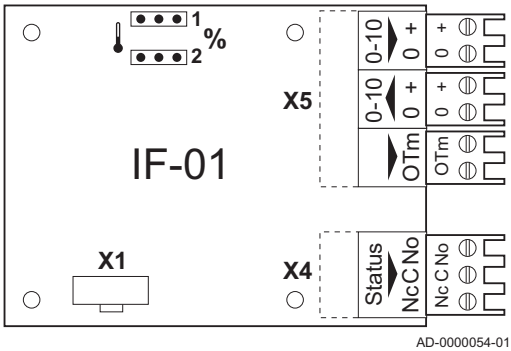
Fig.23 Connecting a PC



A PC can be connected to the 'telephone connector' X7 using a serial/ optional serial cable and the corresponding interface. Together with the Recom software, you can import, alter and export various boiler settings. See the user instructions that come with this software.

6.5.5 Connection options for the 0–10 V PCB (IF-01)

Fig.24 IF-01 PCB



The IF-01 PCB can be built into the instrument box or the housing for the PCBs. See the instructions provided with the product.

Caution
Do not connect a frost thermostat or room thermostat to the boiler if using the 0–10 V PCB.

Connecting the status relay (Nc)

If the boiler locks out, a relay is de-energised and the alarm can be transmitted via a potential-free contact (maximum 230 V, 1 A) on terminals **Nc** and **C** of the connector.

Connection (OTm)

The interface uses **OpenTherm** to communicate with the boiler control unit. To make this possible, the **OTm** connection must be connected to the **OpenTherm** input of the boiler control unit.**OTm**

Analogue input (0-10 V)

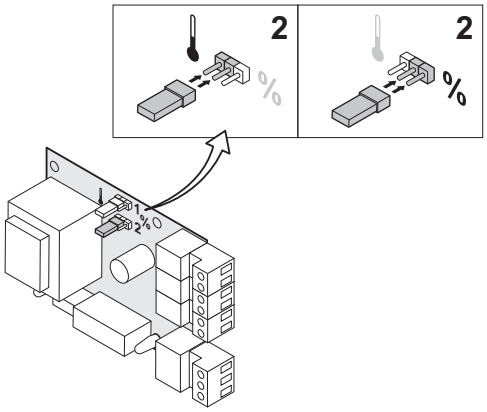
A choice can be made with this control between control based on temperature or heat output. The two controls are described briefly below.

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

Tab.19 Temperature-based control (°C)

Jumper 2	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

Fig.25 Switch jumper (2)



AD-0000055-01

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.

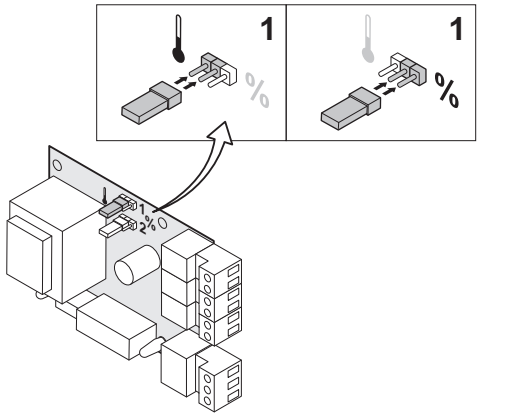
A jumper (**2**) on the interface is used to select either temperature-based control (🌡) or output-based control (**%**).

Tab.20 Control based on heat output

Jumper 2	Input signal (V)	Heat output (%)	Description
%	0–2.0(1)	0–20	Boiler off
	2.0–2.2 (1)	20–22	Hysteresis
	2.0–10 (1)	20–100	Desired heat output
(1) Dependent on the minimum modulation depth (set speeds, standard 20%)			

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.

Fig.26 Switch jumper (1)



■ Analogue output (0–10 V)

This feedback can be based on temperature or heat output. The two controls are described briefly below.

A jumper (**1**) on the interface is used to select either temperature (🌡) or output (**%**).

Tab.21 Temperature message

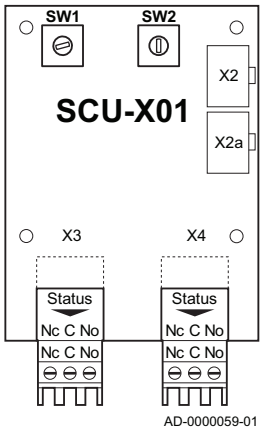
Jumper 1	Output signal (V)	Temperature °C	Description
🌡	0.5	–	Alarm
	1–10	10–100	Supplied temperature

Tab.22 Output message

Jumper 2	Output signal (V)	Heat output (%)	Description
%	0	0–15	Boiler off
	0.5	15–20	Alarm
	2.0–10(1)	20–100	Supplied heat output
(1) Dependent on the minimum modulation depth (set speeds, standard 20%)			

6.5.6 Connection options for the PCB (SCU-X01)

Fig.27 -X01 PCB



The -X01 PCB has two potential-free contacts (**status**), which can be configured as required. Depending on the setting, a maximum of two messages about the status of the boiler can be transmitted. See table. Select the messages required using rotary knobs **SW1** and **SW2**. Use rotary knob **SW1** for messages on the status connector **X3**. Use rotary knob **SW2** for messages on the status connector **X4**.

Tab.23 Configuring the rotary knobs

Position	C-NO	C-NC
0	Alarm standby	Alarm active
1	Alarm inverted active	Alarm inverted standby
2	Burning standby	Burning active
3	Burning inverted active	Burning inverted standby
4	Burning low standby	Burning low active
5	Burning high standby	Burning high active
6	Maintenance message standby	Maintenance message active
7	CH mode standby	CH mode active
8	DHW mode standby	DHW mode active
9	CH pump standby	CH pump active

6.6 Filling the installation

6.6.1 Water treatment and water quality

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

The quality of the CH water must comply with certain limit values, which can be found in the **Water quality instructions**. The regulations and guidelines in this manual must be observed at all times.

6.6.2 Filling the siphon

1. Fill the siphon with clean water.

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

6.6.3 Filling the installation

1. Disconnect the boiler from the power supply.
2. Fill the central heating system with clean tap water.

Important
The recommended water pressure is between 1.5 bar and 2 bar.

3. Check the water-side connections for tightness.
4. Power up the boiler.

Important
- Top up the central heating system by at least 0.8 bar if the water pressure drops too low.

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 system.
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.

7.1.2 Gas circuit

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.

7.1.3 Hydraulic circuit

1. Check the water pressure in the central heating system.
   ⇨ If necessary, top up the central heating system.
2. Check the siphon; it should be fully filled with clean water.
3. Check the water-side connections for tightness.

7.1.4 Connections for the air and flue gas pipes

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

7.1.5 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.
4. Set the components (thermostats, control) so that heat is demanded.
   ⇨ The start-up program will start and cannot be interrupted. During the start-up cycle, all segments of the display are shown briefly.

