Floor-standing high efficiency gas boiler

CALORA TOWER GAS 15S EX
CALORA TOWER GAS 25S EX
CALORA TOWER GAS 35S EX

C003589-A

Installation and Service Manual

remeha

Declaration of conformity

The device complies with the standard type described in the EG declaration of conformity. It was manufactured and commissioned in accordance with European directives.

The original declaration of conformity is available from the manufacturer.

Contents

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1 Safety instructions and recommendations

1.1 General safety instructions

> ⚠️ **DANGER**
>
> This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.

> ⚠️ **DANGER**
>
> If you smell gas:
>
> 1. Do not use a naked flame, do not smoke, do not operate electrical contacts or switches (doorbell, light, motor, lift, etc..).
> 2. Shut off the gas supply.
> 3. Open the windows.
> 4. Trace possible leaks and seal them immediately.
> 5. If the gas leak is before the gas meter, contact the gas supplier.

> ⚠️ **DANGER**
>
> If you smell flue gases:
>
> 1. Switch the appliance off.
> 2. Open the windows.
> 3. Trace possible leaks and seal them immediately.

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1.2 Recommendations

> ⚠️ **WARNING**
>
> ▸ Installation and maintenance of the boiler must be carried out by a qualified professional in compliance with prevailing local and national regulations.
> ▸ When working on the boiler, always disconnect the boiler from the mains and close the main gas inlet valve.
> ▸ After maintenance or repair work, check all installations to ensure that there are no leaks.

> ⚠️ **CAUTION**
>
> The boiler must be installed in a frost-free environment.

> ℹ️ Keep this document close to the place where the boiler is installed.

Casing components

Only remove the casing for maintenance and repair operations. Put the casing back in place after maintenance and repair operations.

Instructions stickers

The instructions and warnings affixed to the appliance must never be removed or covered and must remain legible during the entire lifespan of the appliance. Immediately replace damaged or illegible instructions and warning stickers.

Modifications

Modifications may only be made to the boiler after the written permission of **Remeha** to do so.

1.3   Liabilities

1.3.1.   Manufacturer's liability

Our products are manufactured in compliance with the requirements of the various applicable European

Directives. They are therefore delivered with $C\epsilon$ marking and all relevant documentation.

In the interest of customers, we are continuously endeavouring to make improvements in product quality. All the specifications stated in this document are therefore subject to change without notice.

Our liability as the manufacturer may not be invoked in the following cases:

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

1.3.2.   Installer's liability

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

▸ Read and follow the instructions given in the manuals provided with the appliance.
▸ Carry out installation in compliance with the prevailing legislation and standards.
▸ Perform the initial start up and carry out any checks necessary.
▸ Explain the installation to the user.
▸ If a maintenance is necessary, warn the user of the obligation to check the appliance and maintain it in good working order.
▸ Give all the instruction manuals to the user.

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2 About this manual

2.1 Symbols used

2.1.1. Symbols used in the manual

In these instructions, various danger levels are employed to draw the user's attention to particular information. In so doing, we wish to safeguard the user's safety, highlight hazards and guarantee correct operation of the appliance.

⚠ **DANGER**

Risk of a dangerous situation causing serious physical injury.

⚠ **WARNING**

Risk of a dangerous situation causing slight physical injury.

⚠ **CAUTION**

Risk of material damage.

i Signals important information.

☞ Signals a referral to other instructions or other pages in the instructions.

2.1.2. Symbols used on the equipment

⏚ Protective earthing

~ Alternating current

📖 Before installing and commissioning the device, read carefully the instruction manuals provided.

🗑 Dispose of the used products in an appropriate recovery and recycling structure.

D000241-C

This appliance must be connected to the protective earth.

M002628-A

Caution: danger, live parts.
Disconnect the mains power prior to any operations.

2.2 Abbreviations

- ▶ **3CE**: Collective conduit for sealed boiler
- ▶ **DHW**: Domestic hot water
- ▶ **HRU**: Heat Recovery Unit
- ▶ **HL**: High Load - DHW tank with plate exchanger
- ▶ **SL**: Standard Load - DHW tank with coil
- ▶ **SHL**: Solar High Load - Solar DHW tank with plate exchanger

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3 Technical specifications

3.1 Homologations

3.1.1. Certifications

CE identification no	**CE-0085CM0178**
NOx classification	**5 (EN 15502-1, EN 15502-2-1)**
Type of connection (Flue gas outlet)	B_{23}, B_{23P}, B_{33}, C_{13}, C_{33}, C_{43}, C_{53}, C_{63}, C_{83}, C_{93}

3.1.2. Gas categories

Gas category	Gas type	Connection pressure (mbar)
II_{2H3P}	G20 (Gas H)	20
	G31 (Propane)	37/50

3.1.3. Additional Directives

Apart from the legal provisions and Directives, the additional Directives described in these instructions must also be observed.

For all provisions and Directives referred to in these instructions, it is agreed that all addenda or subsequent provisions will apply at the time of installation.

3.1.4. Factory test

Before leaving the factory, each boiler is set for optimum performance and tested to check the following items:

▸ Electrical safety
▸ Adjustment (CO_2)
▸ Domestic hot water mode
▸ Water tightness
▸ Gas tightness
▸ Parameter settings

3.2 Technical specifications

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Boiler type			CALORA TOWER GAS 15S EX	CALORA TOWER GAS 25S EX	CALORA TOWER GAS 35S EX
General					
Nominal output (Pn) Heating System (80/60 °C)	minimum-maximum	kW	3,0 - 14,9	5,0 - 24,8	6,3 - 34,8
Nominal output (Pn) Heating System (50/30 °C)	minimum-maximum	kW	3,4 - 15,8	5,6 - 25,5	7,0 - 35,9
Nominal output (Pn) Heating System (40/30 °C)	minimum-maximum	kW	3,4 - 16,0	5,6 - 25,9	7,0 - 36.4
Nominal input (Qn) Heating System (Hi)	minimum-maximum	kW	3,1 - 15,0	5,2 - 25,0	6,5 - 35,1
Nominal input (Qn) Heating System (Hs)	minimum-maximum	kW	3,4 - 16,7	5,8 - 27,8	7,2 - 39,0
Nominal input (Qnw) DHW System (Hi)	minimum-maximum	kW	3,1 - 15,0	5,2 - 29,3	6,5 - 35,1
Nominal input (Qnw) DHW System (Hs)	minimum-maximum	kW	3,4 - 16,7	5,8 - 32,6	7,2 - 39,0
Heating efficiency under full load (Hi) (80/60 °C)	-	%	99,3	99,2	99,1
Heating efficiency under full load (Hi) (50/30 °C)	-	%	105,3	102,0	102,2
Heating efficiency under partial load (Hi) (Return temperature 60°C)	-	%	94,9	96,1	96,3
Heating efficiency under partial load (EN 92/42) (Return temperature 30°C)	-	%	110,2	110,1	110,6
Data on the gases and combustion gases					
Gas consumption - Natural gas H (G20)	minimum-maximum	m^3/h	0,33 - 1,59	0,55 - 3,10	0,69 - 3,71
Gas consumption - Natural gas L (G25)	minimum-maximum	m^3/h	0,38 - 1,85	0,64 - 3,61	0,80 - 4,32
Gas consumption - Propane G31	minimum-maximum	m^3/h	0,13 - 0,61	0,21 - 1,20	0,27 - 1,44
Mass flue gas flow rate	minimum-maximum	kg/h	5,3 - 25,2	8,9 - 49,3	11,1 - 57,3
Flue gas temperature	minimum-maximum	°C	30 - 65	30 - 80	30 - 75
Maximum counter pressure		Pa	80	130	140
Characteristics of the heating circuit					
Water content (ex expansion vessel)		l	1,9	1,9	2,5
Water operating pressure	minimum	kPa (bar (MPa))	80 (0,8)	80 (0,8)	80 (0,8)
Water operating pressure (PMS)	maximum	kPa (bar (MPa))	300 (3,0)	300 (3,0)	300 (3,0)
Water temperature	maximum	°C	110	110	110
Operating temperature	maximum	°C	90	90	90
Electrical characteristics					
Power supply voltage		VAC	230	230	230
Power consumption - Full load	maximum	W	101	116	132
Electrical protection index			IP21	IP21	IP21
Other characteristics					
Weight (empty)		kg	56	59	59

4 Technical description

4.1 General description

Gas fired floor-standing condensing boiler

▸ High efficiency heating.

▸ Low pollutant emissions.

▸ Optional domestic hot water production in combination with a DHW tank.

ⓘ The boiler is fitted with an interior light. The interior light comes on in the following cases:

▸ The boiler is switched on: The lighting is switched on for 10 minutes.

▸ The boiler is switched off: The lighting is switched on for 30 minutes.

4.2 Main parts
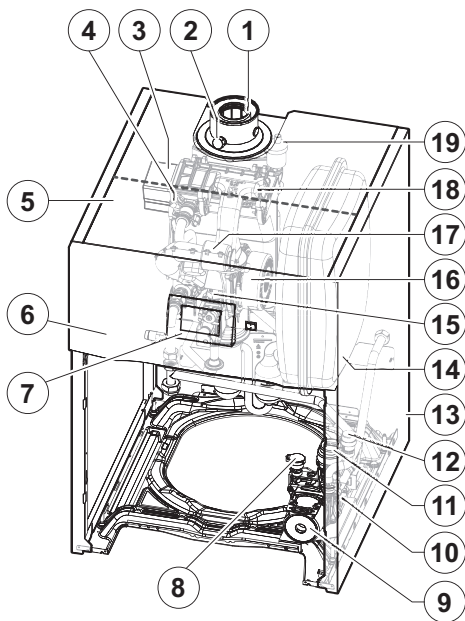
C003072-C

1	Flue gas discharge pipe
2	Flue gas measuring point
3	Heat exchanger
4	Ignition/ionization electrode
5	Box for the control PCBs
6	Control panel
7	Command module
8	Water pressure sensor
9	Circulation pump
10	Hydroblock
11	3-way valve
12	Safety valve
13	Casing
14	Expansion vessel
15	Combined venturi and gas valve unit
16	Fan
17	Air intake silencer
18	Mixer pipe
19	Automatic air vent

4.3 Operating principle

4.3.1. Skeleton Diagrams

■ **Boiler self-standing**

C003073-C
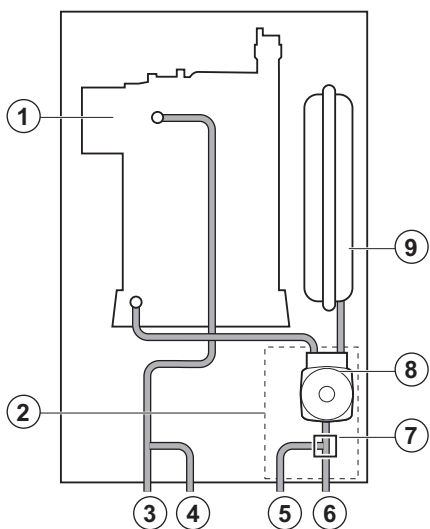
1	Heat exchanger
2	Hydroblock
3	Heating flow
4	Primary DHW tank flow
5	Primary DHW tank return
6	Heating return
7	3-way valve
8	Circulation pump
9	Expansion vessel

■ **Boiler with 100HL / 220SHL type domestic hot water tank**

M002513-F
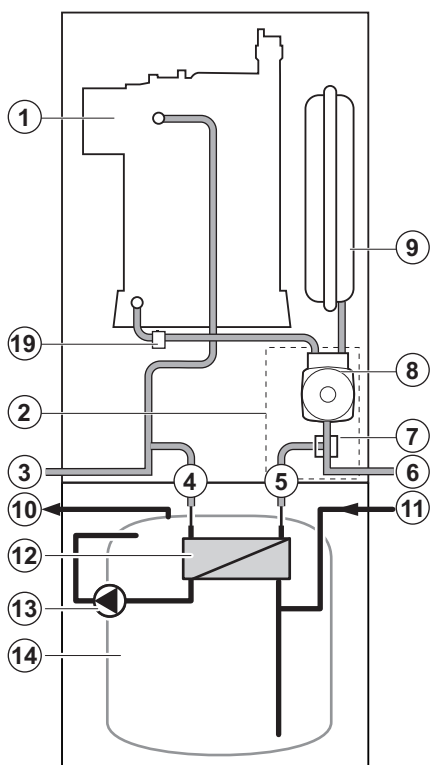
1	Heat exchanger
2	Hydroblock
3	Heating flow
4	Plate exchanger inlet
5	Plate exchanger outlet
6	Heating return
7	3-way valve
8	Circulation pump
9	Expansion vessel
10	Domestic hot water outlet
11	Domestic cold water inlet
12	Plate heat exchanger
13	Domestic hot water pump
14	Domestic hot water tank
19	Safety valve

■ **Boiler with 100SL / 160SL / 200SSL type domestic hot water tank**
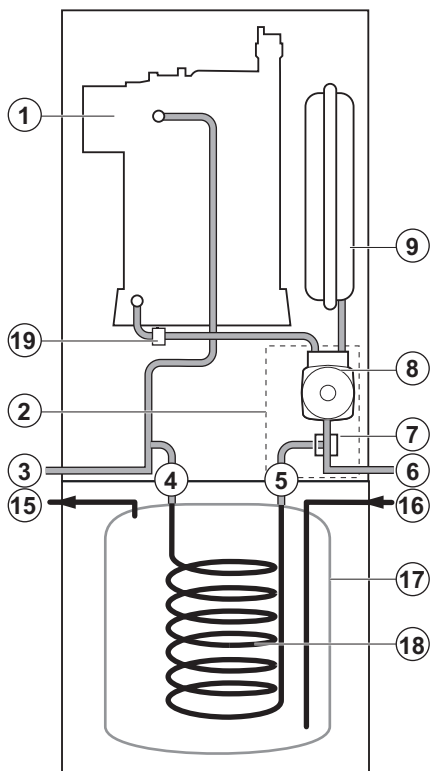
M002514-D

1	Heat exchanger
2	Hydroblock
3	Heating flow
4	Coil exchanger inlet
5	Coil exchanger outlet
6	Heating return
7	3-way valve
8	Circulation pump
9	Expansion vessel
15	Domestic hot water outlet
16	Domestic cold water inlet
17	Domestic hot water tank
18	Domestic water coil
19	Safety valve

4.3.2. Circulation pump

■ **Pump specifications**

15 - 25 kW boilers
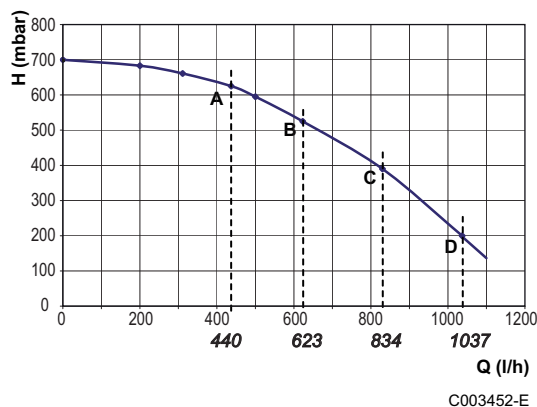
C003452-E

H	Manometric height available for the heating circuit
Q	Water flow
	Useful output (ΔT 20 K)
A	10 kW
B	15 kW
C	20 kW
D	25 kW

35 kW boilers

H (mbar)
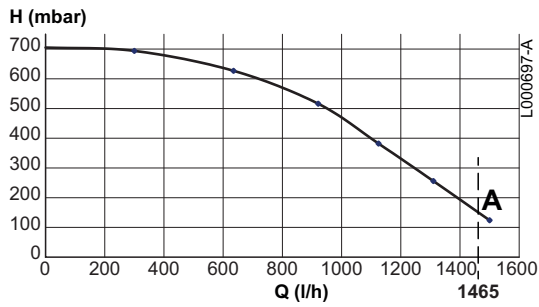
H	Manometric height available for the heating circuit
Q	Water flow
A	Useful output 35 kW (ΔT 20 K)

Q (l/h)

1465

4.3.3.   Water flow rate

The boiler's modulating control system limits the maximum difference
in temperature between the heating flow and return and the maximum
speed at which the flow temperature increases. In this way, the boiler
does not require a minimum water flow rate.

5 Installation

5.1 Regulations governing installation

> ⚠️ **WARNING**
>
> Installation of the appliance must be done by a qualified engineer in accordance with prevailing local and national regulations.

5.2 Package list

5.2.1. Standard delivery

The delivery includes:

▸ The boiler, fitted with an earthed mains plug
▸ Attachment for C-mix optional PCB
▸ Sticker with details on gas type
▸ Installation and Service Manual
▸ User Guide

5.2.2. Accessories

Various options are available depending on the configuration of the installation.

▸ Boiler - DHW tank connection kits
▸ Central connection kit - right / left
▸ Mixing valve kit for integration DHW tank
▸ Connection kit for external mixing valve
▸ Fitting for circulating pipe
▸ Flue kit
▸ Flue gas adapters for concentric 80/125 mm or eccentric 80/80 mm connection
▸ iSense programmable control system for modulating boiler control (Cable on RF)
▸ C-mix control PCB
▸ Outside sensor
▸ Flue gas temperature sensor
▸ Electronic boards for extension
▸ DHW expansion vessel
▸ Propane conversion kit

▸ Cleaning tools

5.3   Choice of the location

5.3.1.   Type plate

C003074-E

The data plates provide important information on the appliance: serial number, model, gas category, etc.

❶   This data plate is affixed to the inside side panel of the appliance in the factory.

❷   When installation has been completed, affix the data plate provided in the instructions bag to the casing of the appliance in a position where it can be seen.
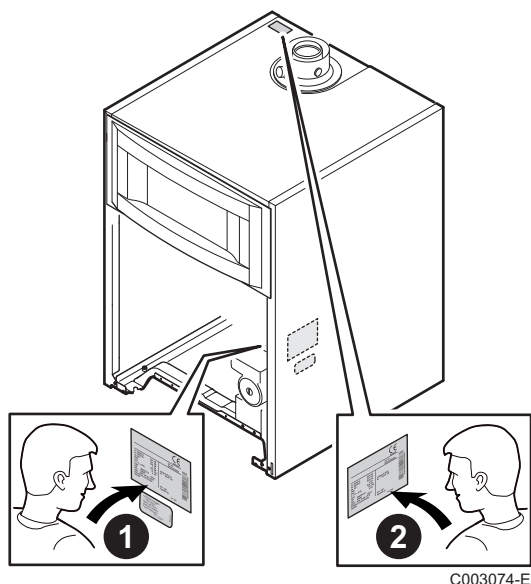
5.3.2. Positioning of the appliance

C003080-F

(1) Minimum recommended distance

▸ Before mounting the boiler, decide on the ideal position for mounting, bearing the Directives and the dimensions of the appliance in mind.
▸ When choosing the position for mounting the boiler, bear in mind the authorised position of the combustion gas discharge outlets and the air intake opening.
▸ To ensure adequate accessibility to the appliance and facilitate maintenance, leave enough space around the boiler.

> ⚠️ **WARNING**
>
> It is forbidden to store inflammable products and materials in the boiler room or close to the boiler, even temporarily.

> ⚠️ **CAUTION**
>
> ▸ The boiler must be installed in a frost-free environment.
> ▸ An earthed electrical connection must be available close to the boiler.
> ▸ A connection to the mains drainage system for the discharge of condensate must be available close to the boiler.
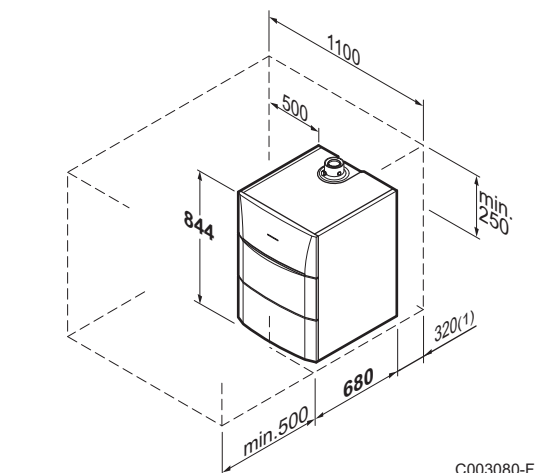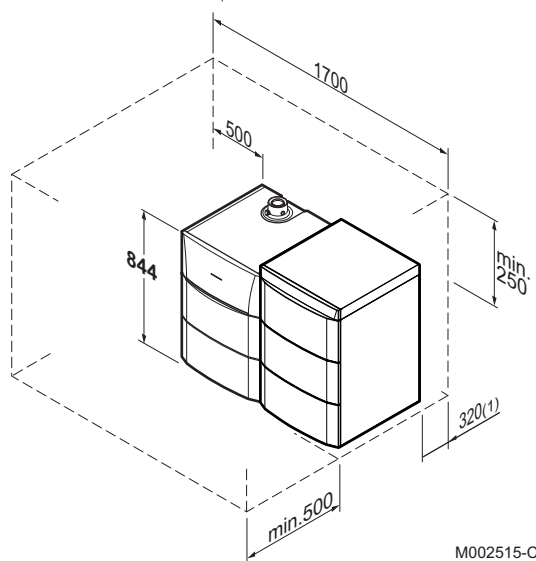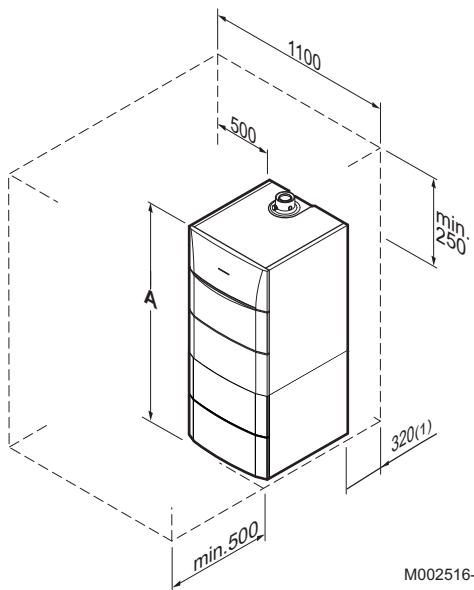
M002515-C

(1) Minimum recommended distance

DHW calorifier type	A
100 HL	1408
160 SL	1688
220 SHL	1968

M002516-C

5.3.3. Ventilation
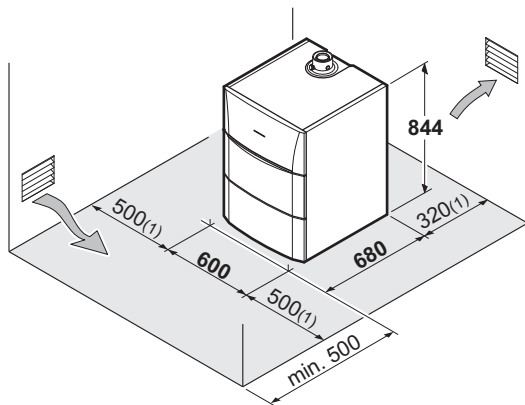
C003075-E

(1) Minimum recommended distance

■ Connection to a chimney

Do not obstruct the air inlets in the room (even partially).

The compulsory cross section of aeration vents in the premises in which the boiler is installed must comply with the standards current in the country.

> ⚠️ **CAUTION**
>
> In order to avoid damage to the boiler, it is necessary to prevent the contamination of combustion air by chlorine and/or fluoride compounds, which are particularly corrosive. These compounds are present, for example, in aerosol sprays, paints, solvents, cleaning products, washing products, detergents, glues, snow clearing salts, etc. Therefore:
>
> ‣ Do not pull in air evacuated from premises using such products: hairdressing salons, dry cleaners, industrial premises (solvents), premises containing refrigeration systems (risk of refrigerant leakage), etc.
> ‣ Do not stock such products close to the boilers.
>
> **If the boiler and/or peripheral equipment are corroded by such chloride or fluoride compounds, the contractual guarantee cannot be applied**.

■ Forced flue connection

If the discharge of combustion gases and the intake of combustive air are done using a concentric flue, ventilation of the boiler room is only necessary if a mechanical connector is fitted to the gas supply (as per the description in the DTU 61.1 standard).

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5.3.4. Main dimensions

■ Key

①	Direct heating circuit return	G¾"
②	Direct heating circuit flow	G¾"
③	Gas supply	G1/2"
④	Condensates discharge - PVC pipe	Ø 24x19 mm
⑤	Primary return independent DHW tank - (Option)	G¾"
⑥	Primary flow independent DHW tank - (Option)	G¾"
⑦	Heating flow circuit with mixing valve - (Option)	G¾"
⑧	Heating return circuit with mixing valve - (Option)	G¾"
⑩	Domestic cold water inlet	G¾"
⑪	Domestic hot water outlet	G¾"
⑫	DHW circulation loop return - Pipe	G¾"
⑬	DHW drain valve (on the front of the DHW tank)	ext. Ø 14 mm
⑭	Primary solar coil inlet	ext. Ø 18 mm
⑮	Primary solar coil outlet	ext. Ø 18 mm
⑯	Air/flue gas connection	Ø 80/125 mm
(1)	Adjustable feet	0 to 20 mm

■ Boiler only

C003076-C
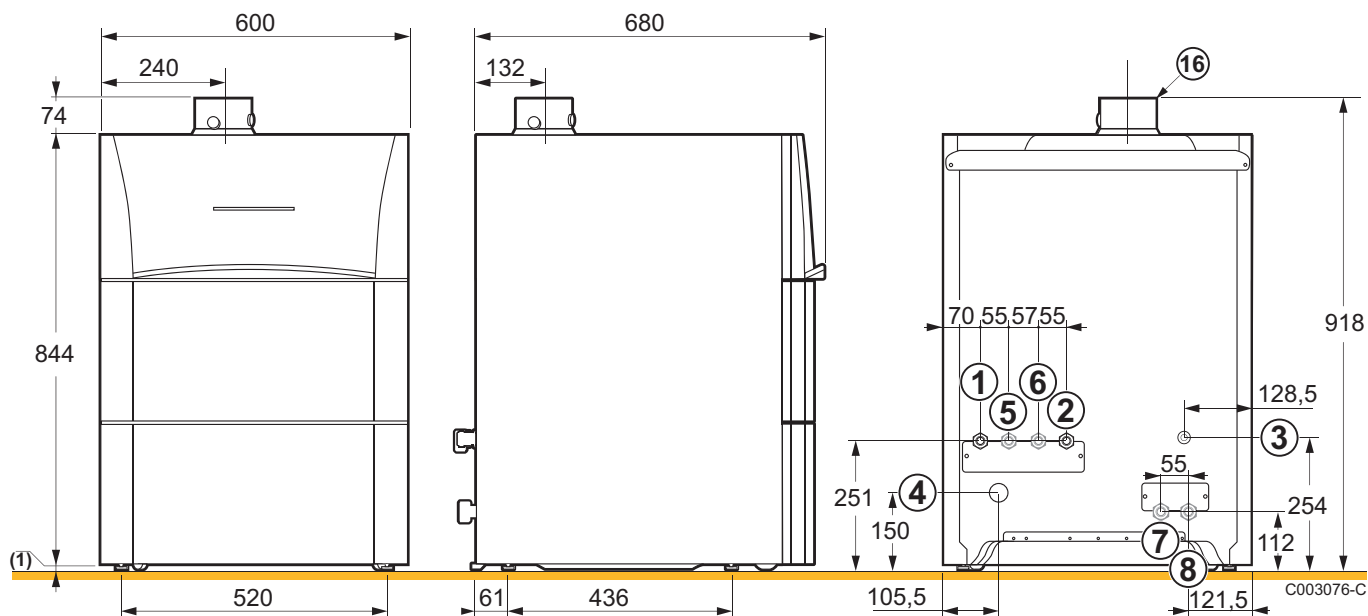
■ **Boiler with 100HL type domestic hot water tank**

M002517-B
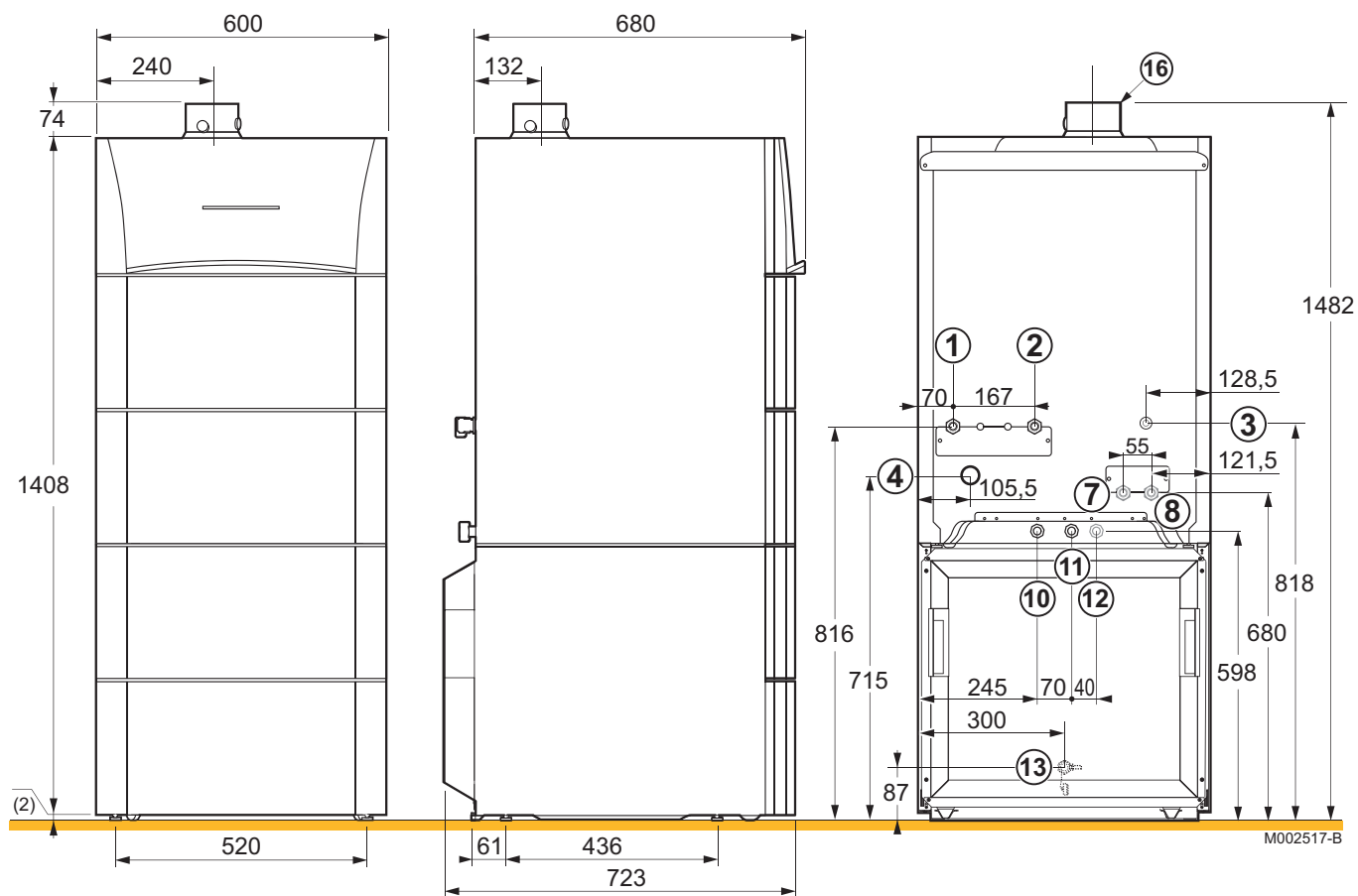
■ **Boiler with 160SL type domestic hot water tank**

M002518-B

M002519-D
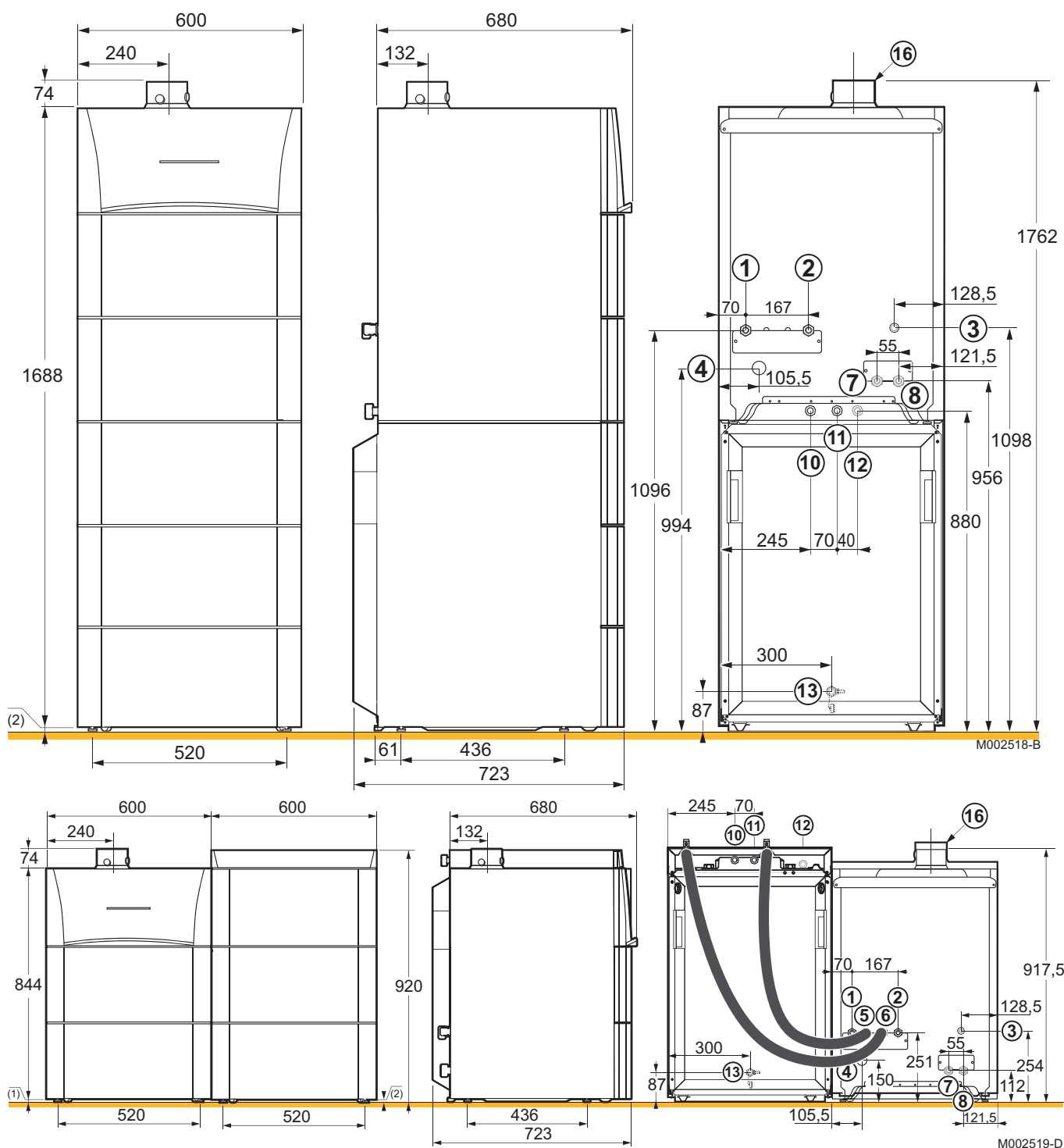
■ Boiler with 220SHL type domestic hot water tank