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 Adaptation to a different gas type

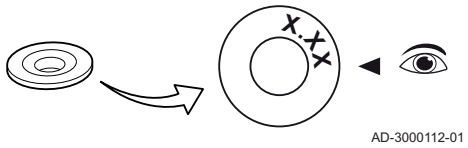
Warning
Only a qualified installer may carry out the following operations.

Tab.24 Factory setting G20 (H gas)

Parameter	Description	210-80	210-120	210-160	210-200
P17	Maximum speed for central heating	51	64	48	57
P18	Minimum speed for central heating	12	13	10	12
P19	Start speed	17	17	17	17
Restrictor	ø (mm)	8,4	8,4	–	–

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

Fig.28 Replacing restrictor



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1. Check the correct diameter of the existing restrictor (see table) and replace it if necessary.
2. Set the fan speed as indicated in the table for the relevant gas type. The speed can be changed with a parameter setting.

Tab.25 Adjustment for gas type G31 (propane)

Parameter	Description	210-80	210-120	210-160	210-200
P17	Maximum speed for central heating	52	61	60	55
P18	Minimum speed for central heating	15	14	15	13
P19	Start speed	20	20	22	22
Restrictor	ø (mm)	6,5	6,5	10	10

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

7.3.2 Checking/setting the combustion

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

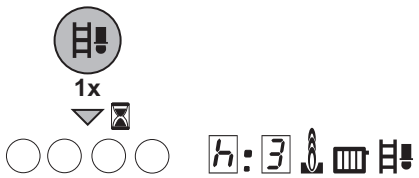
Warning
During measurement, seal the opening around the sensor fully.

Important
- The flue gas analyser must have a minimum accuracy of ±0.25% O_2/CO_2.
- The flue gas analyser must meet the requirements of BS 7927 or BS-EN 503793 and be calibrated according to the manufacturer's requirements.

3. Measure the percentage of O_2/CO_2 in the flue gases. Take measurements at full load and at part load.

Setting full load

Fig.29 Setting full load



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1. Press the key.
   ⇨ The symbol will appear in the display.
2. Wait a while until h : 3 appears in the display.
   ⇨ Full load has now been set.

Checking/setting values O_2/CO_2 at full load

1. Set the boiler to full load.
2. Measure the percentage of O_2/CO_2 in the flue gases.
3. Compare the measured value with the checking values in the table.

Tab.26 Checking/setting values for O_2 at full load for G20

Values at full load for G20	O_2 %(1)	CO_2 %(1)
210-80	3,9 - 5,2(1) - 6,5	8,1 - 8,8(1) - 9,5
210-120	3,9 - 5,2(1) - 6,5	8,1 - 8,8(1) - 9,5
210-160	4,3 - 5,2(1)	8,8(1) - 9,3
210-200	4,3 - 5,2(1)	8,8(1) - 9,3
(1) Nominal value		

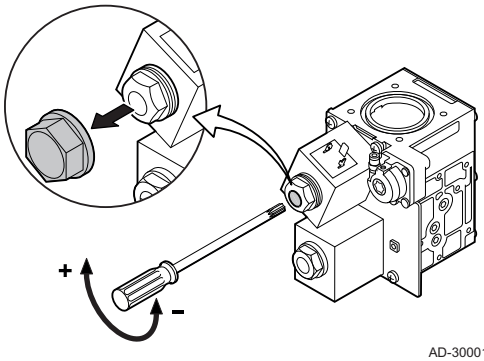
Tab.27 Checking/setting values for O_2 at full load for G31

Values at full load for G31	O_2 %(1)	CO_2 %(1)
210-80	4,7 - 5,7(1) - 6,7	9,3 - 10,0(1) - 10,7
210-120	4,7 - 5,7(1) - 6,7	9,3 - 10,0(1) - 10,7
210-160	4,9 - 5,7(1)	10,0(1) - 10,5
210-200	4,9 - 5,7(1)	10,0(1) - 10,5
(1) Nominal value		

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

Important
The 210-80 and 210-120 boilers are equipped with a restrictor on the gas valve unit. They can therefore only be set to part load.

Fig.30 210-160 - 210-200



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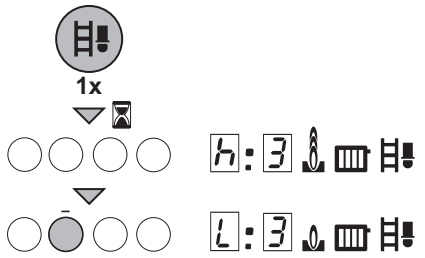
5. Using the adjusting screw, set the percentage of O_2/CO_2 for the gas type being used to the nominal value. This should always be inside the highest and lowest setting limit. The direction in which the adjustment screw must be turned to increase or decrease the gas flow is indicated on the gas valve unit.
6. Check the flame through the inspection window.

Important
The flame must not blow off.

Fig.31 Setting low load



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Setting low load

1. Press the key.
   ⇨ The symbol will appear in the display.
2. Wait a while until h :3 appears in the display.
3. Press the key until L :3 appears on the display.
   ⇨ Low load has now been set.

Checking/setting values for O_2/CO_2 at part load

1. Set the boiler to part load.
2. Measure the percentage of O_2/CO_2 in the flue gases.
3. Compare the measured value with the checking values in the table.

Tab.28 Checking/setting values for O_2 at part load for G20

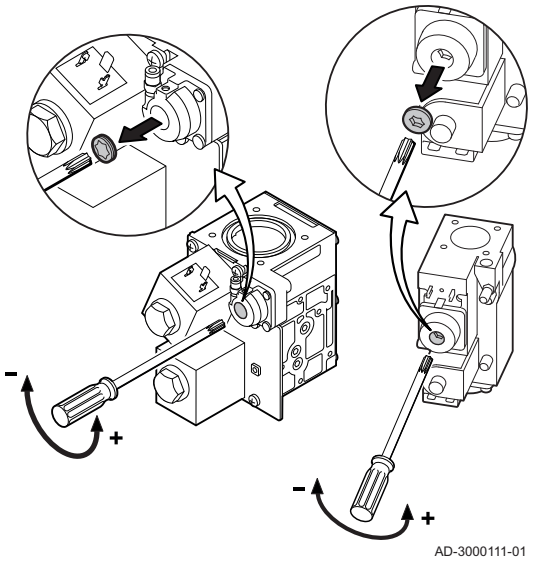
Values at part load for G20	O_2 %(1)	CO_2 %(1)
210-80	3,4 - 4,3(1)	9,3(1) - 9,8
210-120	3,4 - 4,3(1)	9,3(1) - 9,8
210-160	3,4 - 4,3(1)	9,3(1) - 9,8
210-200	3,4 - 4,3(1)	9,3(1) - 9,8
(1) nominal value		

Tab.29 Checking/setting values for O_2 at part load for G31

Values at part load for G31	O_2 %(1)	CO_2 %(1)
210-80	4,1 - 4,9(1)	10,5(1) - 11,0
210-120	4,1 - 4,9(1)	10,5(1) - 11,0
210-160	4,1 - 4,9(1)	10,5(1) - 11,0
210-200	4,1 - 4,9(1)	10,5(1) - 11,0
(1) nominal value		

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

Fig.32 Adjusting screw



5. Using the adjusting screw, set the percentage of O_2/CO_2 for the gas type being used to the nominal value. This should always be inside the highest and lowest setting limit. The direction in which the adjustment screw must be turned to increase or decrease the gas flow is indicated on the gas valve unit.
6. Check the flame through the inspection window.