M002520-B

M002521-C
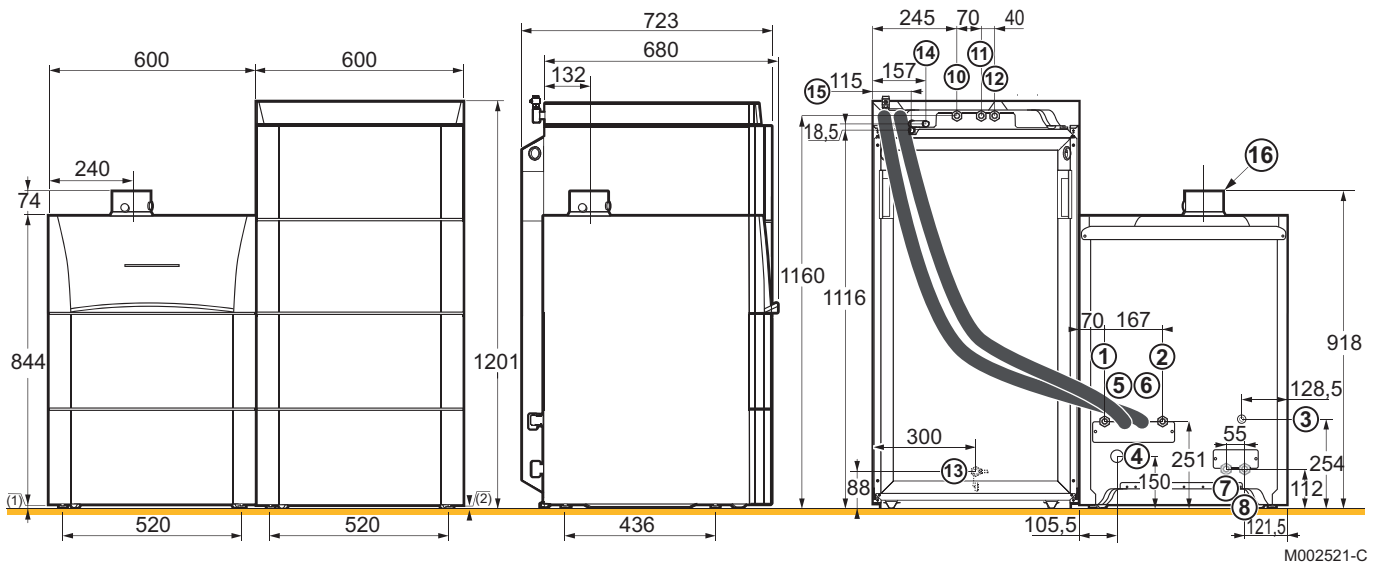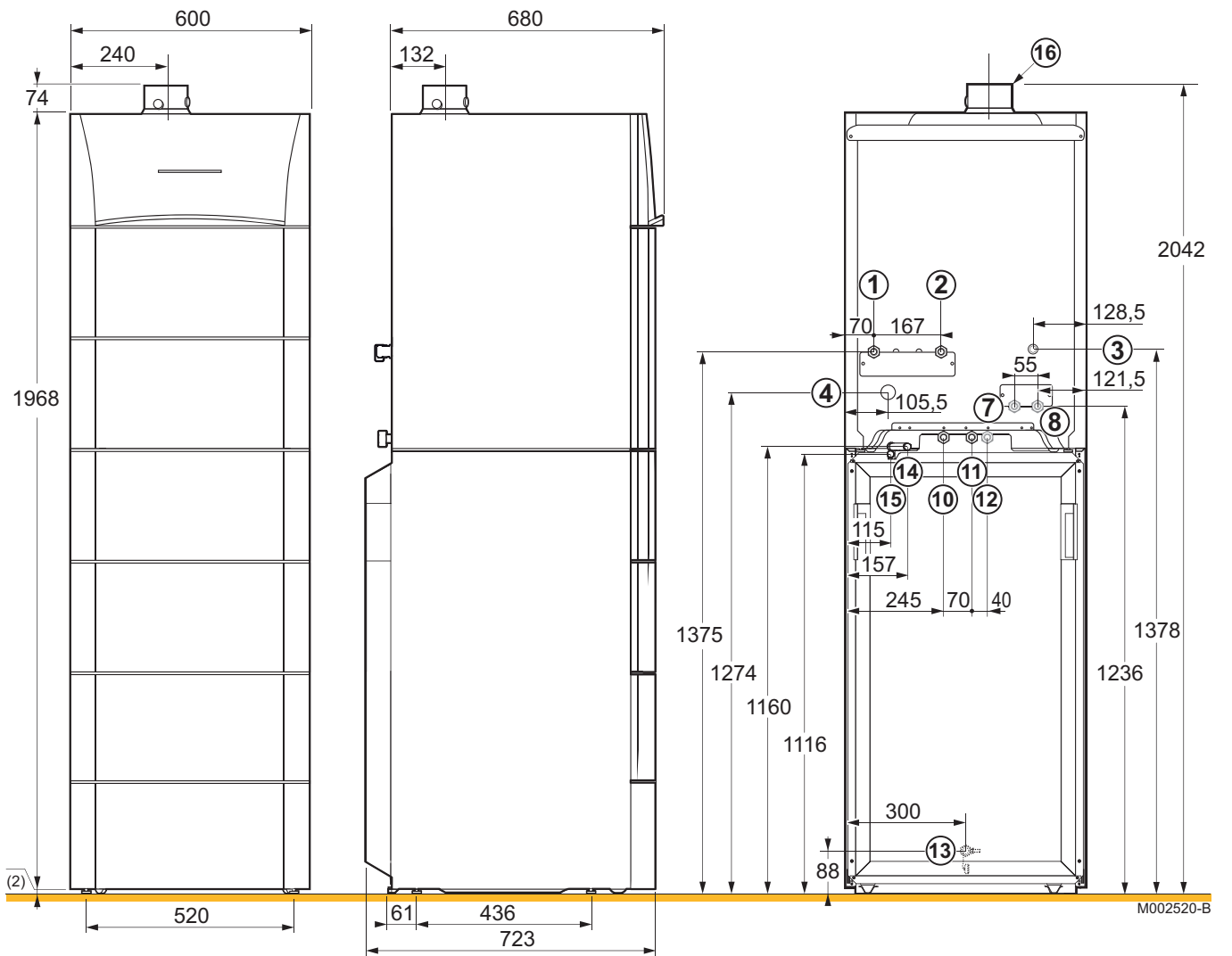
5.4 Positioning the appliance

> ⚠ **CAUTION**
>
> ‣ Have 2 people available.
> ‣ Handle the appliance with gloves.

5.4.1. Positioning the boiler on its own

C003109-B

1. Remove the packaging from the boiler but leave the shipping pallet in place.
2. Remove the protective packaging.

> ⓘ The technical documentation is housed in the protective block.
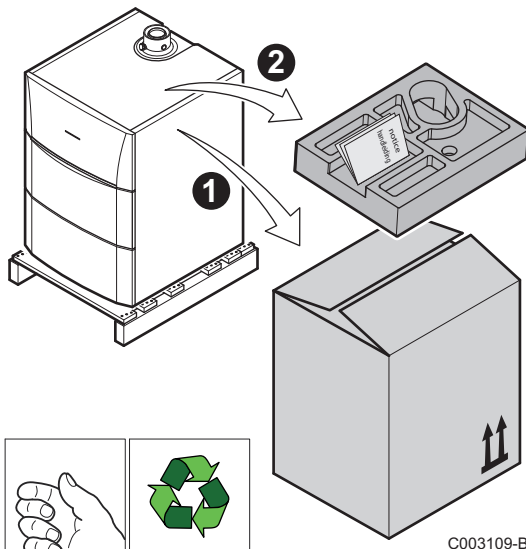
C003110-C

3. Open the access door on the control panel.
4. Remove the front panel by pulling firmly from both sides.
5. Remove the front panel.
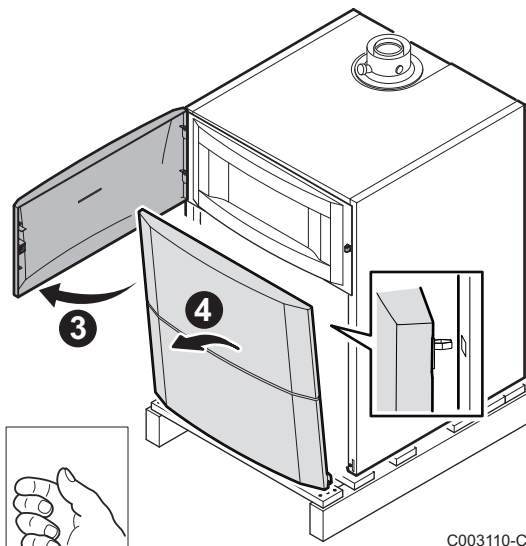
6. Remove the retaining screws.

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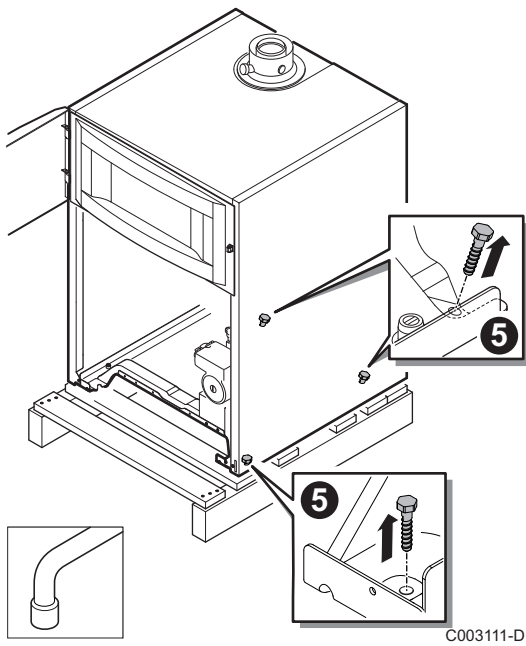
7. Lift the boiler and position it on the ground

C003217-C

C003078-C
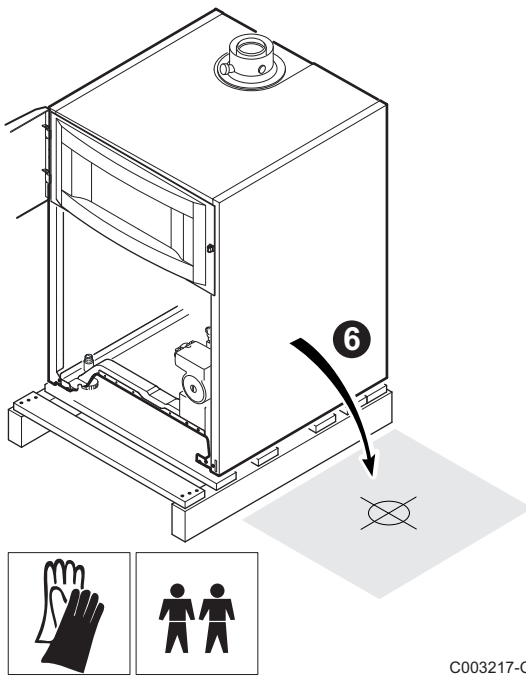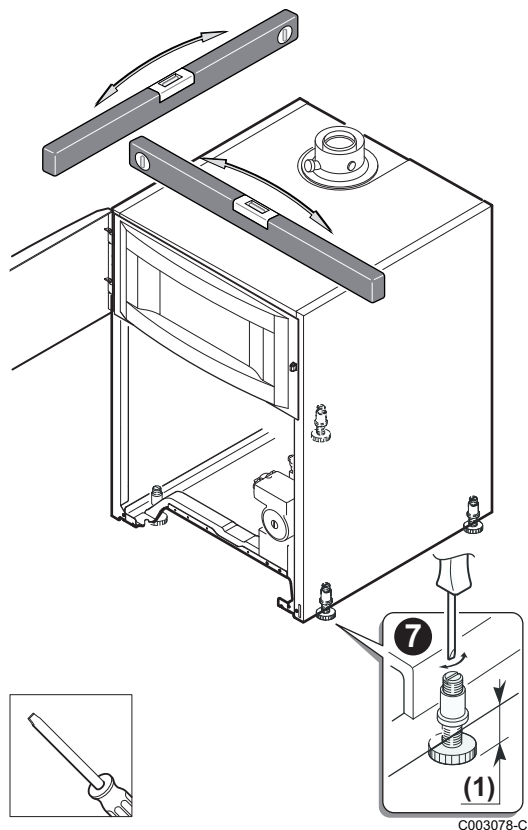
8. Level the appliance using the adjustable feet.
   (1) Adjustment range: 0 to 20 mm
9. Slot the bottom of the front panel into the notches on the front of the appliance.
10. Lift the panel and push the clips down firmly into the notches on top of the appliance.

5.4.2. Fitting the boiler to a DHW tank

1. Put the DHW tank in place.
   ☞ Refer to the DHW tank's installation, use and maintenance instructions.
2. Carry out steps 1 to 6 described above.
   ☞ See chapter "Positioning the boiler on its own", page 25
3.
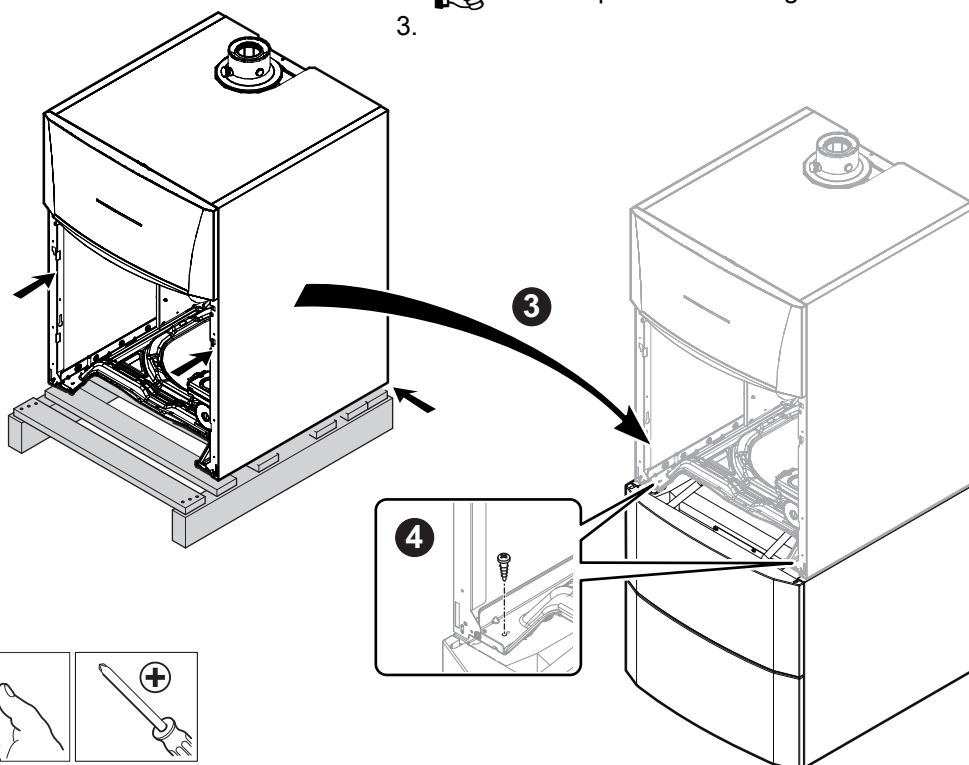
M002522-B

Position the boiler on the DHW tank.

4. Put the 2 screws in place at the front to attach the boiler to the DHW tank.

5.4.3. Positioning the boiler to the left or right of a DHW tank

1. Put the DHW tank in place.
   ☞Refer to the DHW tank's installation, use and maintenance instructions.
2. Position the boiler beside the DHW tank.
   ☞See chapter "Positioning the boiler on its own", page 25

5.5 Hydraulic connections

5.5.1. Flushing the system

■ **Fitting the appliance to new installations**

▸ Clean the installation with a universal cleaner to eliminate debris from the system (copper, hemp, flux).
▸ Thoroughly flush the installation until the water runs clear and shows no impurities.

■ **Fitting the appliance to existing installations**

▸ Remove sludge from the installation.
▸ Flush the installation.
▸ Clean the installation with a universal cleaner to eliminate debris from the system (copper, hemp, flux).
▸ Thoroughly flush the installation until the water runs clear and shows no impurities.

5.5.2. Hydraulic connection of the heating circuit
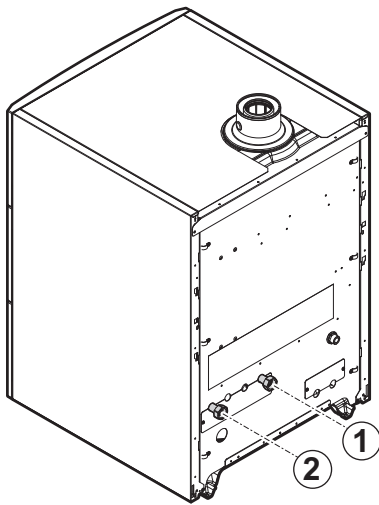
M002524-A

1. Connect the heating water outlet pipe to the heating flow connection.
2. Connect the heating water return pipe to the heating return connection.
3. Install a filling and drainage valve on the installation for filling and draining the boiler.

ℹ ▸ The boiler is equipped with a safety valve.

⚠ **CAUTION**

▸ The heating pipe must be mounted in accordance with prevailing provisions.

☞ If using thermostatic valves, see chapter: "Connecting the expansion vessel", page 29

5.5.3. Connection of the water circuit for domestic use

☞ If need be, refer to the DHW tank's installation, user and maintenance manual.

5.5.4. Connecting the expansion vessel

The boiler is fitted as standard with an 12-litre expansion vessel.

If the water volume is greater than 225 litres or the static height of the system exceeds 5 metres, an additional expansion vessel must be fitted. Refer to the table below to determine the expansion vessel required for the installation.

Conditions of validity of the table:

▸ 3-bar safety valve

▸ Average water temperature: 70 °C
Flow temperature: 80 °C
Return temperature: 60 °C

▸ The filling pressure in the system is lower than or equal to the initial pressure in the expansion vessel

Initial pressure of the expansion vessel	Volume of the expansion vessel depending on the volume of the installation (in litres)							
	100	125	150	175	200	250	300	> 300
0.5 bar	4,8	6,0	7,2	8,4	9,6	12,0	14,4	Volume of the installation x 0,048
1 bar	8,0	10,0	12,0[(1)]	14,0	16,0	20,0	24,0	Volume of the installation x 0,080
1.5 bar	13,3	16,6	20,0	23,3	26,6	33,3	39,9	Volume of the installationx 0,133
(1) Factory configuration								

i On an installation in which the flow can be fully
disconnected from the return (e.g. by using thermostatic
valves), a bypass should be fitted or the expansion vessel
placed on the heating flow pipe.

5.5.5.   Connecting the condensate discharge pipe

M002535-A

1. Mount a standard drainage pipe, Ø 32 mm or more, leading to the
mains drainage system.
2. Into this, insert the condensate collector hose coming from the
siphon (siphon symbol).
3. Mount a trap or a siphon in the discharge pipe.
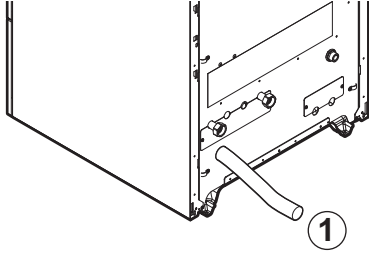
⚠ **CAUTION**

Do not make a permanent rigid connection owing to
maintenance work on the condensate trap.

i
  ▸ Do not plug the condensate discharge pipe.
  ▸ Set the discharge pipe at a gradient of at least 30 mm
    per metre, maximum horizontal length 5 metres.
  ▸ Do not drain condensation water into a roof gutter at
    any time.
  ▸ Connect the condensate discharge pipe in
    accordance with prevailing standards.

5.5.6. Filling the condensate trap
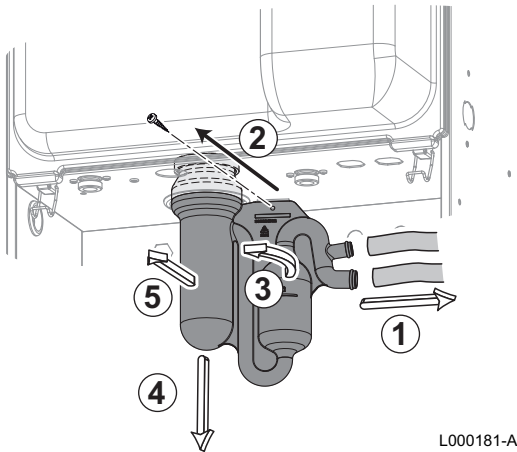
1. Remove the siphon.
2. Fill the siphon with clean water up to the mark.
3. Re-assemble the siphon.

> ⚠ **CAUTION**
>
> Fill the condensate trap with water before starting the boiler to avoid combustion products escaping from the boiler.

L000181-A
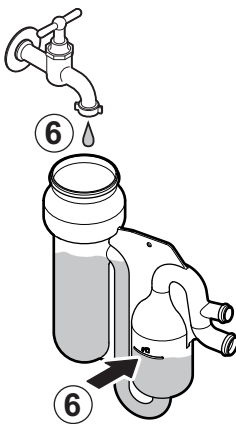
C003098-E

5.6 Gas connection

> ⚠ **DANGER**
>
> Before making the gas connections, ensure that the boiler is immobilised in accordance with prevailing standards.

1. Connect the gas inlet pipe.
2. Fit a gas stop valve to this pipe in such a way that it is visible and easily accessible.
3. Connect the gas pipe to the gas shut off valve.

> ⚠ **WARNING**
>
> ▸ Close the main gas valve before starting work on the gas pipes.
> ▸ Before mounting, check that the gas meter has sufficient capacity. To do this, you should keep in mind the consumption of all domestic appliances.
> ▸ If the gas meter has a too low capacity, inform the energy supply company.
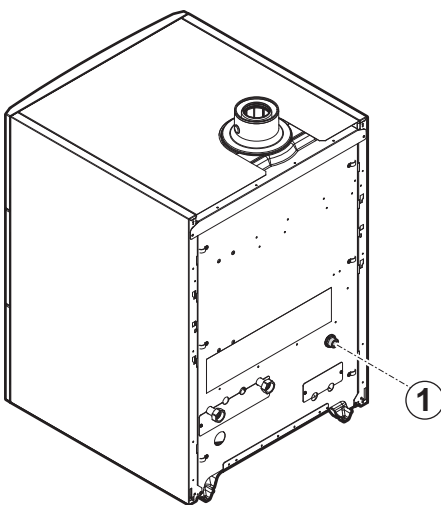
M002525-A

> ⚠ **CAUTION**
>
> ▸ Ensure that there is no dust in the gas pipe. Blow into the pipe or shake it before mounting.
> ▸ We recommend installing a gas filter on the gas pipe to prevent clogging of the gas valve unit.
> ▸ Connect the gas pipe in accordance with prevailing standards and regulations.

5.7 Flue gas system connections

> ⚠ **DANGER**
>
> Ensure that the flue gas pipes are held firmly in place in order to prevent any dislocation.

5.7.1. Classification

C003087-C
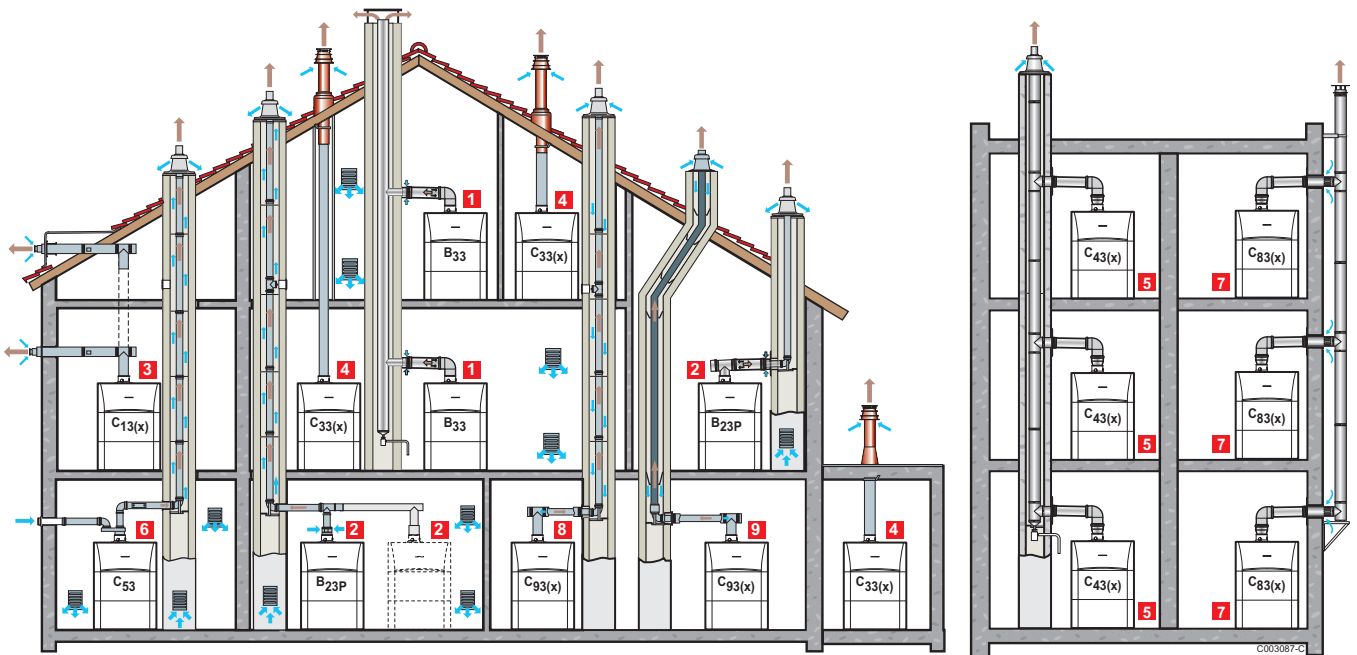
1 **Configuration B_{33}**

Connection to a collective pipe via a concentric pipe (combustive air taken from the boiler room)
All of the pressurised parts of the appliance are surrounded by air.

2 **Configuration B_{23} - B_{23P}**

Connection to a chimney using a connection kit (combustive air taken from the boiler room)

3 **Configuration $C_{13(x)}$**

Air/flue gas connection by means of concentric pipes to a horizontal terminal (so-called forced flue)

4 **Configuration $C_{33(x)}$**

Air/flue gas connection by means of concentric pipes to a vertical terminal (roof outlet)

remeha

5	**Configuration C$_{43(x)}$**
	Air/flue gas connection to a collective conduit for watertight boilers (3CE P system)

6	**Configuration C$_{53}$**
	Air and flue gas connection separated by means of a bi-flow adapter and single pipes (combustive air taken from outside)

7	**Configuration C$_{83(x)}$**
	Flue gas connection to a collective conduit for sealed boilers. The air supply is individual via a terminal coming from outside the building.

8	**Configuration C$_{93(x)}$**
	Air/flue gas connection by concentric pipes in the boiler room and single pipes in the chimney (combustive air in counter current in the chimney)

9	**Configuration C$_{93(x)}$**
	Air/flue gas connection by concentric pipes in the boiler room and single flex in the chimney (combustive air in counter current in the chimney)

> ⚠ **WARNING**
>
> ▸ Only factory components are authorised for connecting the boiler and the terminal.
> ▸ The clear section must comply with the standard.
> ▸ The chimney must be swept before the installation of the evacuation conduit.

5.7.2. Lengths of the air/flue gas pipes

ℹ For configurations B$_{23}$ and C$_{93}$, the lengths given in the table are valid for horizontal conduits with a maximum length of 1 metre. For each additional metre of horizontal conduit, subtract 1.2 m from the vertical length Lmax

Type of air/flue gas connection			Diameter	Maximum length in metres		
				CALORA TOWER GAS 15S EX	**CALORA TOWER GAS 25S EX**	**CALORA TOWER GAS 35S EX**
C$_{13}$	Concentric pipes connected to a horizontal terminal	Alu or PPS	60/100 mm	12,0	3,5	3,5
			80/125 mm	12,3	20,0	17,6
C$_{33}$	Concentric pipes connected to a vertical terminal	Alu or PPS	60/100 mm	13,0	4,9	5,5
			80/125 mm	10,7	20,0	19,0
(1) See table for minimum sizes of duct or sleeving						

Type of air/flue gas connection		Diameter	Maximum length in metres		
			CALORA TOWER GAS 15S EX	CALORA TOWER GAS 25S EX	CALORA TOWER GAS 35S EX
C_{93} [1]	Concentric pipes in the boiler room Single conduits in the chimney (combustive air in counter-current)	Alu or PPS	60/100 mm 60 mm (Rigid duct)	15,0	8,1	2,8
	Concentric pipes in the boiler room Flexible single conduit in the chimney	PPS	60/100 mm 80 mm (Flexible duct)	9,9	20,0	18,0
C_{53}	Bi-flow adapter and separate single air/flue gas ducts (combustive air taken from outside)	Alu	60/100 mm 2 x 80 mm	40,0	40,0	32,0
B_{23}	Chimney (rigid or flexible duct in chimney, combustive air taken from the premises)	PPS	80 mm (Rigid duct)	40,0	40,0	40,0
			80 mm (Flexible duct)	40,.0	40,0	28,0
C_{43}	Collective conduit for sealed boiler (3 CE or 3 CEP)	To determine the size of such a system, consult the supplier of the 3 CEP conduit.			
(1) See table for minimum sizes of duct or sleeving					

Type	Models		Minimum size of the duct or jacket			
C_{93}		diameter	$\varnothing$ Channel (Without air-supply)	$\varnothing$ Channel (With air-supply)	□ Channel (Without air-supply)	□ Channel (With air-supply)
	Rigid	60 mm	110 mm	120 mm	110 x 110 mm	110 x 110 mm
		80 mm	130 mm	140 mm	130 x 130 mm	130 x 130 mm
		100 mm	160 mm	170 mm	160 x 160 mm	160 x 160 mm
	Flexible	60 mm	110 mm	120 mm	110 x 110 mm	110 x 110 mm
		80 mm	130 mm	145 mm	130 x 130 mm	130 x 130 mm
		100 mm	160 mm	170 mm	160 x 160 mm	160 x 160 mm
	Concentric	60/100 mm	120 mm	120 mm	120 x 120 mm	120 x 120 mm
		80/125 mm	145 mm	145 mm	145 x 145 mm	145 x 145 mm
		100/150 mm	170 mm	170 mm	170 x 170 mm	170 x 170 mm

Pipe reductions per element used		
Diameter	Elbow 45°	Elbow 90°
	Pipe reduction	Pipe reduction
60 mm	0,9 m	3,1 m
70 mm	1,1 m	3,5 m
80 mm	1,2 m	4,0 m
90 mm	1,3 m	4,5 m
100 mm	1,4 m	4,9 m

⚠ **WARNING**

Maximum length = lengths of the straight air/flue gas ducts + equivalent lengths of other components

ℹ For the list of flue gas system accessories and the equivalent lengths, refer to the current price list.

5.8   Electrical connections

5.8.1.   Control unit

The boiler is fully pre-wired. The electricity supply is made via connection cable to the mains (connection by 6 A, 230 V AC plug). All other external connections can be made to the connection connectors (low voltage). The main characteristics of the control unit are described in the table below.

Power supply voltage	230 V AC / 50 Hz
Rating of the main fuse F1 (230 VAC)	6.3 AT
Fan-DC	27 VDC
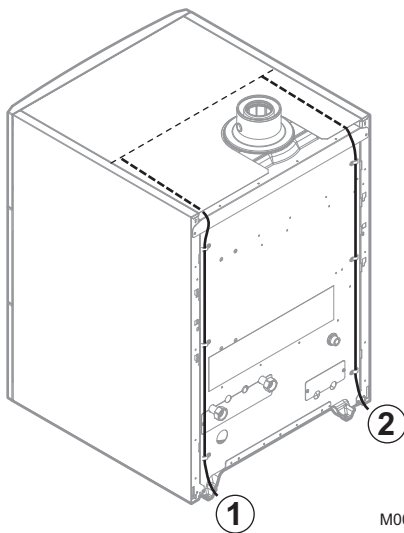
①   Routing of the 230 V cables

②   Routing of the sensor cables

> ⚠ **CAUTION**
>
> The following components of the appliance are at a voltage of 230 V:
> ‣ Boiler pump
> ‣ Combined venturi and gas valve unit
> ‣ 3-way valve
> ‣ The majority of components in the control panel and the terminal box
> ‣ Power supply cable.

M002532-A

5.8.2.   Recommendations

> ⚠ **WARNING**
>
> ‣ Only qualified professionals may carry out electrical connections, always with the power off.
> ‣ Disconnect the appliance from the mains before any work on it.
> ‣ The boiler is entirely pre-wired. Do not modify the connections inside the control panel.
> ‣ Earth the appliance before making any electrical connections.

> ⚠ **WARNING**
>
> If the power cable is damaged, it must be replaced by the manufacturer, its after sales service or persons with similar qualifications in order to obviate any danger.

Make the electrical connections of the appliance according to:

‣ The instructions of the prevailing standards.

▸ The instructions on the circuit diagrams provided with the appliance.

▸ The manufacturer's instructions.

⚠️ **CAUTION**

Separate the sensor cables from the 230 V cables.

▸ Outside the boiler: Use 2 pipes or cable guides at least 20 cm apart.

All connections are made with the terminal boxes designed for that purpose on the back of the boiler's command board. The connection cables are threaded into the boiler through the space provided between the top panel and the upper rear panel. These cables will be fixed on to the control panel with cable clips (supplied in a separate bag).

Power the appliance via a circuit which includes a remote omnipolar switch with a gap of more than 3 mm.

The available output per outlet is 450 W (2 A, with cos φ = 0.7) and the inrush current must be lower than 16 A. If the load exceeds either of these values, the control must be relayed using a contactor that must not be installed in the control panel under any circumstances.

⚠️ **CAUTION**

Failure to comply with these instructions could lead to interference and control unit malfunctioning or even damage to the electronic circuitry.

5.8.3. Access to the connection terminal

1. Open and remove the control panel door.

C003099-D

remeha
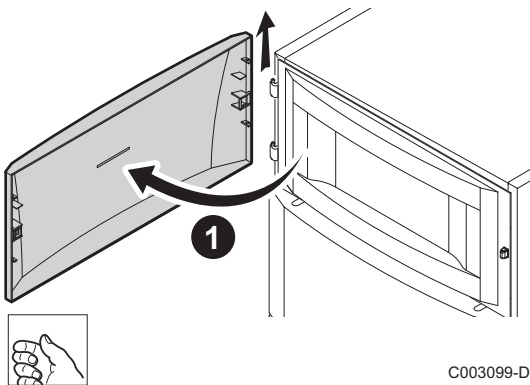
2. Remove the front panel by pulling firmly from both sides.

C003101-C
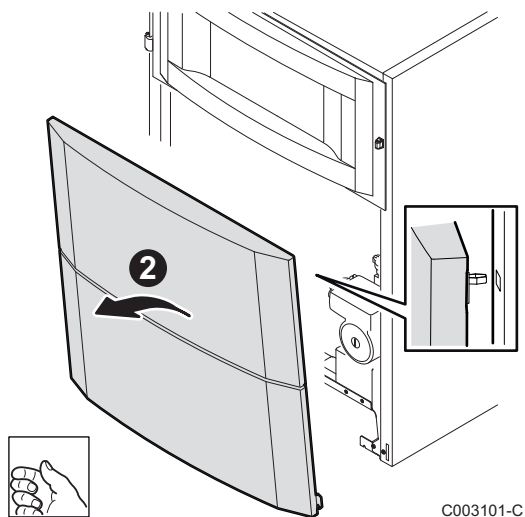
3. Lift the control system module support.
4. Pivot the control system module support.

C003102-C
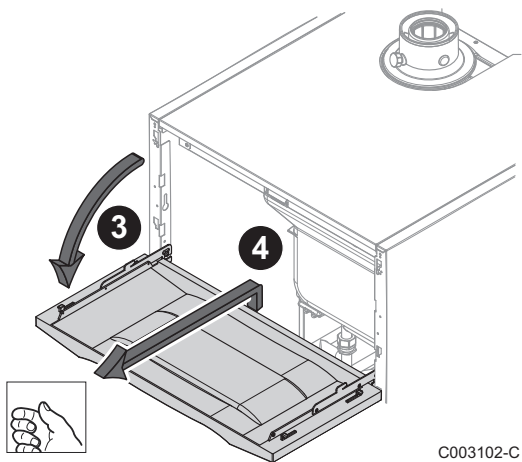
5. Remove the 2 retaining screws.
6. Remove the top panel.

C003103-C
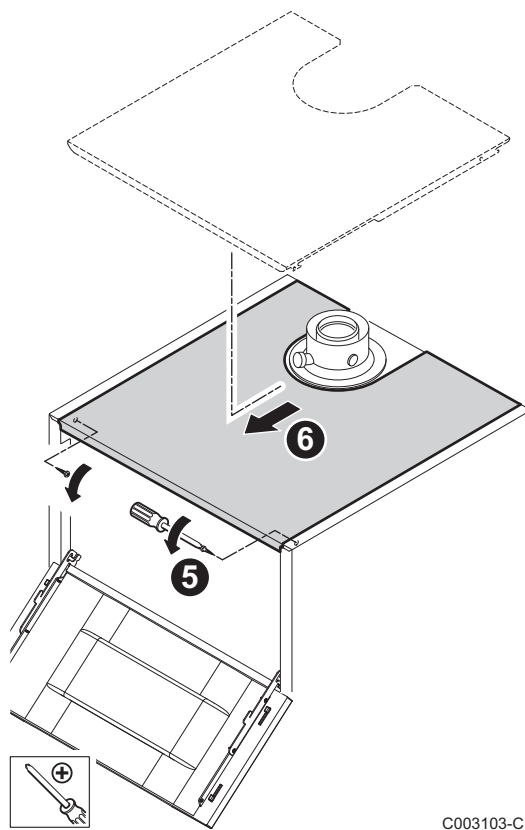
7. Remove the 2 retaining screws.
8. Disassemble the protective cover from the flat bars.

M002533-C
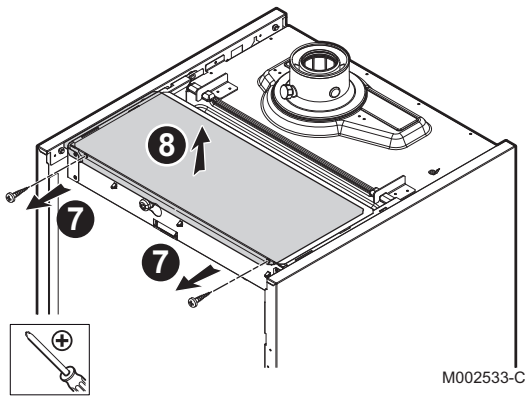
5.8.4.   Position of the PCBs

C003766-B
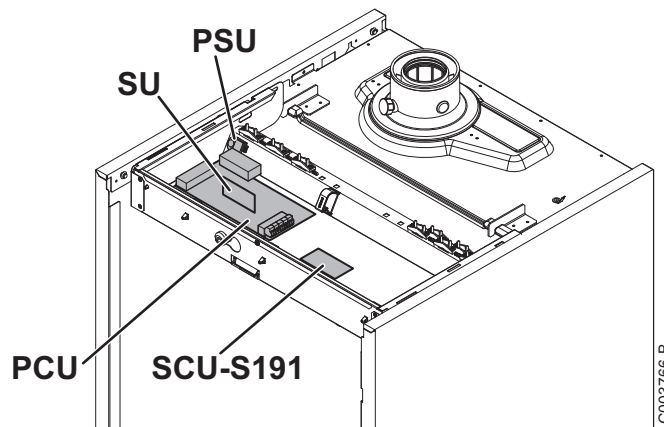
5.8.5.   Heating circuit with boiler alone
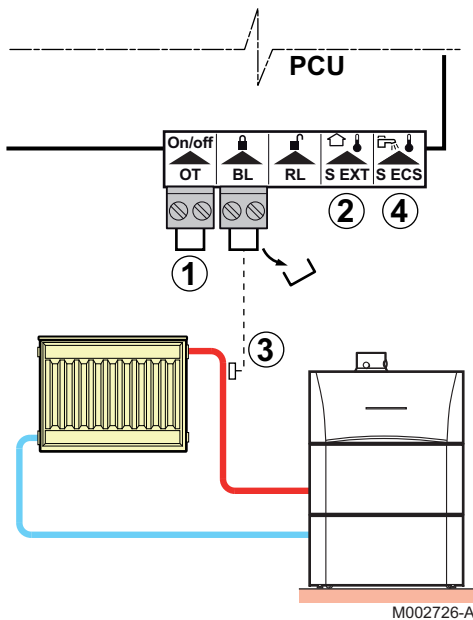
①   Connect a ON/OFF thermostat or OpenTherm controller to the terminals of the connector (Option).