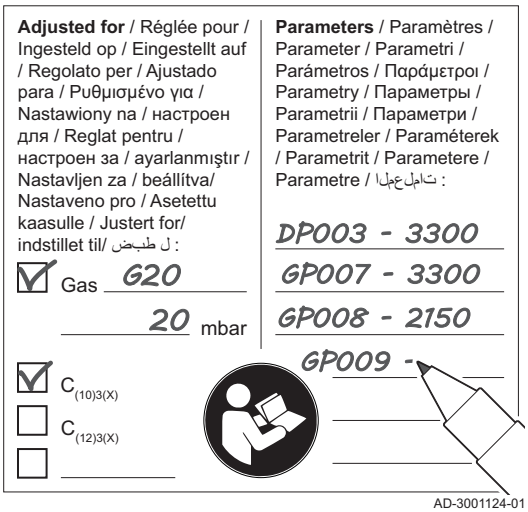
Important
The flame must not blow off.

7. Repeat the full load test and the part load test as often as necessary until the correct values are obtained.
8. Set the boiler back to the normal operating status.

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.
    - 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.33 Example filled-in sticker



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.

The manual for the control panel provides information on altering and reading out parameters, the meaning of fault codes and the deletion of the fault memory.

See
Manual for the control panel

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 the on/off switch to the off position.
2. Switch off the boiler's electrical connection.
3. Shut off the gas supply.
4. Keep the area frost-free.

Caution
In the event of low temperatures, we recommend that the installation continues to operate at a lower temperature. This will prevent freezing.

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.

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:

- If the water temperature is lower than 7 °C, the heating pump switches on.
- If the water temperature is lower than 4 °C, the boiler switches on.
- If the water temperature is higher than 10℃, the boiler shuts down 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.

Caution

- The frost protection does not work if the boiler is out of operation.
- The boiler protection only protects the boiler, not the system.

9 Settings

9.1 Description of Gas 210 ECO PRO parameters

Tab.30 Factory setting for user level parameters

Parameter	Description	Adjustment range	210-80	210-120	210-160	210-200
P1	Flow temperature: T_{SET}	20 to 90ºC	80	80	80	80
P2	Post-circulation of the pump	0 to 98 minutes 99 minutes = continuous	3	3	3	3
P3	Boiler control	0 = CH off 1 = CH on	1	1	1	1
P4	Display screen	0 = Simple 1 = Extended 2 = Automatic switching to simple	2	2	2	2

Tab.31 Factory setting for installer level parameters

Parameter	Description	Adjustment range	210-80	210-120	210-160	210-200
P17	Maximum fan speed for central heating	G20 (H gas) (x100 rpm/min)	51	64	48	57
P18	Minimum fan speed for central heating	G20 (H gas) (x100 rpm/min) Only modify for flue gas cascade and when converting to propane (upon request).	12	13	10	12
P19	Start speed	G20 (H gas) (x100 rpm/min) Only modify for flue gas cascade and when converting to propane (upon request).	17	17	17	17
P20	Maximum central heating flow temperature	20 - 90 °C	90	90	90	90
P21	Base point heating curve outside temperature	0 - 30 °C (only with outside sensor)	20	20	20	20
P22	Base point heating curve flow temperature	0 - 90 °C (only with outside sensor)	20	20	20	20
P23	Climate point heating curve outside temperature	-30 - 0 °C (only with outside sensor)	-15	-15	–15	–15
P24	Outside temperature for frost protection	-30 - 0 °C (only with outside sensor)	-10	–10	–10	–10
P25	Fault relay function (optional)	-30 - 0 °C (only with outside sensor)	1	1	1	1
P26	Minimum water pressure (optional)	1 - 60:10 bar (only with water pressure sensor) 0 = Off	0	0	0	0
P27	Minimum gas pressure monitor (optional)	0 = Off 1 = on (only with minimum gas pressure sensor)	0	0	0	0

Parameter	Description	Adjustment range	210-80	210-120	210-160	210-200
P28	Operating time of hydraulic flap (optional)	0 = no waiting time 1-255 seconds (only if connected)	0	0	0	0
P29	Operating time of flue gas valve (optional)	0 = no waiting time 1-255 seconds (only if connected)	0	0	0	0
P30	Maximum release time	0 = no waiting time 1-255 seconds (only if connected)	0	0	0	0
P31	VPS gas leak monitor (optional)	0 = Off 1 = on (only with gas leak monitor)	0	0	0	0
P32	Mains detection phase	0 = Off 1 = On	1	1	1	1
P33	Blocking input function	1 = blocking 2 = Shut-down with frost protection 3 = lock out	2	2	2	2
P34	Display units	0 = °C/bar 1 = °F/bar Do not change	0	0	0	0
P35	Minimum pump speed	0%–100%	20	20	20	20
P36	Maximum pump speed	0%–100%	100	100	100	100
Ad	Detection of connected SCUs	0 = No detection 1 = Detection	0	0	0	0
dF + dU	Factory setting	To restore the factory settings or when replacing the control unit, enter the values dF and dU from the data plate for parameters d F and dU.	X Y	X Y	X Y	X Y

9.2 Changing the parameters

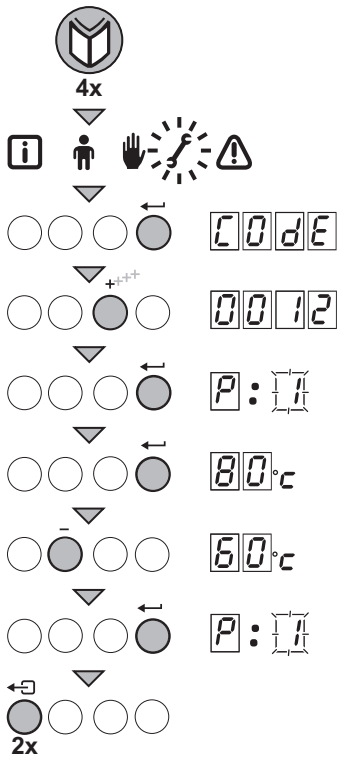
The boiler's control unit is set for the most common central heating systems. These settings will ensure that virtually every central heating system operates effectively. The user or the installer can optimise the parameters as required.