     ‣ Remove the bridge.
     ‣ Connect the wires from the ON/OFF thermostat to the connector

②   Connect the outside temperature sensor (Option)

③   Connect a safety thermostat if the heating circuit is for underfloor heating.

     ‣ Remove the bridge.
     ‣ Connect the wires from the safety thermostat to the connector.

④   Do not connect anything to the terminal block

M002726-A

Settings to be made for this type of installation			
Parameters	Description	Settings to be made	See chapter
$P.36$	Shutdown input function	1	☞ "Parameter descriptions", page 68

5.8.6. Connecting a direct heating circuit and a domestic hot water tank

■ **Connecting a direct heating circuit and a type 100SL / 160SL / 200SSL DHW tank**
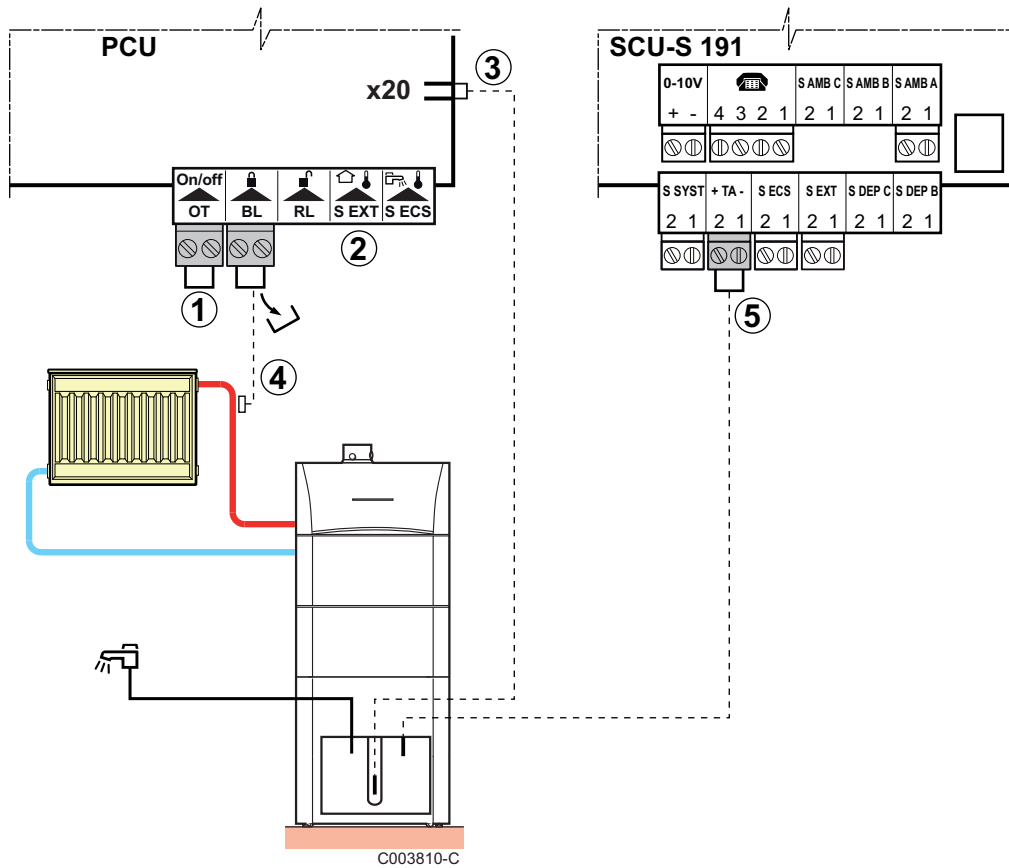
C003810-C

① Connect a ON/OFF thermostat or OpenTherm controller to the terminals of the connector (Option).

‣ Remove the bridge.
‣ Connect the wires from the ON/OFF thermostat to the connector

② Connect the outside temperature sensor (Option).

③ Connect the DHW sensor to the X20 connector

④ Connect a safety thermostat if the heating circuit is for underfloor heating.

‣ Remove the bridge.
‣ Connect the wires from the safety thermostat to the connector.

⑤ Connect the DHW tank anode.

■ **Connecting a direct heating circuit and a type 100HL /
220 SHL DHW tank**
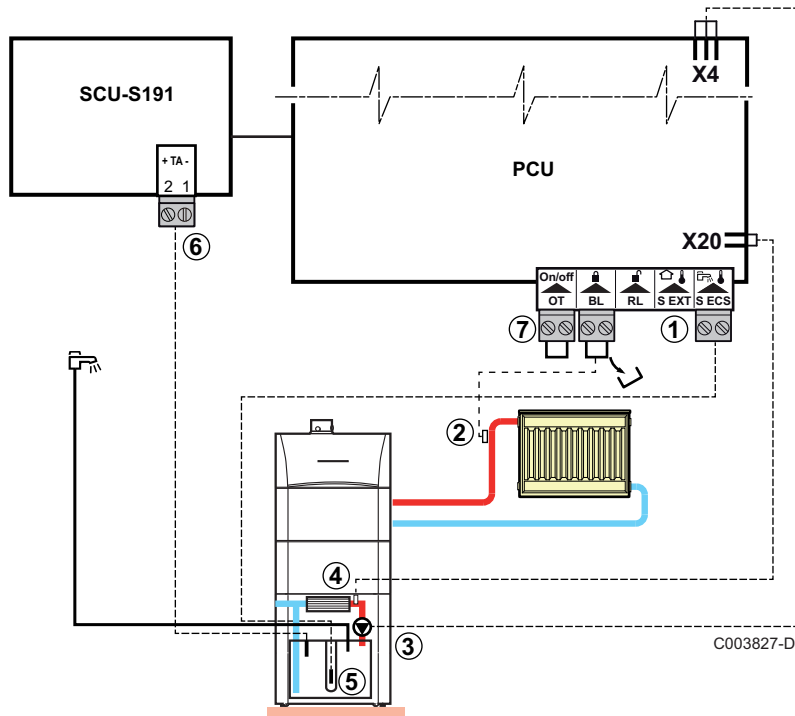
C003827-D

①   Connect the outside temperature sensor (Option).

②   Connect a safety thermostat if the heating circuit is for
     underfloor heating.

     ▸   Remove the bridge.
     ▸   Connect the wires from the safety thermostat to the
         connector.

③   Connect the DHW pump.

④   Connect the plate exchanger sensor.

⑤   Connect the DHW sensor.

⑥   Connect the DHW tank anode.

⑦   Connect a ON/OFF thermostat or OpenTherm controller
     to the terminals of the connector (Option).

     ▸   Remove the bridge.
     ▸   Connect the wires from the ON/OFF thermostat to
         the connector

■ **Connecting a direct heating circuit and an independent domestic hot water tank**
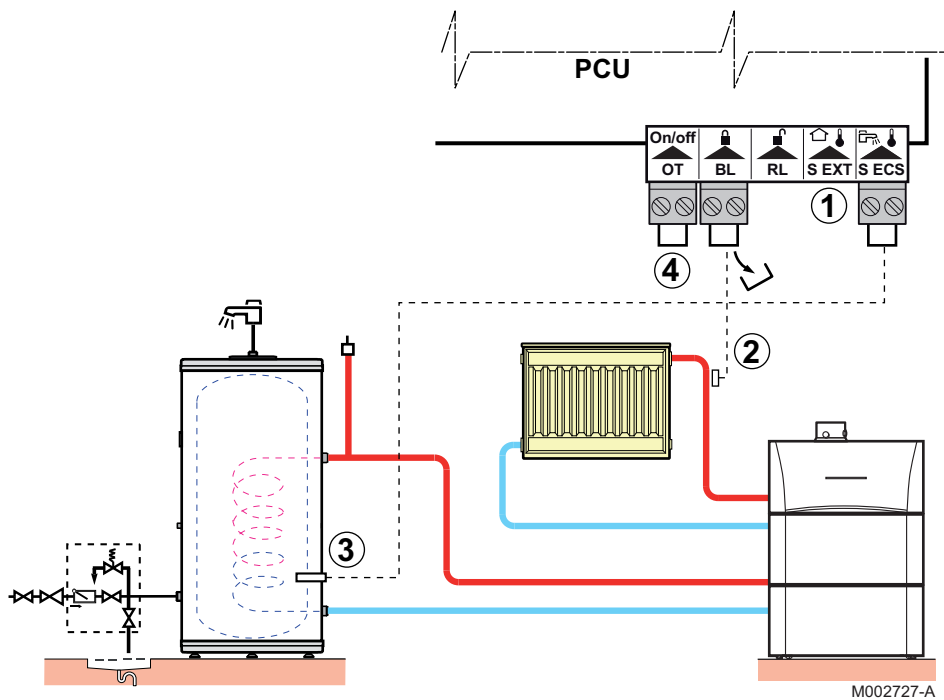
M002727-A

①   Connect the outside temperature sensor (Option).

②   Connect a safety thermostat if the heating circuit is for underfloor heating.

     ▸   Remove the bridge.

     ▸   Connect the wires from the safety thermostat to the connector.

③   Connect the DHW sensor.

④   Connect a ON/OFF thermostat or OpenTherm controller to the terminals of the connector (Option).

     ▸   Remove the bridge.

     ▸   Connect the wires from the ON/OFF thermostat to the connector

5.9   Optional electrical connections

5.9.1.   Position of the optional PCBs
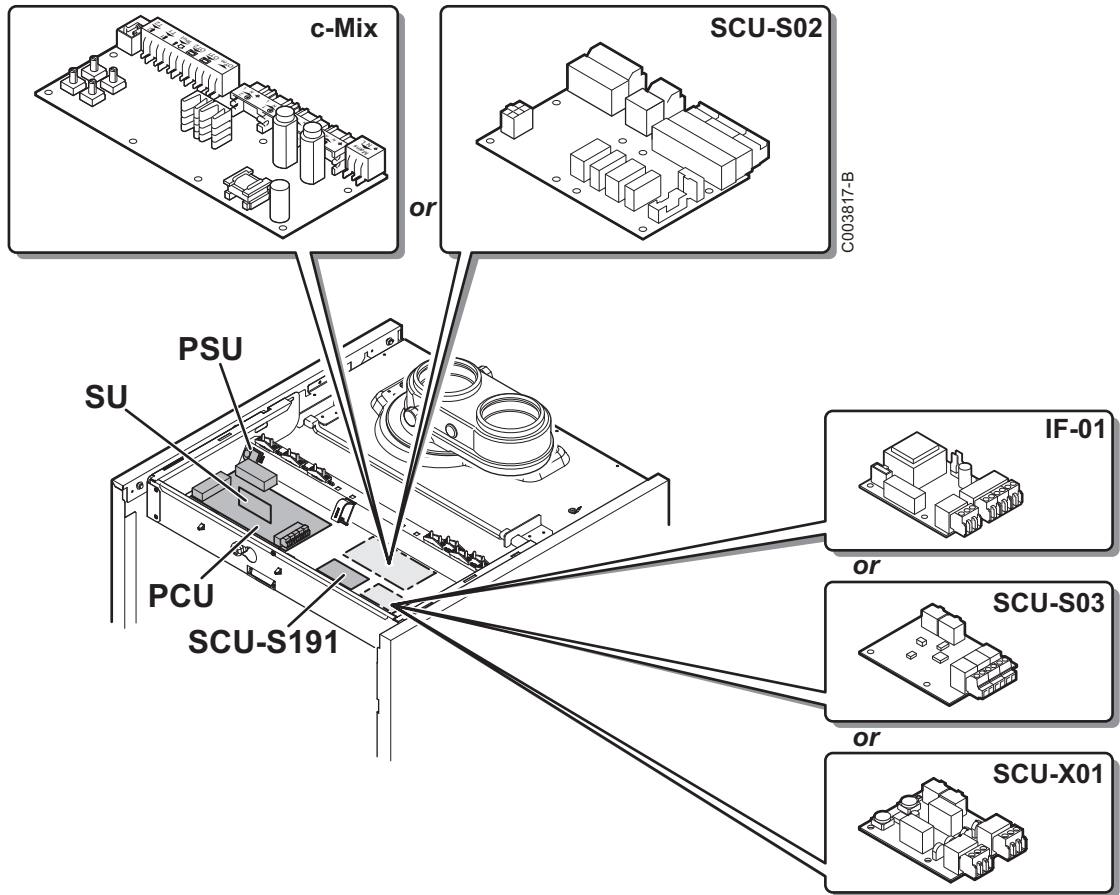
5.9.2. Position of the connections on the PCU board

C003825-D
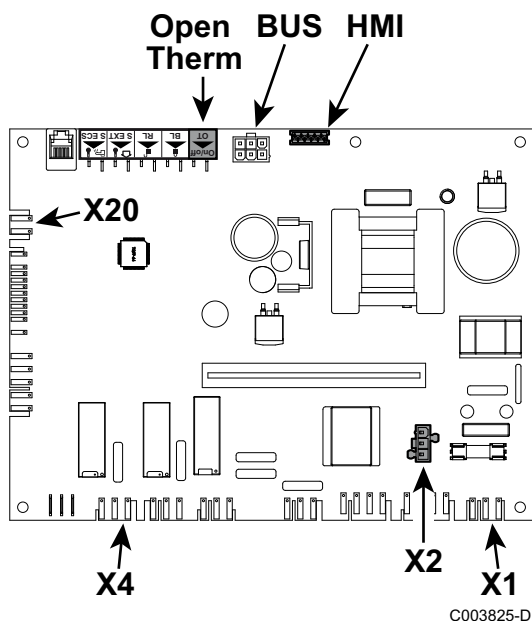
X1	Input 230 V
X2	Output 230 V
X4	DHW pump
X20	Domestic hot water sensor

5.9.3. c-Mix PCB

■ Installing the PCB

C003818-C
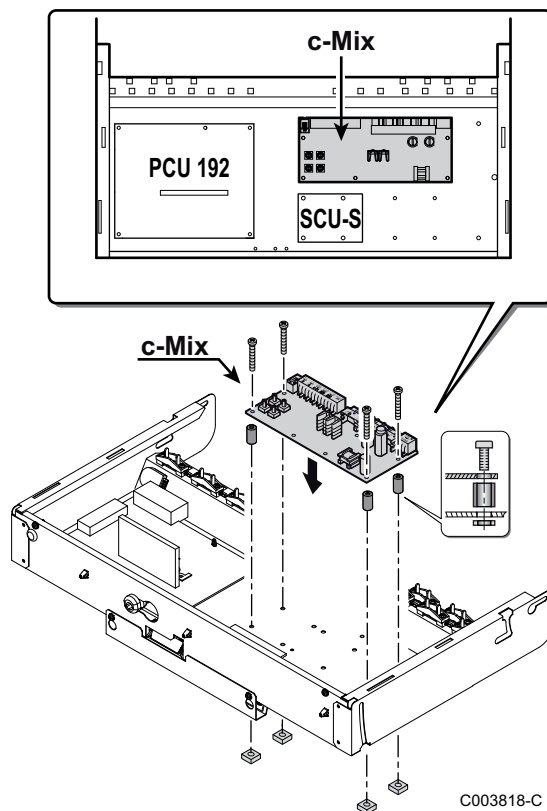
■ **Connecting the board**

Connect the OT and 230 V connectors on the C-mix board to the
PCU board in the boiler.

5.9.4.   0-10 V (IF-01) PCB

■ **Installing the PCB**
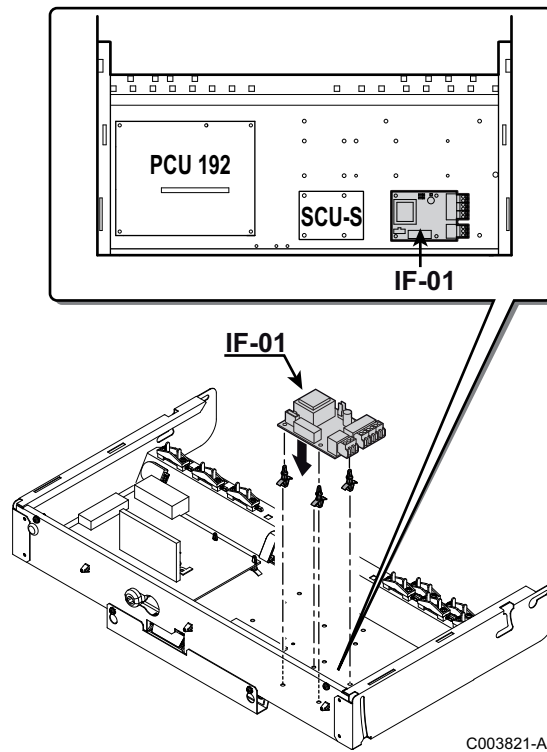
C003821-A

■ **Connecting the board**

Connect the OT and 230 V connectors on the 0-10 V (IF-01) board to
the PCU board in the boiler.
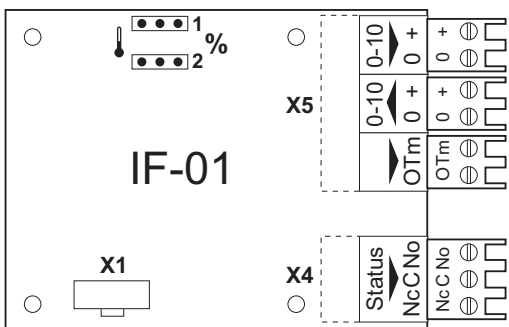
> ⚠ **CAUTION**
>
> Do not connect the antifreeze or room thermostat to the
> boiler if using the 0-10 V (IF-01) board.

T000784-A

■ **Connection status (STATUS)**

When the boiler is locked out, the alarm signal may be transmitted via a potential-free contact (maximum 230 V, 1A) on the **Nc** and **C** terminals on the connector.

■ **Connection (OTm)**

The interface communicates with the boiler regulator via the **OpenTherm** BUS. The **OTm** connection must be connected to the **OpenTherm** input **OT** of the boiler control.

■ **Analogue input (0-10 V)**

This control can be based on temperature or heat output. The two controls are described briefly below. For analogue control, the 0-10 V signal must be connected to the interface.