For operation in open vented systems, the P35 parameter must be adjusted.

Caution
Modification of the factory settings may impair boiler operation.

9.2.1 Setting the parameters in the Installer level

Fig.34 Access to the installer level



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Parameters at installer level (see table of parameters) may be modified only by a recognised installer. To prevent unwanted modifications to settings, some parameters can only be changed after the special access code 0012 is entered.

1. Navigate to the Installer menu.
   ⇨ The symbol flashes in the menu bar.
2. Select the installer menu using the ⟵ key.
   ⇨ CODE appears on the display.
3. Using the + or − keys, set the installer code 0012.
4. To confirm, press the ⟵ key.
   ⇨ P1 appears.
5. Press the ⟵ key.
   ⇨ The value 80 °C will appear (factory setting).
6. Change the value by pressing the + or − keys. Reduce the value to 60 °C, for example, using the − key.
7. Press the ⟵ key to confirm the value.
   ⇨ P1 appears.
8. Set any other parameters by selecting them using the + or − keys.
9. Press the ⟵ key twice to go back to the main display.

Important
The main menu will appear even if no keys are pressed for 3 minutes.

9.3 Reading out measured values

The control unit continually registers various values from the boiler and the connected sensors. These values can be read on the control panel of the boiler.

See
See control panel manual

9.3.1 Reading current values

The following current values can be read in the information menu ⓘ:

- St = status
- Su = sub-status
- t1 = Flow temperature (°C)
- t2 = Return temperature (°C)
- t4 = Outside temperature (°C); is only indicated when outside sensor is connected.
- t6 = boiler block temperature (°C)
- SP = Internal set point (°C).
- FL = ionisation current (uA)
- rF = fan speed (rpm)
- Pr = Water pressure (bar).
- Po = Supplied relative heat output (%).

9.3.2 Status and sub-status

The information menu ⓘ gives the following status and sub-status numbers:

Tab.32 Status and sub-status numbers

Status ST		Sub-status Su	
0	Stand-by mode	0	Stand-by mode
1	Boiler start (heat demand)	1	Anti-swing
		2	Open hydraulic valve
		3	Start pump
		4	Wait for the correct temperature before burner start
2	Burner start	10	Open external gas valve
		11	Fan on
		12	Open flue damper
		13	Pre-ventilation
		14	Wait for release signal
		15	Burner on
		16	Gas leakage control VPS
		17	Pre-ignition
		18	Main ignition
		19	Flame detection
		20	Intermediate ventilation
		21	Burner on (flue gas discharge test)
3	Burning on CH operation	30	Temperature control
		31	Limited temperature control (ΔT protection)
		32	Capacity control
		33	Temperature gradient protection level 1 (modulate down)
		34	Temperature gradient protection level 2 (part load)
		35	Temperature gradient protection level 3 (blocking)
		36	Modulate up for flame control
		37	Temperature stabilisation time
		38	Cold start
5	Burner stop	40	Burner off
		41	Post ventilation
		42	Fan off
		43	Close flue damper
		44	Stop fan
		45	Close the external gas valve

Status ST		Sub-status Su	
6	Boiler stop (end of heat demand)	60	Pump post circulation
		61	Pump off
		62	Close hydraulic valve
		63	Start anti-swing
8	Control stop	0	Wait for burner start
		1	Anti-swing
9	Blocking	xx	Blocking code xx

10 Maintenance

10.1 General

- The boiler does not require a lot of maintenance. Nevertheless, the boiler must be inspected and maintained periodically.
- Sweep the chimney **at least once a year** or more often, depending on the country's applicable regulations. Always check the combustion when the chimney is swept.
- Perform the standard checking and maintenance procedures once a year.
- Perform the specific maintenance procedures if necessary.

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 Standard inspection and maintenance operations

10.2.1 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.

10.2.2 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.

10.2.3 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 lower than 4 µA.

10.2.4 Check the flue gas outlet/air supply connections

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

10.2.5 Checking the combustion

Combustion is checked by measuring the O_2/CO_2percentage in the flue gas outlet duct.

10.2.6 Cleaning the siphon

1. Remove the siphon from the boiler and clean it.
2. Fill the siphon with clean water and attach the siphon.

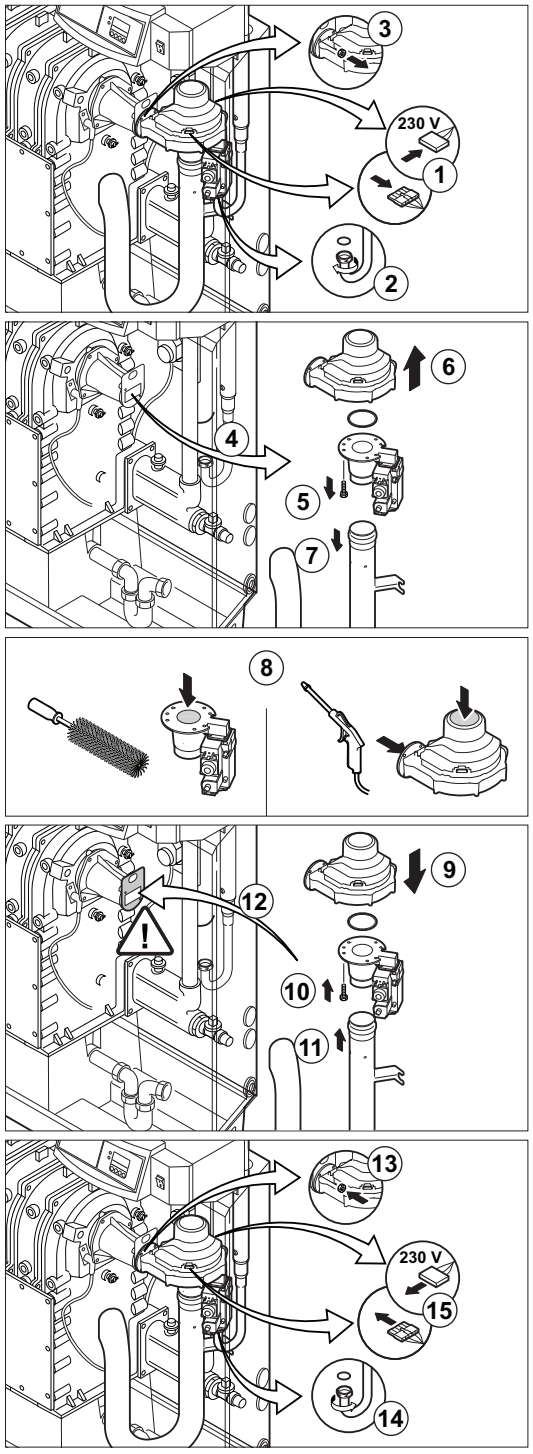
Danger
The siphon must always be sufficiently filled with water. This prevents flue gases from entering the room.