◼ **Analogue temperature-based control (🌡)**

T000785-A

The 0-10 V signal controls the boiler flow temperature between 0°C and 100°C. This control modulates on the basis of flow temperature, whereby the heat output varies between the minimum and maximum values 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 control (🌡) or heat output control (**%**).
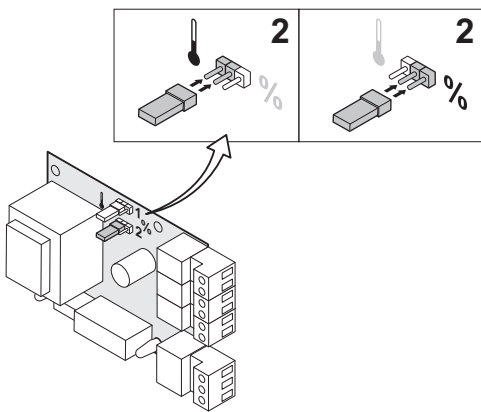
Jumper 2	Input signal (V)	Temperature ºC	Description
🌡	0 - 1,5	0 - 15	Boiler off
	1,5 - 1,8	15 - 18	Hysteresis
	1,8 - 10	18 - 100	Temperature required

◼ **Analogue heat output-based control (%)**

The 0-10V signal controls the boiler output between 0% and 100%. The minimum and maximum values are limited. The minimum output is linked to the boiler's modulation depth. where the heat output modulates between the minimum and maximum value based on the flow temperature set in the boiler.

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	Heat output requested
(1) Dependent on the minimum modulation depth (set speeds, standard 20%)			

■ Analogue output (0-10 V)
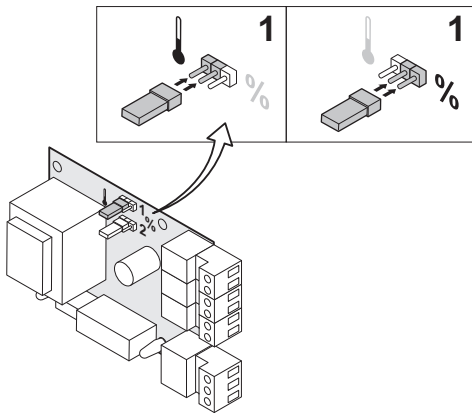
T000800-A

This outlet can be configured either for the temperature or the output. The two controls are described briefly below.

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

Jumper 1	Output signal (V)	Temperature ℃	Description
🌡	0,5	-	Alarm
	1 - 10	10 - 100	Delivered temperature

Jumper 1	Output signal (V)	Heat output (%)	Description
%	0	0 - 15	Boiler off
	0,5	15 - 20	Alarm
	2,0 - 10[1]	20 - 100	Heat output supplied

(1) Dependent on the minimum modulation depth (set speeds, standard 20%)

5.9.5. Connection possibilities for the PCB (SCU-S02)

■ Installing the PCB
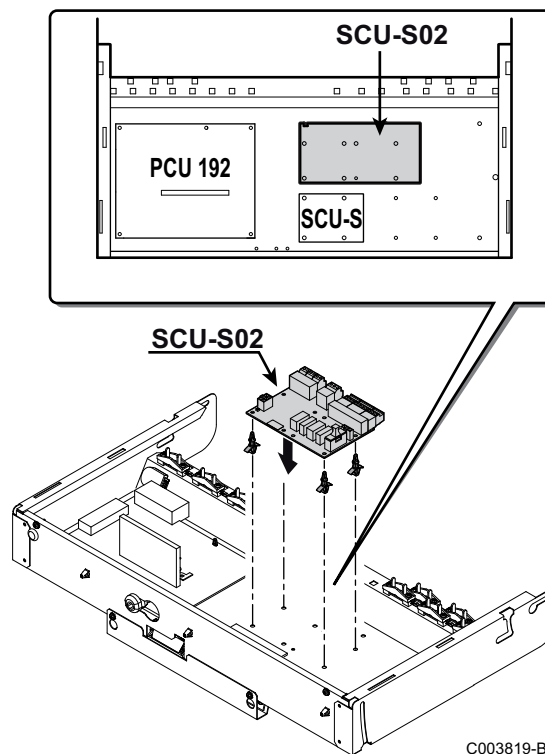
C003819-B

■ Connecting the board

Connect the BUS connector on the SCU-S02 board to the PCU board in the boiler.

T001255-B
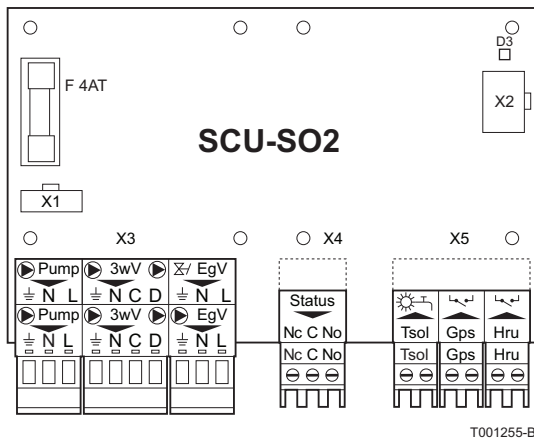
If the boiler is fitted with the control PCB (SCU-S02), then this is automatically recognised by the automatic control unit of the boiler.

> ⚠ **CAUTION**
>
> On removing this PCB, the boiler will show fault code $\boxed{E}\!:\!\boxed{3}\boxed{8}$. To prevent this fault, an auto-detect must be carried out after removing this PCB.
>
> ☞ See chapter: "Carrying out an auto-detect", page 75.

The status indicator D3 at the top right of the control PCB indicates the status:

▸ Continuous signal: PCB working normally
▸ Flashing signal: No connection
▸ No signal: No voltage or faulty PCB (Check the wiring)

■ Control of external central heating pump (Pump)

An external central heating pump can be connected to the **Pump** terminals of the connector. The maximum input power is 400 VA.

■ Control of external three-way valve (3wV)

The external three-way valve (230 VAC) can be used when connecting an indirectly heated calorifier. The neutral position of the three-way valve can be set using parameter $\boxed{P}\boxed{3}\boxed{4}$.

The three-way valve is connected as follows:

▸ N = neutral
▸ C = central heating
▸ D = tank

■ Control of external sanitary hot water pump (3wV)

It is also possible to connect an external DHW pump to the terminals **3wV**. Connect the pump as follows:

▸ N = N pump
▸ D = L pump
▸ ⏚ = PE pump

> ⚠ **CAUTION**
>
> If the neutral position of the 3-way valve is adjusted with parameter $\boxed{P}\boxed{3}\boxed{4}$, the pump should be connected as follows:
> ▸ N = N pump
> ▸ C = L pump
> ▸ ⏚ = PE pump

■ **Control of external gas valve (EgV)**

If there is a heat demand, an alternating voltage of 230 VAC, 1 A (maximum) becomes available on the **EgV** terminals of the connector to control an external gas valve.

■ **Operation signal and failure signal (Status)**

The alarm or operation signal is selected using parameter $\boxed{P}\boxed{4}\boxed{0}$.

▸ If the boiler is operating, the operation signal can be switched via a potential-free contact (maximum 230 VAC, 1 A) on the **No** and **C** terminals of the connector.
▸ If the boiler locks out, the alarm can be transmitted via a potential-free contact (maximum 230 VAC, 1 A) on the **Nc** and **C** terminals of the connector.

■ **Pressure switch minimum Gps**

The minimum gas pressure switch shuts the boiler down if the inlet gas pressure becomes too low. Connect the minimum gas pressure switch to the **Gps** terminals of the connector. The presence of the gas pressure switch must be set using parameter $\boxed{P}\boxed{4}\boxed{1}$.

■ **Heat Recovery Unit (Hru)**

Connect the wires from the heat recovery unit to the **Hru** terminals of the connector. The presence of the heat recovery unit must be set using parameter $\boxed{P}\boxed{4}\boxed{2}$.

5.9.6.   Connection possibilities for the PCB (SCU-S03)

■ **Installing the PCB**

C003820-A
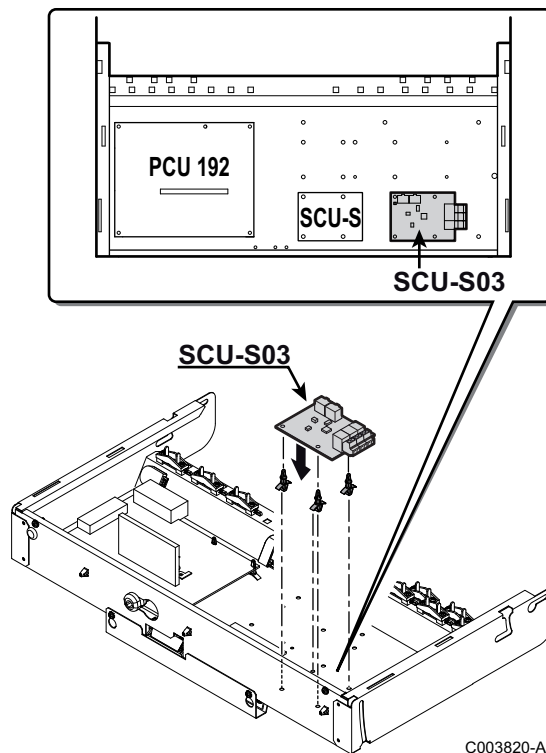
■ **Connecting the board**

Connect the BUS connector on the SCU-S03 board to the PCU board in the boiler.

If the boiler is fitted with the control PCB (SCU-S03), then this is automatically recognised by the automatic control unit of the boiler.
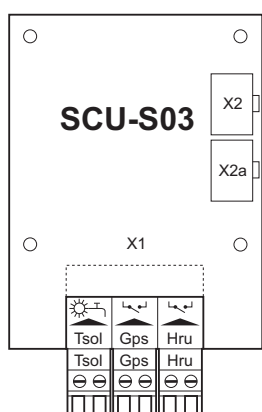
T002879-A

> ⚠ **CAUTION**
>
> On removing this PCB, the boiler will show fault code $E:38$. To prevent this fault, an auto-detect must be carried out after removing this PCB.
>
> ☞ See chapter: "Carrying out an auto-detect", page 75.

■ **Solar DHW sensor Tsol**

The solar boiler temperature is controlled using a sensor. Connect this sensor to the connector terminals **Tsol**.

■ **Pressure switch minimum Gps**

The minimum gas pressure switch shuts the boiler down if the inlet gas pressure becomes too low. Connect the minimum gas pressure switch to the **Gps** terminals of the connector. The presence of the gas pressure switch must be set using parameter $\boxed{P}\boxed{4}\boxed{1}$.

■ **Heat Recovery Unit (Hru)**

Connect the wires from the heat recovery unit to the **Hru** terminals of the connector. The presence of the heat recovery unit must be set using parameter $\boxed{P}\boxed{4}\boxed{2}$.

5.9.7. Connection possibilities for the PCB (SCU-X01)

■ **Installing the PCB**

C003822-A
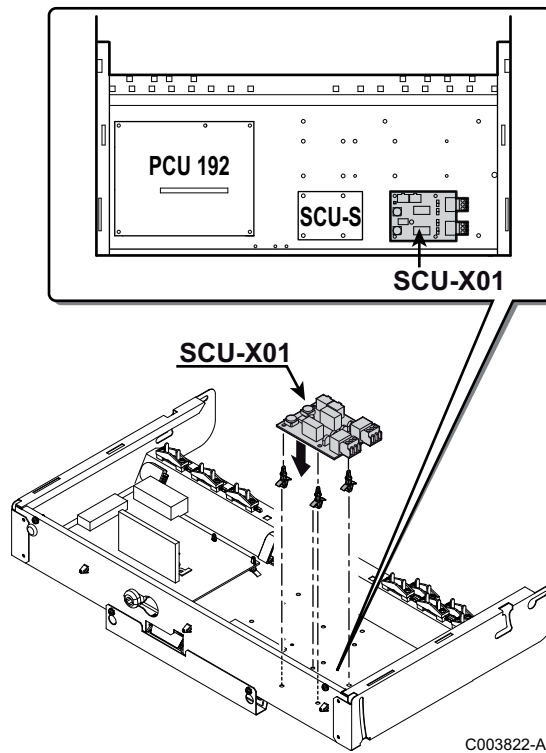
■ **Connecting the board**

Connect the BUS connector on the SCU-X01 board to the PCU board in the boiler.

SCU-X01

T002880-A
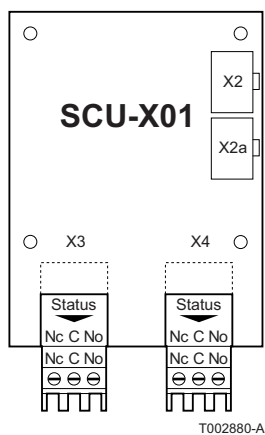
The control PCB SCU-X01 has two potential-free contacts, which can be set as required. Depending on the setting, a maximum of two messages about the status of the boiler can be transmitted. See table below:

No.	C-NO	C-NC
0	Alarm Standby	Alarm Active
1	Alarm inverted = fail safe Active	Alarm inverted = fail safe 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	Service report Standby	Service report Active
7	CH-mode Standby	CH-mode Active
8	DHW-mode Standby	DHW-mode Active
9	CH-pump Standby	CH-pump Active

5.10 Electrical diagram

SCHEMA DE PRINCIPE - STROMLAUFPLAN - PRINCIPLE DIAGRAM - CALORA TOWER GAS NL - BE - EX

HMI-01

PCU-192

PLA-300026391-02

SCU-S191

Boiler Lighting

San Pump

BO Pump

Inv. valve X121

Flow sensor

Return sensor

Pressure sensor

230V / 50 HZ

230V/50HZ	ALIMENTATION	NETZANSCHLUSS	MAIN SUPPLY
BO PUMP	POMPE CHAUDIERE	KESSEL PUMPE	BOILER PUMP
F6.3AT	FUSIBLE 6.3A TEMPORISE	SICHERUNG 6.3A TRAEGE	FUSE 6.3A DELAYED
HMI	INTERFACE HOMME - MACHINE	SNITTSTELLE MENCH MASCHINE	HUMAN MACHINE INTERFACE
X1...X20	CONNECTEUR CIRCUIT IMPRIME PCU	LEITERPLATTE STECKER SCU / PCU	PRINTED CIRCUIT BOARD PLUG PCU
L	PHASE	PHASE	PHASE
N	NEUTRE	NULLEITER	NEUTRAL
PCU	UNITE DE CONTRÔLE PRIMAIRE	PRIMÄRE STEUEREINHEIT	PRIMARY CONTROL UNIT
SONDE DHW	SONDE EAU CHAUDE SANITAIRE	WARMWASSERFÜHLER	DOMESTIC HOT WATER SENSOR
SONDE EXT	SONDE EXTERIEURE	AUSSENFÜHLER	OUTSIDE SENSOR
X111	CONNECTEUR BUS SU	BUS SU STECKER	BUS SU CONNECTOR
X112	MANOMETRE EAU	WASSER MANOMETER	PRESSURE SENSOR
X114	TEMPERATURE RETOUR	RÜCKLAUFTEMPERATUR	RETURN TEMPERATURE
X115	TEMPERATURE DEPART	VORLAUFTEMPERATUR	FLOW TEMPERATURE
X117	THERMOSTAT LIMITEUR HAUT (H.L)	HOCH TEMPERATURWÄCHTER (H.L)	HIGH LIMITER THERMOSTAT (H.L)
X121	VANNE D'INVERSION	UMSCHALTVENTIL	SHIFTING VALVE
X21	VANNE GAZ	GASVENTIL	GAS VALVE
X22	TRANSFORMATEUR D'ALLUMAGE	ZÜNDTRAFO	IGNITION TRANSFORMER
X41	BO PUMP 230V	BO PUMP 230V	BO PUMP 230V
X91	VENTILATEUR	GEBLÄSE	FAN
ZG	INTERRUPTEUR GENERAL	HAUPTSCHALTER	MAIN SWITCH
SAN PUMP	POMPE SANITAIRE	SANITAR PUMP	SANITARY PUMP
SONDE EXT	SONDE EXTERIEURE	WARMWASSERFÜHLER	OUTSIDE SENSOR
SONDE ECS	SONDE EAU CHAUDE SANITAIRE	AUSSENFÜHLER	DOMESTIC HOT WATER SENSOR
TA	TITANE ACTIVE SYSTEME	TITANE ACTIVE SYSTEME	TITANE ACTIVE SYSTEME
X116	PWM BO PUMP	PWM BO PUMP	PWM BO PUMP

230V/50HZ	VOEDING		MAIN SUPPLY
BO PUMP	KETTEL PUMP		BOILER PUMP
F6.3AT	SMELTLOOD 6.3A		FUSE 6.3A DELAYED
HMI	DE INTERFACE MAN MACHINE		HUMAN MACHINE INTERFACE
X1...X20	AANSLUITKLEM SCU/PCU		PRINTED CIRCUIT BOARD PLUG PCU
L	FASE		PHASE
N	NULLEIDER		NEUTRAL
PCU	EENHEID PRIMAIRE CONTRÔLE		PRIMARY CONTROL UNIT
SONDE DHW	SANITAIR WARM WATER SENSORS		DOMESTIC HOT WATER SENSOR
SONDE EXT	BUITEN VOELER		OUTSIDE SENSOR
X111	BUS SU STEKKER		BUS SU CONNECTOR
X112	WATER MANOMETER		PRESSURE SENSOR
X114	RETOURTEMPERATUUR		RETURN TEMPERATURE
X115	AANVOER TEMPERATUUR		FLOW TEMPERATURE
X117	HOOG BEGRENZINGS THERMOSTAT (H.L)		HIGH LIMITER THERMOSTAT (H.L)
X121	OMKEERKLEP		SHIFTING VALVE
X21	GASKLEP ONTSTEKING		GAS VALVE
X22	ONTSTEKINGSTRANSFO		IGNITION TRANSFORMER
X41	BO PUMP 230V		BO PUMP 230V
X91	VENTILATOR		FAN
ZG	ALGEMENE SCHAKELAAR		MAIN SWITCH
SAN PUMP	SANITAIR POMP		SANITARY PUMP
SONDE EXT	SANITAIR WARM WATER SENSORS		OUTSIDE SENSOR
SONDE ECS	BUITEN VOELER		DOMESTIC HOT WATER SENSOR
TA	TITANE ACTIVE SYSTEME		TITANE ACTIVE SYSTEME
X116	PWM BO PUMP		PWM BO PUMP

BL		BLOCKING FUNCTION
RL		RELEASE FUNCTION
OT		OPEN THERM
		USED ONLY WITH H.L. TANK
		USED ONLY WITH H.L. TANK

230V / 50Hz	Power supply	PCU	Primary control unit	X117	Limiter thermostat, top
►BO PUMP	Boiler pump	SONDE DHW	Domestic hot water sensor	X121	Reversal valve
F6.3AT	6.3A fuse	SONDE EXT	Outside sensor	X21	Gas valve
HMI	Control interface	X111	SU bus connector	X22	Ignition transformer
X1...X20	PCB connector PCU	X112	Water pressure gauge	X41	BO PUMP 230V
L	Live	X114	Return temperature	X91	Fan
N	Neutral	X115	Flow temperature	ZG	General switch

5.11 Filling the system

5.11.1. Water treatment

In most cases, the boiler and the central heating installation can be filled with normal tap water and no water treatment will be necessary.

⚠️ **WARNING**

Do not add chemical products to the central heating water without consulting **Remeha**. For example: antifreeze, water softeners, products to increase or reduce the pH value, chemical additives and/or inhibitors. These may cause faults in the boiler and damage the heat exchanger.

ℹ️
  ▸ For untreated water, the pH value of the water in the installation must be between 7 and 9 and for treated water between 7 and 8,5.
  ▸ The maximum hardness of the water in the installation must be between 0,5 - 20,0 °dH (Depending on the total installed heat output).
  ▸ For more information, refer to our publication water quality rules. The rules in the aforementioned document must be respected.

5.11.2. Filling the system
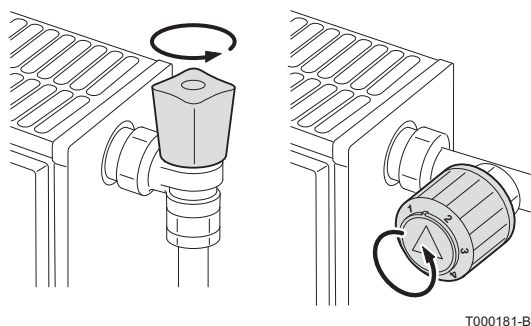
T000181-B

⚠️ **CAUTION**

Before filling, open the valves on every radiator in the installation.

ℹ️ In order to be able to read off the water pressure from the boiler display, the boiler must be switched on.

1. Open the cold water inlet and heating outlet valves.
2. Open the filling/draw-off valve on the heating system.
3. Close the filling valve when the pressure gauge shows a pressure of 2 bar.

T001507-B

4. Check the tightness of the water connections.

i After switching on the power and if there is adequate water pressure, the boiler always runs through an automatic venting program lasting approximately 3 minutes (During filling, air can escape from the system via the automatic air vent). If the water pressure is lower than 0,8 bar, the symbol ⌐⊞ will appear. If necessary, top up the water level in the heating system (recommended hydraulic pressure between 1.5 and 2 bar).

⚠ **CAUTION**

▸ The filling must be carried out within 30 minutes, otherwise the venting program starts and that would be undesirable if the device is not filled. Switch off the boiler if the central heating system is not being topped up immediately.

▸ When venting, prevent water from getting into the boiler casing and electrical parts of the boiler

6 Commissioning

6.1 Control panel

6.1.1. Functions of the keys
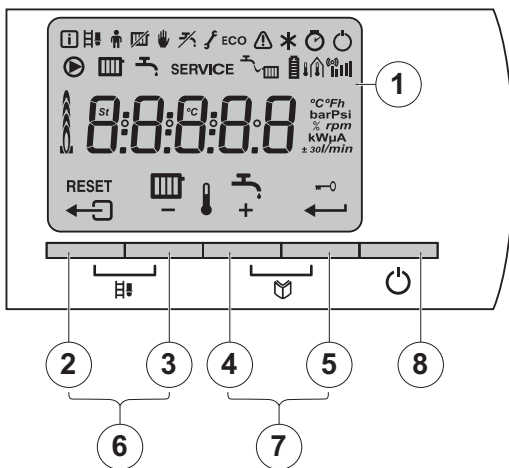
T001996-A

1	Display
2	⬅🔲 [Escape] or **RESET** key
3	▥ Heating temperature key or **[-]**
4	⌐ DHW temperature key or **[+]**
5	⬅ [Enter] or cancel ⊶ Key lock-out
6	⣇ [Chimney-sweeping] keys (press the **2** and **3** keys simultaneously)
7	⍱ [Menu] keys (press the **4** and **5** keys simultaneously)
8	⏻ On/off switch

6.1.2. Meaning of the symbols on the display

ⓘ	Information menu: Reading the various current values.	⏻	On/Off switch: After 5 lock-outs, the boiler must be switched off/on again.
⣇	Chimney-sweeping position: Forced full or part load for O_2 measurement.	◉	Circulation pump: The pump operates.
⛹	User menu: Parameters at user level can be changed.	▥	Central heating function: Access to central heating temperature parameter.
⎗	Heating programme deactivated: The heating function is deactivated.	⌐	DHW function: Access to sanitary hot water temperature parameter.
✋	Manual mode: Boiler is set to manual operation.	**SERVICE**	Yellow display with the symbols: ∫ + **SERVICE** + 𝘙 (Maintenance message).
⤬	DHW programme deactivated: The DHW mode is deactivated.	⌐▥	Water pressure: The water pressure is too low.
∫	Service menu: Parameters at installer level can be changed.	▮	Battery symbol: Status of battery of wireless controller.
ECO	Energy-saving mode: Economic mode activated.	ᵗᵢ₁₁	Signal strength symbol: Signal strength of the wireless controller.

⚠	Defect: Boiler indicates a fault. This can be seen from the $\boxed{\mathcal{E}}$ code and red display.	🌡	Burner level: Boiler is running at full or low load.
✳	Antifreeze protection: Boiler is running in frost protection mode.	⊶0	Locking the keys: Key lock-out is activated.
⏱	Hour counter menu: Readout of the operating hours, number of successful starts and hours on mains supply.		

6.2   Check points before commissioning

6.2.1.   Preparing the boiler for commissioning

⚠ **WARNING**

Do not put the boiler into operation if the supplied gas is not in accordance with the approved gas types.

Preparatory procedure for boiler commissioning:

‣ Check that the gas type supplied matches the data shown on the boiler's data plate.
‣ Check the gas circuit.
‣ Check the hydraulic circuit.
‣ Check the water pressure in the heating system.
‣ Check the electrical connections to the thermostat and the other external controls.
‣ Check the other connections.
‣ Test the boiler at full load. Check the setting of the gas/air ratio and, if necessary, correct it.
‣ Test the boiler at part load. Check the setting of the gas/air ratio and, if necessary, correct it.
‣ Finalizing work.

6.2.2.   Gas circuit

■ **Removing the cover from the sealed chamber**

> ⚠ **WARNING**
>
> Ensure that the boiler is switched off.

1. Open the 2 retaining clips located on the front.
2. Remove the cover from the sealed chamber.

> ⚠ **WARNING**
>
> Check the condition of the tightness gasket when refitting the cover to the sealed chamber.
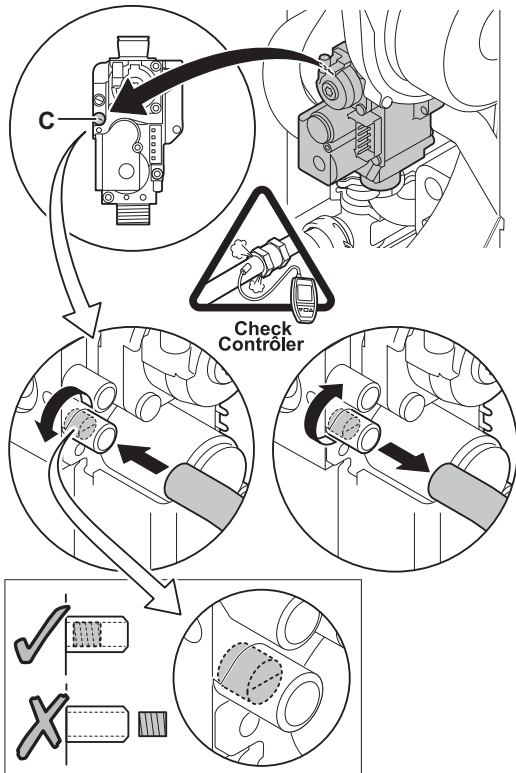

L000166-A
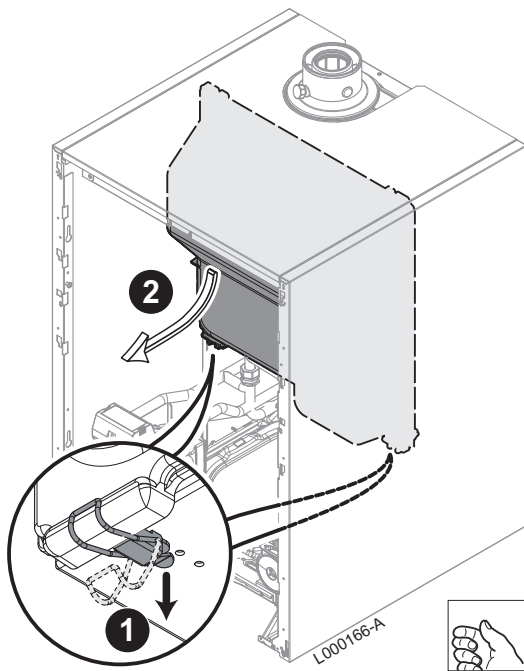
■ **Checking the gas circuit**

> ⚠ **WARNING**
>
> Ensure that the boiler is switched off.

1. Remove the front panel.
2. Remove the cover from the sealed chamber. ☞ See chapter: "Removing the cover from the sealed chamber", page 57

T001518-B

3. Open the main gas supply.
4. Check the gas supply pressure at the pressure outlet **C** on the gas valve unit.

> ⚠ **WARNING**
>
> ☞ To ascertain the gas types permitted, see chapter: "Gas categories", page 11

5. Check the tightness of the gas connections made after the gas valve unit in the boiler.
6. Check the tightness of the gas line, including the gas valves. The test pressure must not exceed 60 mbar.
7. Purge the gas supply pipe within the boiler by unscrewing the pressure outlet on the gas block. Tighten the measurement point when the pipe has been sufficiently purged.
8. Check the tightness of the gas connections in the boiler.

6.2.3.   Hydraulic circuit

▸ Check the condensate discharge trap; it must be filled with clean water up to the mark.
▸ Check that there are no leaks on the hydraulic connections.

6.2.4.   Electrical connections

▸ Check the electrical connections, particularly the earth.

6.3   Putting the appliance into operation

1. Open the main gas supply.
2. Turn on the boiler using the on/off switch.
3. Set the controls (thermostats, control system) so that they request heat.
4. The start-up cycle begins and cannot be interrupted. During the start-up cycle, the display shows the following information:
   A short test where all segments of the display are visible.
   $F\square:XX$: Software version
   $P\square:XX$: Parameter version
   The version numbers are displayed alternately.
5. A vent cycle of a duration of around 3 minutes is carried out automatically.

i If a DHW sensor is connected and the anti-legionella function is activated, the boiler starts to heat the water in the DHW tank as soon as the vent programme has been completed.

By pressing the ← key for a short time, the current operating status is shown on the display:

Heat demand ▥	Heat demand stopped
1: Fan ON	1: Post-ventilation
2: Boiler is igniting	5: Burner stop
3: Heating System	6: Post-circulation of the pump
4: DHW System	0: Standby

In addition to 0, in STAND-BY the display normally shows the water pressure and the symbols ▥, 🌡 and 🚰.

i During the first commissioning of the boiler, the illumination of the housing may be absent or weak (maximum charge of the battery not yet attained). The battery will be fully charged once the boiler has been connected to the power for 24 hours..

Error during the start-up procedure:

▸ No information is shown on the display:
  – Check the mains supply voltage
  – Check the main fuses
  – Check the fuses on the control panel:
    (F1 = 6,3 AT, F2 = 2 AT)
  – Check the connection of the mains lead to the connector **X1** in the instrument box
▸ A fault is indicated on the display by the fault symbol ⚠ and a flashing fault code.
  – The meaning of the error codes is given in the error table.
    ☞
  – Press for 3 seconds on key **RESET** to restart the boiler.

i If the economy setting (eco setting) is on, then, after central heating operation, the boiler will not start to run for hot tap water production.

6.4 Gas settings

6.4.1. Adapting to another gas type

L000182-A

> ⚠ **WARNING**
>
> Only a qualified engineer may carry out the following operations.

The boiler is preset in the factory to operate on natural gas H (G20).

For operation on another group of gases, carry out the following operations:

▸ Set the fan speed using the parameters $P\ 1\ 7$, $P\ 1\ 8$ and $P\ 1\ 9$.

☞ See chapter: "Parameter descriptions", page 68

▸ Set the air/gas ratio.

☞ "Checking/setting values O_2 at full load", page 61

☞ "Checking/setting values O_2 at low load", page 62

▸ Affix the label which indicates for which type of gas the boiler is fitted and set.
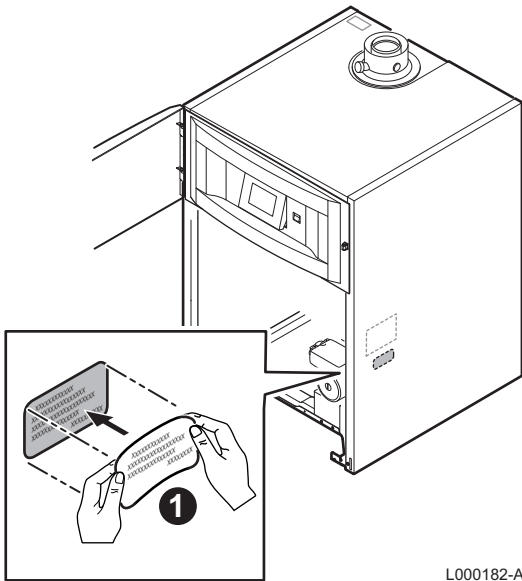
6.4.2. Checking and setting combustion

M002534-A

1. Unscrew the plug of the flue gas measurement point.
2. Insert the probe for the flue gas analyser into the measurement opening.

> ⚠ **WARNING**
>
> Ensure that the opening around the sensor is completely sealed when taking measurements.

> ⚠ **CAUTION**
>
> The flue gas analyser must have a minimum accuracy of 0,25% O_2.

3. Remove the cover from the sealed chamber.
   ☞ see chapter: "Removing the cover from the sealed chamber", page 57
4. Measure the percentage O_2 in the flue gases. Perform measurements at full capacity and low capacity (Front panel removed).

T001997-A

A
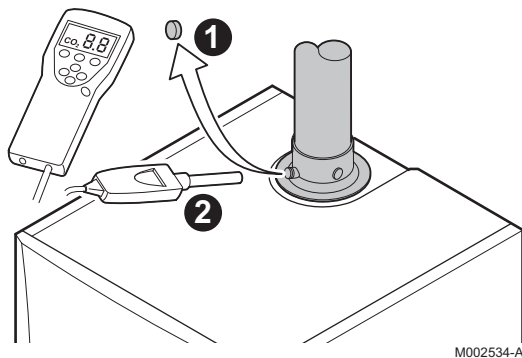
T000932-A

■ Checking/setting values O_2 at full load
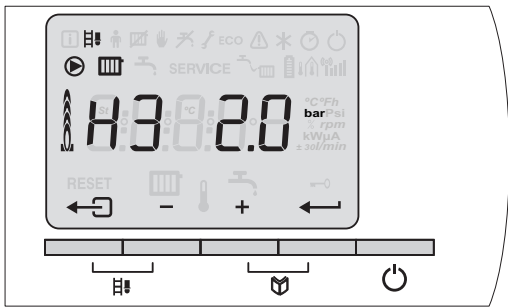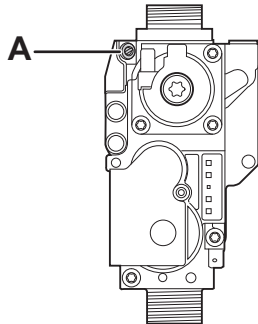
1. Set the boiler to full load. Press the two ▤! keys simultaneously. The display shows $\boxed{H3}$. The symbol ▤! appears.

   ⓘ If an automatic vent cycle is running, it is not possible to perform these operations.

2. Measure the percentage O_2 in the flue gases (with the cover of the watertight housing removed).

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

   ⓘ Using the adjusting screw A, set the percentage O_2 for the gas type being used to the nominal value. This should always be inside the highest and lowest setting limit.

   ▸ Turn the screw A clockwise to obtain a higher O_2 value.
   ▸ Turn the screw A anticlockwise to obtain a lower O_2 value.

4. Check the flame through the flame inspection window.

   ⓘ The flame must not be detached.

Values at full load for G20 (Gas H)	O_2 (%)	CO_2 (%) (Ireland)
CALORA TOWER GAS 15S EX	4,7 - 5,2[1]	8,8[1] - 9,1
CALORA TOWER GAS 25S EX	Austria: 5,2 - 5,7[1] Other countries: 4,7 - 5,2[1]	8,8[1] - 9,1
CALORA TOWER GAS 35S EX	Austria: 5,2 - 5,7[1] Other countries: 4,3 - 4,8[1]	9,0[1] - 9,3
(1) Nominal value		

Values at full load for G25 (Gas L)	O_2 (%)
CALORA TOWER GAS 15S EX	4,4 - 4,9[1]
CALORA TOWER GAS 25S EX	4,4 - 4,9[1]
CALORA TOWER GAS 35S EX	4,1 - 4,6[1]
(1) Nominal value	

Values at full load for G27 (Gas Lw)	O_2 (%)
CALORA TOWER GAS 15S EX	4,2 - 4,8[1]
CALORA TOWER GAS 25S EX	4,2 - 4,8[1]
CALORA TOWER GAS 35S EX	4,0 - 4,6[1]
(1) Nominal value	

Values at full load for G2.350 (Gas Ls)	O_2 (%)
CALORA TOWER GAS 15S EX	4,5 - 5,1[1]
CALORA TOWER GAS 25S EX	4,5 - 5,1[1]
(1) Nominal value	

Values at full load for G31 (Propane) / G30 (Butane)	O_2 (%)	CO_2 (%) (Ireland)	Diameter of the gas diaphragm (Ø mm) (1)
CALORA TOWER GAS 15S EX	4,7 - 5,2[2]	10,3[2] - 10,6	3,00
CALORA TOWER GAS 25S EX	4,7 - 5,2[2]	10,3[2] - 10,6	4,00
CALORA TOWER GAS 35S EX	4,7 - 5,2[2]	10,3[2] - 10,6	4,40
(1) Fit the gas restrictor in the gas block			
(2) Nominal value			

■ Checking/setting values O_2 at low load
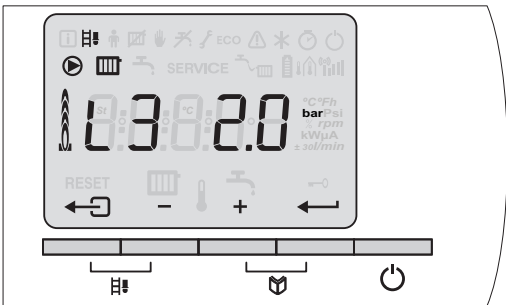
T001998-A
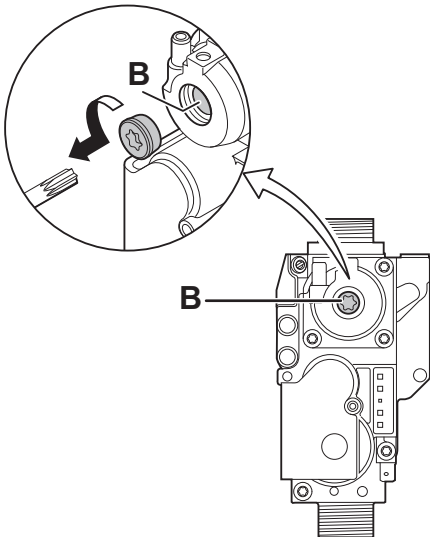
1. Set the boiler to part load. Press the **[-]** key several times until
   $\boxed{L}\boxed{3}$ is displayed on the screen.