10.3 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:

10.3.1 Cleaning the fan

Fig.35 Clean the 210-80 and 210-120 fan



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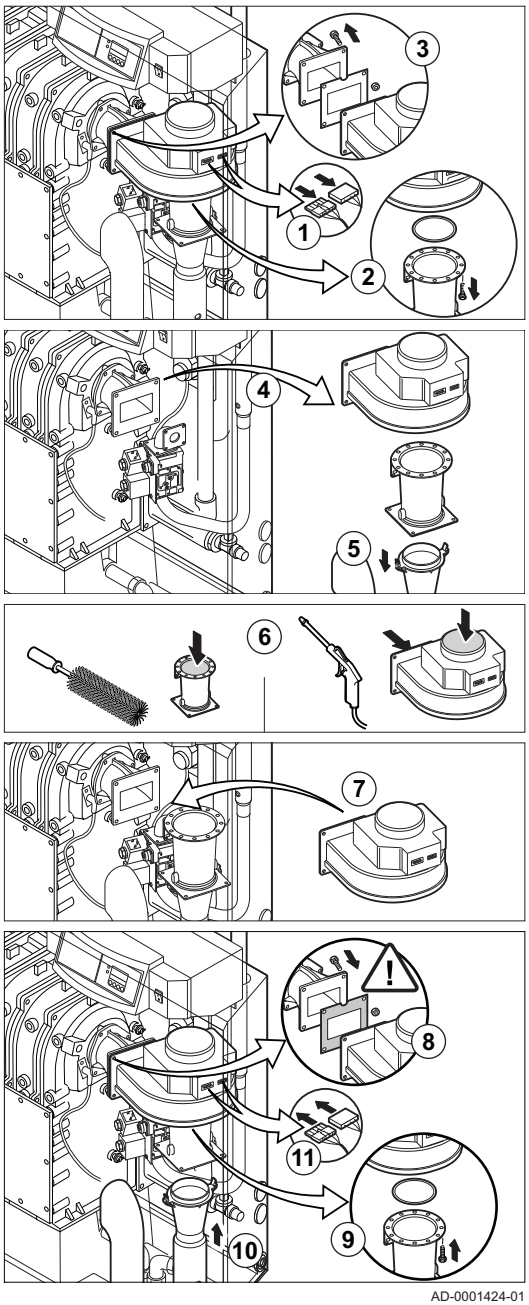
Operation of 210-80 and 210-120:

1. Remove the electrical connections from the fan.
2. Unscrew the union nut underneath the gas multi-block (watch out for the packaging).
3. Remove the screws on the outlet side of the fan.
4. Take away the fan including venturi and gas multi-block.
5. Remove the bolts on the inlet side of the fan.
6. Remove the venturi from the fan.
7. Clean the fan using a plastic brush.
8. Remove loose particles of dust from the fan.
9. Remove the intake silencer from the venturi.
10. Clean the venturi using a plastic brush.
11. Then reattach all the parts that have been removed; make sure that the packaging ring between the fan and the venturi is in the correct position.

Fig.36 Clean the 210-160 and 210-200 fan



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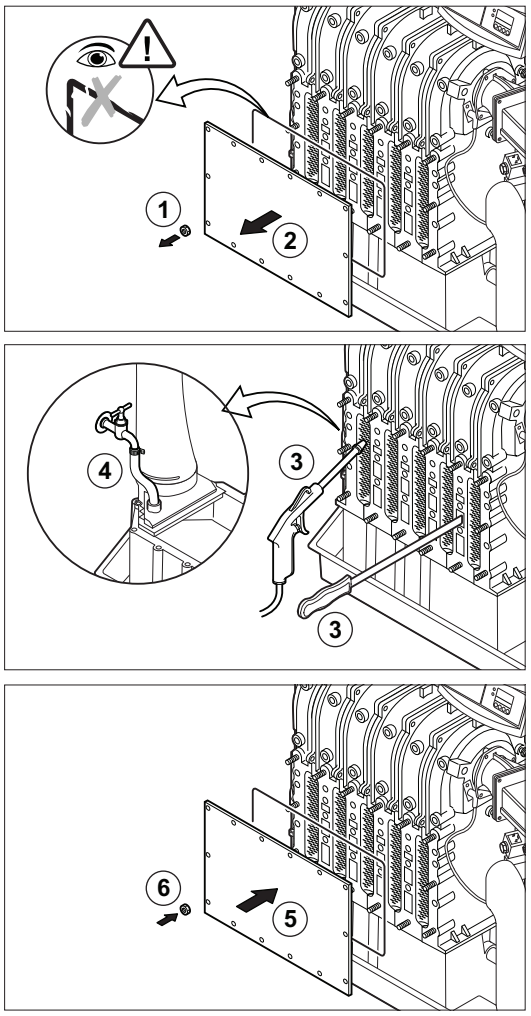
Operation of 210-160 and 210-200:

1. Remove the electrical connections from the fan.
2. Remove the bolts attaching the venturi to the fan.
3. Remove the bolts and screws on the outlet side of the fan.
4. Take the fan away (pay attention to the packaging).
5. Clean the fan using a plastic brush.
6. Remove loose particles of dust from the fan.
7. Remove the intake silencer from the venturi.
8. Clean the venturi using a plastic brush.
9. Then reattach all the parts that have been removed; make sure that the packaging ring between the fan and the venturi is in the correct position.

Fig.37 Clean the heat exchanger



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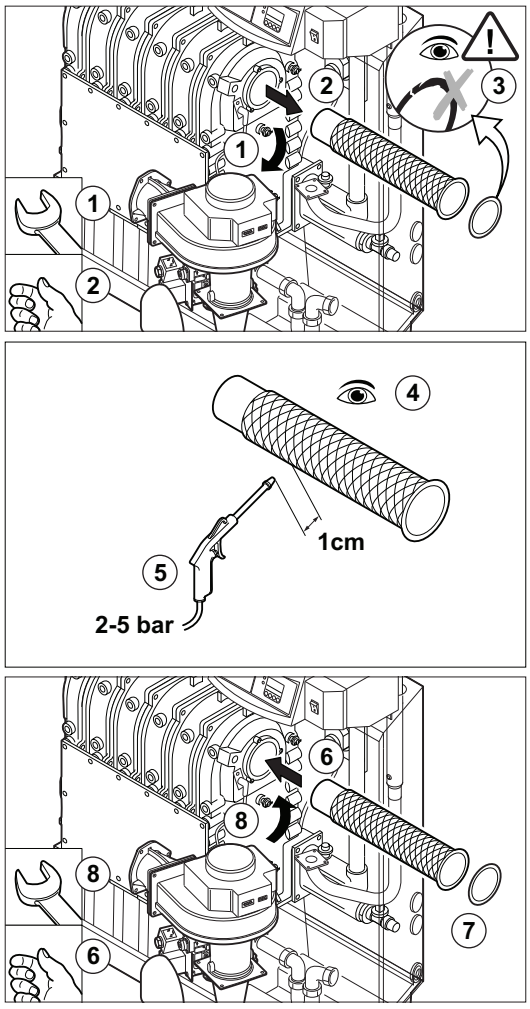
10.3.2 Clean heat exchanger

1. Unscrew the nuts from the inspection hatch on the heat exchanger.
2. Remove the inspection hatch from the heat exchanger.
3. Clean spaces between pins on the heat exchanger using the special cleaning tool/cleaning knife or compressed air. Always work from the bottom to the top. Move the cleaning knife between the pins horizontally and diagonally.
4. Then reattach all the parts that have been removed.

10.3.3 Cleaning the burner

Fig.38 Cleaning the burner



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1. Lift the burner out of the heat exchanger.
2. Check the burner and, if necessary, clean without touching it (e.g. with compressed air between 2 and 5 bars: maintain a minimum distance of 1 cm from the surface of the burner).

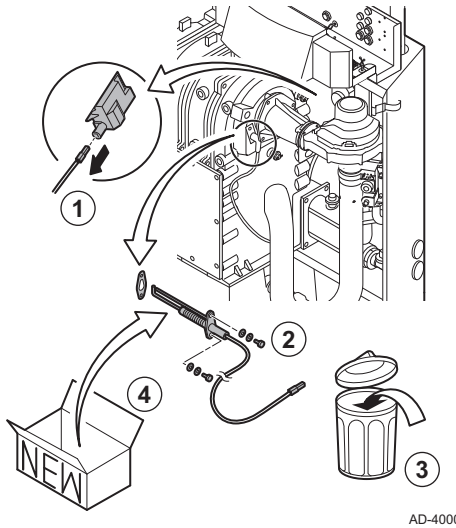
Caution
Do not clean the surface of the burner using a brush or similar.

3. Carefully hoover the dirt from the inside of the burner.
4. Then reattach all the parts that have been removed.

Warning
Make sure that the cables do not touch any hot parts of the boiler!

10.3.4 Replacing the ionisation/ignition electrode

Fig.39 Replacing the ionisation/ignition electrode



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The ionisation/ignition electrode must be replaced if:

- The ionisation current is < 4 µA.
- The electrode is damaged or worn.
-

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 2 screws on the electrode and pull these forwards.

Caution
Do not fit the new electrode until the burner has been cleaned and refitted. This will prevent damage occurring.

3. Remove the entire component.
4. Fit the new ionisation/ignition electrode.

10.3.5 Reassembling the boiler

1. Fit all removed parts in the reverse order.

Caution
During inspection and maintenance operations, always replace all gaskets on the parts removed.

2. Carefully open the water tap.
3. Fill the installation with water.
4. Vent the installation.
5. Top up with more water if necessary.
6. Check the tightness of the gas and water connections.
7. Put the boiler back into operation.

11 Troubleshooting

11.1 Error codes

The boiler is fitted with an electronic regulation and control unit. The heart of the control is a microprocessor, the **Comfort Master©**, which both protects and controls the boiler. In the event of an error, a corresponding code is displayed.

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

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

11.1.1 Blocking

A (temporary) blocking mode is a boiler status, resulting from an abnormal state. The display shows a blocking code (for example St:9). The control unit makes a number of attempts to start the boiler again. The blocking codes can be read out as follows:

1. Press the ⌂ key, followed by the ⟵ key.
   ⇨ St will now appear flashing in the menu bar. = 9.
2. Press the + key.
   ⇨ Su and the blocking code will appear.

Important
The boiler automatically returns to operation once the cause of the blocking has been removed.

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

■ **Blocking codes**

Tab.33 Blocking codes

Blocking code	Description
Su:0	Parameter error: • Reset dF and Ud • Restoring parameters
Su:1	Maximum flow temperature exceeded: • No flow or insufficient flow: - Check the circulation (direction, pump, valves) - Reasons for the heat demand
Su:3	Maximum heat exchanger temperature increase has been exceeded: • No flow or insufficient flow: - Check the circulation (direction, pump, valves) - Check the water pressure - Check the cleanliness of the heat exchanger • Sensor error: - Check that the sensors are operating correctly - Check that the sensor has been fitted properly
Su:4	The maximum rate of increase in the flow temperature tolerated in the exchanger has been exceeded: • No flow or insufficient flow: - Check the circulation (direction, pump, valves) - Reasons for the heat demand

Blocking code	Description
SU:5 SU:6	Maximum difference between the flow and return temperature exceeded: • No flow or insufficient flow: - Check the circulation (direction, pump, valves) - Check the water pressure - Check the cleanliness of the heat exchanger • Sensor error: - Check that the sensors are operating correctly - Check that the sensor has been fitted properly
SU:8	No release signal: • External cause: remove external cause • Parameter error: check parameters • Bad connection: check the wiring
SU:9	Phase and neutral of mains supply mixed up: • The mains connection is wired incorrectly: invert phase and neutral • Floating network or 2-phase network: set parameter P34 to 0
SU:10	Blocking input is active: • External cause: remove external cause • Parameter error: check parameters • Bad connection: check the wiring
SU:11	Blocking input active or frost protection active: • External cause: remove external cause • Parameter error: check parameters • Bad connection: check the wiring
SU:13	Communication error with the SCU PCB: • Bad connection with BUS: check the wiring • SCU PCB not present in connection box: perform automatic detection
SU:14	Water pressure is too low: • The water pressure is too low: - Check the water pressure - Fill the boiler and the system with water - Check the hydraulic pressure sensor setting • Incorrect setting of the water pressure parameter P28: Check water pressure parameter setting P28 • Water leakage
SU:15	Gas pressure too low: • No flow or insufficient flow: - Check that the gas valve is fully opened - Check the gas supply pressure • Incorrect setting on Gps gas pressure switch on SCU PCB: - Check whether the Gps has been correctly fitted - Replace the Gps switch if necessary
SU:16 (1)	Configuration error or SU PCB not recognised: • Wrong SU PCB for this boiler: replace SU PCB
SU:17	Configuration error or default parameter table incorrect: • Parameter error in the PCU PCB: replace PCU PCB
SU:18	Configuration error or PCU PCB not recognised: • Wrong PCU PCB for this boiler: replace PCU PCB
SU:19	Configuration error or dF and dU parameters unknown • Parameter error: Reset dF and dU
SU:20	Configuration procedure active: • Active for a short time after switching on the boiler: no action

Blocking code	Description
S.:21	Communication error with the SU PCB: • Poor connection: Check whether the PCU PCB has been correctly fitted in the connector on the SU PCB
S.:22	No flame during operation: • No ionisation current: - 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
S.:24	Gas leakage control fault: • Bad connection: check the wiring • Gas valve unit faulty: replace the gas valve unit • VPS gas leakage control defective: replace VPS gas leakage control
S.:25	Internal error in SU PCB: • Replace SU PCB
(1) These blockings are not stored in the error memory	

11.1.2 Lock out

If the blocking conditions still exist after various start attempts, the boiler goes into lockout (also called error). The boiler will also lock out if an error is signalled anywhere in the boiler. An error code will appear on the display. The error code is displayed as follows:

In a red flashing display:

- the symbol ⚠
- the symbol **RESET**
- the error code, for example E:01

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

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

Press the **RESET** key for two seconds. If the error code continues to display, search for the cause in the error table and apply the solution.

Important
If the display does not show **RESET** but rather ⏻, the boiler must be switched off and then switched on again 10 seconds later before the error can be reset.

Tab.34 Error codes

Error code	Description
E:00	Parameter storage unit PSU not found: • Bad connection: check the wiring
E:01	Safety parameters not OK: • Bad connection: check the wiring • Faulty PSU: replace PSU

Error code	Description
E:02	Flow temperature sensor short circuited: • Bad connection: check the wiring • Sensor not connected or incorrectly connected: - Check that the sensor has been fitted properly - Check that the sensors are operating correctly • Faulty sensor: replace the sensor if necessary
E:03	Flow temperature sensor open: • Bad connection: check the wiring • Sensor not connected or incorrectly connected: - Check that the sensor has been fitted properly - Check that the sensors are operating correctly • Faulty sensor: replace the sensor if necessary
E:04	Temperature of heat exchanger too low: • Bad connection: check the wiring • Sensor not connected or incorrectly connected: - Check that the sensors are operating correctly - Check that the sensor has been fitted properly • Faulty sensor: replace the sensor if necessary • No circulation: - Vent the air from the CH system - Check the circulation (direction, pump, valves) - Check the water pressure - Check the cleanliness of the heat exchanger - If present: check the boiler type parameter setting
E:05	Temperature of heat exchanger too high: • Bad connection: check the wiring • Sensor not connected or incorrectly connected: - Check that the sensors are operating correctly - Check that the sensor has been fitted properly • Faulty sensor: replace the sensor if necessary • No circulation: - Vent the air from the CH system - Check the circulation (direction, pump, valves) - Check the water pressure - Check the cleanliness of the heat exchanger - If present: check the boiler type parameter setting
E:06	Return temperature sensor short-circuited: • Bad connection: check the wiring • Sensor not connected or incorrectly connected: - Check that the sensors are operating correctly - Check that the sensor has been fitted properly • Faulty sensor: replace the sensor if necessary
E:07	Open circuit in return temperature sensor: • Bad connection: check the wiring • Sensor not connected or incorrectly connected: - Check that the sensors are operating correctly - Check that the sensor has been fitted properly • Faulty sensor: replace the sensor if necessary

Error code	Description
E:08	Return temperature too low: • Bad connection: check the wiring • Faulty sensor: replace the sensor if necessary • Sensor not connected or incorrectly connected: - Check that the sensors are operating correctly - Check that the sensor has been fitted properly • No circulation: - Vent the air from the CH system - Check the circulation (direction, pump, valves) - Check the water pressure - Check the cleanliness of the heat exchanger - If present: check the boiler type parameter setting
E:09	Return temperature too high: • Bad connection: check the wiring • Faulty sensor: replace the sensor if necessary • Sensor not connected or incorrectly connected: - Check that the sensors are operating correctly - Check that the sensor has been fitted properly • No circulation: - Vent the air from the CH system - Check the circulation (direction, pump, valves) - Check the water pressure - Check the cleanliness of the heat exchanger - If present: check the boiler type parameter setting
E:10 E:11	Difference between the flow and return temperatures too great: • No circulation: - Vent the air from the CH system - Check the circulation (direction, pump, valves) - Check the water pressure - Check the cleanliness of the heat exchanger - Check that the heating pump is operating correctly - If present: check the boiler type parameter setting • Sensor not connected or incorrectly connected: - Check that the sensors are operating correctly - Check that the sensor has been fitted properly • Faulty sensor: replace the sensor if necessary
E:12	• Temperature of heat exchanger above normal range (STB high-limit thermostat): - Bad connection: check the wiring - Sensor not connected or incorrectly connected: • Check that the sensors are operating correctly • Check that the sensor has been fitted properly - Faulty sensor: replace the sensor if necessary - No circulation: • Vent the air from the CH system • Check the circulation (direction, pump, valves) • Check the water pressure • Check the cleanliness of the heat exchanger • If present: check the boiler type parameter setting • If present: Air pressure differential switch has been triggered: - Air supply or flue gas outlet blocked: check air supply and flue gas outlet for blockage

Error code	Description
E:14	Five failed burner starts: • No ignition spark: - Check cabling of ignition transformer - Check the ionisation/ignition electrode - Check breakdown to earth - Check the condition of the burner cover - Check the earthing - Defective control SU PCB • Ignition spark but no flame: - 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 the wiring on the gas valve unit - Defective control SU PCB • Flame present, but ionisation has failed or is inadequate: - Check that the gas valve is fully opened - Check the gas supply pressure - Check the ionisation/ignition electrode - Check the earthing - Check the wiring on the ionisation/ignition electrode
E:15	If VPS switch is present: 5 failed gas leakage checks: • Gas pressure non-existent or too low: - check whether the gas tap is properly open - check the gas supply pressure • Wiring fault: check the wiring • Incorrect setting of the VPS switch: check whether the VPS switch is set properly • VPS pressure switch not installed or poorly installed: check that the VPS switch is properly installed • Faulty VPS switch: replace VPS switch if necessary • Faulty gas valve: check the gas valve and replace it if necessary
E:16	False flame signal: • Ionisation current measured but no flame should be present: check the ionisation and ignition electrode • Ignition transformer faulty: replace the ignition transformer if necessary • Faulty gas valve: check the gas valve and replace it if necessary • The burner remains very hot: O_2/CO_2 too high: adjust O_2/CO_2 settings
E:17	Gas valve error in SU PCB: • Bad connection: check the wiring • Defective SU PCB: check the SU PCB and replace if necessary
E:34	Fan operation error: • Bad connection: check the wiring • Fan defective: - Check for adequate draw on the chimney connection - Replace the fan if necessary
E:35	Flow and return reversed: • Bad connection • Sensor not connected or incorrectly connected: - Check that the sensors are operating correctly - Check that the sensor has been fitted properly • Sensor failure: Replace the sensor if necessary • Water circulation in wrong direction: check the circulation (direction, pump, valves)

Error code	Description
E:36	5x flame loss: • No ionisation current: - Vent the gas supply to remove air - Check that the gas valve is fully opened - Check the gas supply pressure - Check the operation and setting of the gas valve unit - Check that the air supply inlet and flue gas outlet are not blocked - Check that there is no recirculation of flue gases
E:37	Error in communication with SU PCB: • Bad connection: check whether the SU PCB has been correctly fitted in the connector on the PCU PCB
E:38	Communication error with the PCB: • Bad connection: check the wiring • Faulty PCB: replace PCB
E:39	Blocking input in locked-out mode: • Bad connection: check the wiring • External cause: remove external cause • Wrong parameter set: check the parameters
E:40	If present: Heat recovery unit test fault: • Bad connection: check the wiring • External cause: remove external cause • Wrong parameter set: check the parameters

11.2 Blockage and fault memory

The boiler control unit has an error memory. This stores the 16 most recent blockages and the 16 most recent faults.

12 Disposal

12.1 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 installation.
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

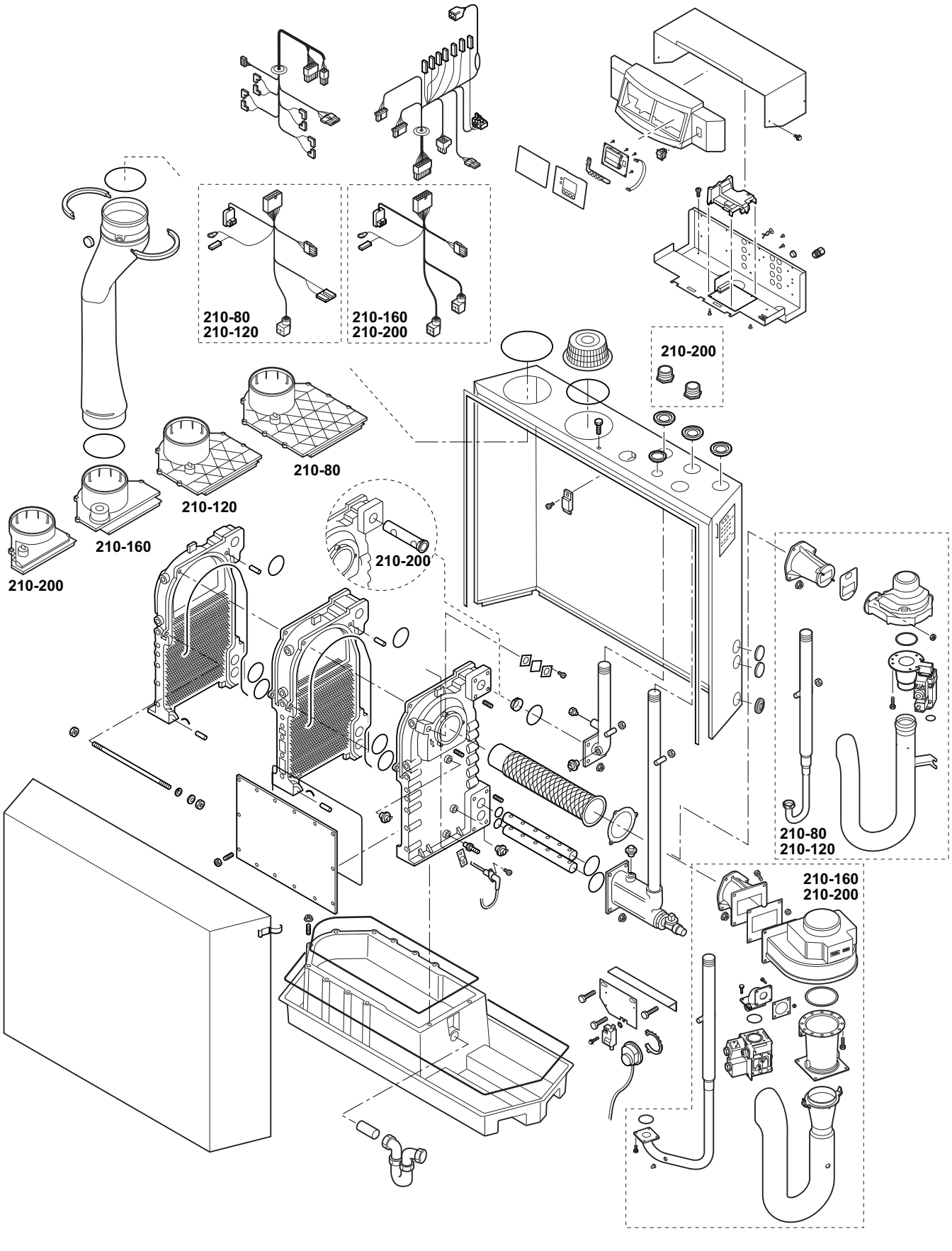
13.1 General

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.40 Gas 210 Eco Pro



14 Appendix

14.1 ErP information

14.1.1 Product card

Tab.35 Product card

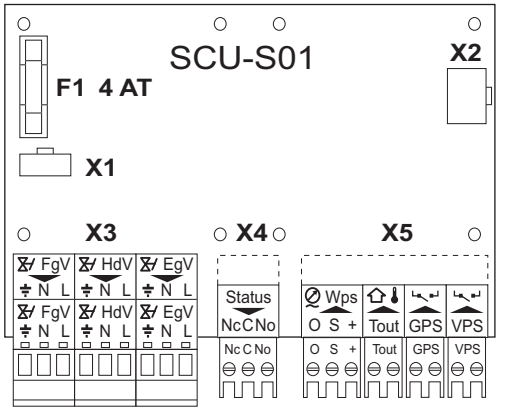
Remeha - Gas 210 ECO PRO		210-80	210-120	210-160	210-200
Seasonal space heating energy efficiency class		-	-	-	-
Rated heat output *(Prated or Psup)*	kW	87	115	166	200
Seasonal space heating energy efficiency	%	-	-	-	-
Annual energy consumption	GJ	-	-	-	-
Sound power level L_{WA} indoors	dB	67	67	67	67

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

14.2 Optional electrical connections

14.2.1 Connection options for the control PCB (SCU-S01)

Fig.41 SCU-S01 PCB



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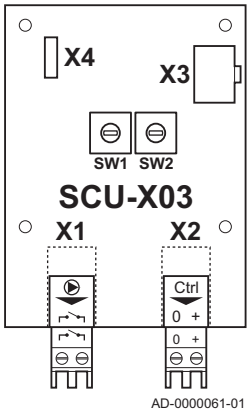
The SCU-S01 control PCB can be used to control or record:

- a flue gas flap
- a hydraulic valve
- an external gas valve
- a water pressure sensor
- a gas pressure switch or gas leak monitor
- an outside temperature sensor
- operating message or error message

14.2.2 Connection options for the PCB (SCU-X03)

Fig.42 -X03 PCB



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The -X03 PCB can control a modulating central heating pump. Depending on the make and type of pump, the pump can be controlled by a 0–10 V, 4–20 mA or a PWM signal. The speed of the pump is modulated based on the signal received from the boiler.

Important
For correct connection of the pump, see the documentation supplied with the pump.

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