2. Measure the percentage O_2 in the flue gases (with the cover of the
   watertight housing removed) .

T000933-B

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

   i Using the adjusting screw B, set the percentage O_2 for the
   gas type being used to the nominal value. This should
   always be inside the highest and lowest setting limit.

   ‣ Turn screw B clockwise to obtain a lower O_2 value..

   ‣ Turn screw B anticlockwise to obtain a higher O_2
      value..

4. Check the flame through the flame inspection window.

   i The flame must not be detached.

Values at low load for G20 (Gas H)	O_2 (%)	CO_2 (%) (Ireland)
CALORA TOWER GAS 15S EX	5,9[1] - 6,3	8,2 - 8,4[1]
CALORA TOWER GAS 25S EX	Austria: 6,4[1] - 6,8 Other countries: 5,9[1] - 6,3	8,2 - 8,4[1]
CALORA TOWER GAS 35S EX	Austria: 6,4[1] - 6,8 Other countries: 5,5[1] - 5,9	8,4 - 8,6[1]
(1) Nominal value		

Values at low load for G25 (Gas L)	O_2 (%)
CALORA TOWER GAS 15S EX	5,7[1] - 6,1
CALORA TOWER GAS 25S EX	5,7[1] - 6,1
CALORA TOWER GAS 35S EX	5,3[1] - 5,7
(1) Nominal value	

Values at low load for G27 (Gas Lw)	O_2 (%)
CALORA TOWER GAS 15S EX	5,5[1] - 5,9
CALORA TOWER GAS 25S EX	5,5[1] - 5,9
CALORA TOWER GAS 35S EX	5,3[1] - 5,7
(1) Nominal value	

Values at low load for G2.350 (Gas Ls)	O_2 (%)
CALORA TOWER GAS 15S EX	5,8[1] - 6,2
CALORA TOWER GAS 25S EX	5,8[1] - 6,2
(1) Nominal value	

Values at low load for G31 (Propane) / G30 (Butane)	O_2 (%)	CO_2 (%) (Ireland)
CALORA TOWER GAS 15S EX	5,8[1] - 6,1	9,7 - 9,9[1]
CALORA TOWER GAS 25S EX	5,8[1] - 6,1	9,7 - 9,9[1]
CALORA TOWER GAS 35S EX	5,8[1] - 6,1	9,7 - 9,9[1]
(1) Nominal value		

⚠ **CAUTION**

Repeat the high speed test and the low speed test as often as necessary until the correct values are obtained without having to make additional adjustments.

Refit the sealed cover when the O_2 adjustments have been made at low and high speed..

6.4.3. Basic setting for the gas/air ratio
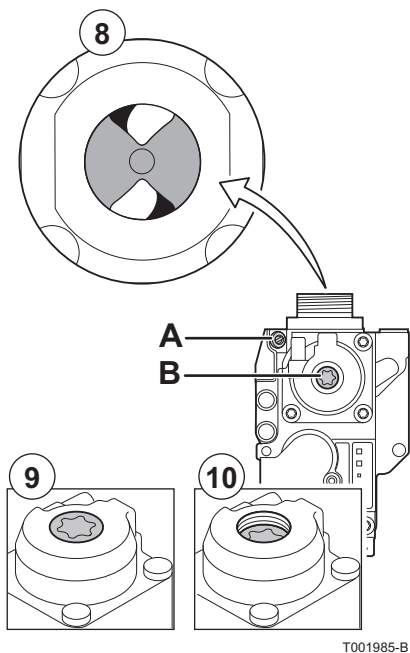
If the gas/air ratio is out of adjustment, the gas valve unit has a basic setting. To do this, proceed as follows:

1. .
2. Close the gas valve on the boiler.
3. Remove the air inlet flue on the venturi.
4. Unscrew the top connection on the gas valve unit.
5. Disconnect the connector located under the fan.
6. Release the 2 clips holding the fan/mixing elbow unit in place on the heat exchanger.
7. Completely remove the fan/mixing elbow unit.
   ☞For steps 3 to 7 inclusive, see chapter: "Checking the burner and cleaning the heat exchanger", page 81
8. Turn the setting screw **A** on the gas valve unit to modify the position of the restrictor.
9. Turn the setting screw **B** on the gas valve unit anticlockwise until it matches the front panel.
10. Turn the setting screw **B** on the gas valve unit by 6 turns clockwise.
11. Follow the procedure in reverse to re-assemble all of the components.

T001985-B

6.5 Checks and adjustments after commissioning

6.5.1. Finalizing work
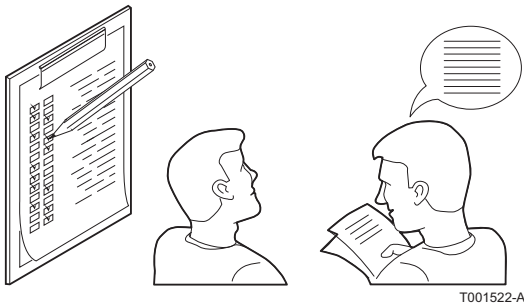
1. Remove the measuring equipment.
2. Put the flue gas sampling plug back in place.
3. Refit the front panel.
4. Push key ⬅⟳ to return the boiler to normal operating mode.
5. Raise the temperature in the heating system to approximately 70°C.
6. Shut down the boiler.
7. After about 10 minutes, vent the air in the heating system.
8. Switch on the boiler.
9. Check the tightness of the flue gases evacuation and air inlet connections.
10. Checking the hydraulic pressure. If necessary, top up the water level in the heating system (recommended hydraulic pressure between 1,5 and 2 bar).
11. Tick the gas category used on the data plate.
12. When installation has been completed, affix the data plate provided in the instructions bag to the casing of the appliance in a position where it can be seen
13. Explain the operation of the installation, the boiler and the regulator to the users.
14. Give all the instruction manuals to the user.

T001522-A

6.6   Reading out measured values

6.6.1.   Reading out measured values

The following current values can be read off the information menu
[i]:

- ▸ $\boxed{5}\boxed{t}$ = State.
- ▸ $\boxed{5}\boxed{u}$ = Sub-status.
- ▸ $\boxed{t}\boxed{1}$ = Flow temperature (°C).
- ▸ $\boxed{t}\boxed{2}$ = Return temperature (°C).
- ▸ $\boxed{t}\boxed{3}$ = Water temperature in the DHW tank (°C).
- ▸ $\boxed{t}\boxed{4}$ = Outside temperature (°C).
- ▸ $\boxed{t}\boxed{5}$ = Solar boiler temperature (°C).
- ▸ $\boxed{t}\boxed{6}$ = Solar panel temperature (°C).
- ▸ $\boxed{5}\boxed{P}$ = Internal set point (°C).
- ▸ $\boxed{F}\boxed{L}$ = Ionization current (µA).
- ▸ $\boxed{n}\boxed{F}$ = Fan speed in rpm.
- ▸ $\boxed{P}\boxed{r}$ = Water pressure (bar (MPa)).
- ▸ $\boxed{P}\boxed{o}$ = Supplied relative heat output (%).
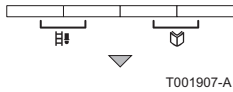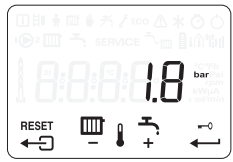
T001907-A
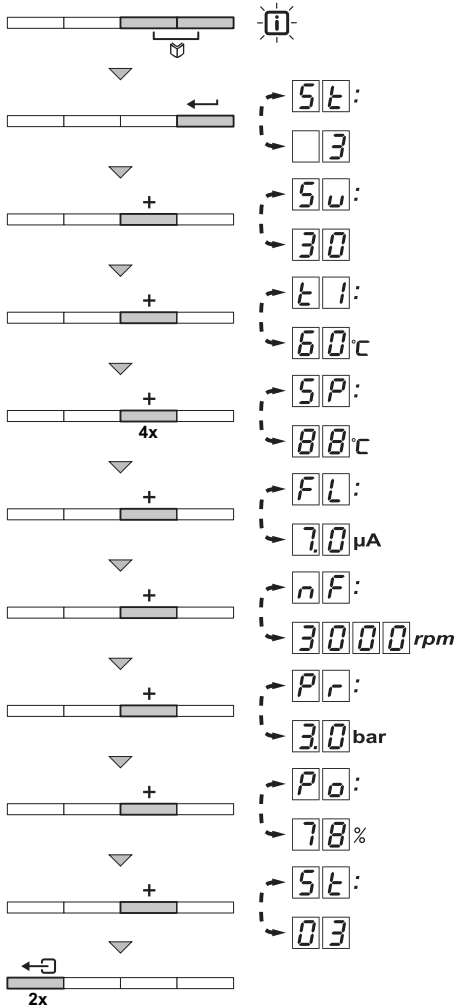
T000810-F

The current values can be read as follows:

1. Press the two 🖐 keys simultaneously. The symbol **i** flashes.

2. Confirm using key ↵. `St` is displayed, alternating with the current status `3` (for example).

3. Press the **[+]** key. `Su` is displayed, alternating with the current sub-status `30` (for example).

4. Press the **[+]** key. `t1` is displayed, alternating with the current flow temperature `60`°C (for example).

5. Press the **[+]** key successively to scroll down the various parameters. `t2`, `t3`, `t4`, `t5`, `t6`.

6. Press the **[+]** key. `SP` is displayed, alternating with the internal set point `88`°C (for example).

7. Press the **[+]** key. `FL` is displayed, alternating with the current ionization current `70` µA (for example).

8. Press the **[+]** key. `nF` is displayed, alternating with the current fan rotation speed `3000` rpm (for example).

9. Press the **[+]** key. `Pr` is displayed, alternating with the current water pressure `30` bar (for example). If no water pressure sensor is connected, **[-.-]** appears on the display.

10. Press the **[+]** key. `Po` is displayed, alternating with the current modulation percentage `78` % (for example).

11. Press the **[+]** key. The readout cycle starts again with `St`.

12. Press the ↵ key 2 times to return to the current operating mode.

6.6.2.   Readout from the hour counter and percentage of successful starts
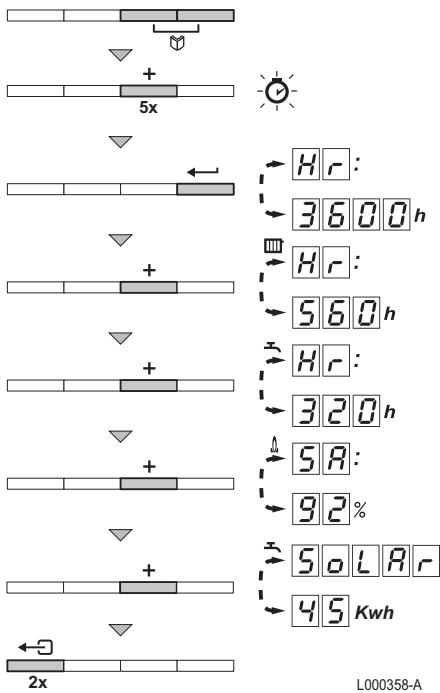
L000358-A

1. Press the two keys ⩔ simultaneously and then key **[+]** until the symbol ⊘ flashes on the menu bar.
2. Press the ← key. Hr and the number of hours of boiler operation 3600 (for example) are displayed alternately.
3. Press the **[+]** key. The display shows ▥. Hr is displayed, alternating with the number of operating hours in central heating operation 560 (for example).
4. Press the **[+]** key. The display shows ⌁. Hr is displayed, alternating with the number of operating hours used for heating tap water 320 (for example).
5. Press the **[+]** key. The display shows ⚲. SA is displayed, alternating with the percentage of successful starts 92 % (for example).
6. Press the **[+]** key. The display shows ⌁. $SoLAr$ and the solar Kwh 45 Kwh (for example) are displayed alternately.
7. Press the ←⎘ key 2 times to return to the current operating mode.

6.6.3.   Status and sub-status

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

State St		Sub-status Su	
0	Rest	0	Rest (no heat demand)
1	Boiler start (Heat demand)	1	Anti-hunting
		2	Control three-way valve (if present)
		3	Start pump
		4	Wait for the correct temperatures for burner start
2	Burner start up	10	Open flue gas damper/external gas valve
		11	Increase fan speed
		13	Pre-ventilation
		14	Wait for release signal
		15	Burner on
		17	Pre-ignition
		18	Main ignition
		19	Flame detection
		20	Intermediate ventilation

State ⎡St⎤		Sub-status ⎡Su⎤	
⎡3⎤	Burner for central heating operation	⎡30⎤	Temperature control
		⎡31⎤	Limited temperature control (ΔT safety)
		⎡32⎤	Output control
		⎡33⎤	Temperature protection gradient level 1 (Modulate down)
		⎡34⎤	Temperature protection gradient level 2 (Part load)
		⎡35⎤	Temperature protection gradient level 3 (Blockage)
		⎡36⎤	Modulate up for flame control
		⎡37⎤	Temperature stabilisation time
		⎡38⎤	Cold start
⎡4⎤	DHW mode running	⎡30⎤	Temperature control
		⎡31⎤	Limited temperature control (ΔT safety)
		⎡32⎤	Output control
		⎡33⎤	Temperature protection gradient level 1 (Modulate down)
		⎡34⎤	Temperature protection gradient level 2 (Part load)
		⎡35⎤	Temperature protection gradient level 3 (Blockage)
		⎡36⎤	Modulate up for flame control
		⎡37⎤	Temperature stabilisation time
		⎡38⎤	Cold start
⎡5⎤	Burner stop	⎡40⎤	Burner off
		⎡41⎤	Post ventilation
		⎡42⎤	Close flue gas damper/external gas valve
		⎡43⎤	Recirculation protection
		⎡44⎤	Stop fan
⎡6⎤	Boiler stop (End of heat demand)	⎡60⎤	Pump post circulation
		⎡61⎤	Pump off
		⎡62⎤	Control three-way valve
		⎡63⎤	Start anti-hunting
⎡8⎤	Control stop	⎡0⎤	Wait for burner start
		⎡1⎤	Anti-hunting
⎡9⎤	Blocking	⎡XX⎤	Shutdown code ⎡XX⎤
⎡17⎤	Bleed	⎡0⎤	Rest
		⎡2⎤	Control three-way valve (Heating)
		⎡3⎤	Start pump
		⎡61⎤	Pump off
		⎡62⎤	Control three-way valve (DHW)

6.7   Changing the settings

The boiler control panel is set for the most common heating
systems. With these settings, practically all heating systems operate
correctly. The user or installer can optimise the parameters according
to own preferences.

6.7.1.   Parameter descriptions

Parameter	Description	Adjustment range	Factory setting		
			CALORA TOWER GAS 15S EX	CALORA TOWER GAS 25S EX	CALORA TOWER GAS 35S EX
$P1$	Flow temperature: T_{SET}	20 to 90 °C	80	80	80
$P2$	Domestic hot water temperature: T_{SET}	40 to 65 °C	65	65	65
$P3$	Heating / DHW mode	0 = Heating deactivated / DHW deactivated 1 = Heating activated / DHW activated 2 = Heating activated / DHW deactivated 3 = Heating deactivated / DHW activated	1	1	1
$P4$	ECO mode	0 = Comfort 1 = Energy-saving mode 2 = Management using a programmable thermostat	2	2	2
$P5$	Anticipation resistance	0 = No anticipation resistance for the ON/OFF thermostat 1 = Anticipation resistance for the ON/OFF thermostat	0	0	0
$P6$	Display screen	0 = Simple 1 = Comprehensive 2 = Automatic switching to simple after 3 minutes 3 = Automatic switching to simple after 3 minutes; Key blocking is active	2	2	2
$P7$	Post-circulation of the pump	1 to 98 minutes 99 minutes = continuous	3	3	3
$P8$	Brightness of display lighting	0 = Dimmed 1 = Bright	1	1	1
$P17$	Maximum fan speed (Heating)	G25 (Gas L)[1] (x100 rpm)	44	53	62
		G20 (Gas H) (x100 rpm)	45	56	62
		G31 (Propane) (x100 rpm)	44	59	62
$P18$	Maximum fan speed (DHW)	G25 (Gas L)[1] (x100 rpm)	44	59	62
		G20 (Gas H) (x100 rpm)	45	63	62
		G31 (Propane) (x100 rpm)	44	59	62
$P19$	Minimum fan speed (Heating+DHW)	G25 (Gas L)[1] (x100 rpm)	18	18	17
		G20 (Gas H) (x100 rpm)	18	18	17
		G31 (Propane) (x100 rpm)	22	18	17

(1) Do not modify these factory settings unless absolutely necessary. For example, for modification of the boiler for: G20 (H gas) or G31 (propane), high pressure systems, WTW coupling or CLV overpressure
(2) Factory setting depends on installation type
(3) The parameter is only displayed if the SCU-S191 and the solar control system are present
(4) The parameter is only displayed if the SCU-S191 is present
(5) The parameter is only displayed if the solar control system is connected

Parameter	Description	Adjustment range	Factory setting		
			CALORA TOWER GAS 15S EX	CALORA TOWER GAS 25S EX	CALORA TOWER GAS 35S EX
$P20$	Minimum fan speed (offset)	Do not modify	50	50	50
$P21$	Start speed	Do not modify (x100 rpm)	37	30	40
$P22$	Minimum water pressure	0 - 3 bar (MPa)(x 0,1bar (MPa))	8	8	8
$P23$	Maximum flow temperature of system	0 to 90 °C	90	90	90
$P24$	Anti-hunting differential for central heating operation	-15 to 15 °C	3	3	3
$P25$	Maximum outside temperature	0 to 30 °C (Only with an outside temperature sensor)	20	20	20
$P26$	Minimum flow temperature	0 to 90 °C (Only with an outside temperature sensor)	20	20	20
$P27$	Heat curve set point (Minimum outside temperature)	-30 to 0 °C (Only with an outside temperature sensor)	-15	-15	-15
$P28$	Minimum pump speed for central heating operation (Setting the pump speed)	1 to 10	2	2	2
$P29$	Maximum pump speed for central heating operation (Setting the pump speed)	1 to 10	6	6	6
$P30$	Antifreeze temperature	from - 30 to 0°C	-10	-10	-10
$P31$	Legionella protection	0 = Stop 1 = Start (After commissioning, the boiler will operate once a week at 65°C for DHW) 3 = Management using a programmable thermostat	1	1	1
$P32$	Set point increase for calorifier	0 to 20 °C	20	20	20
$P33$	DHW cut-in temperature DHW sensor	from 2 to 15°C	6	6	6
$P34$	3-way valve rest position	0 = Heating 1 = DHW	0	0	0
$P35$	Boiler type	1 = Boiler self-standing or Boiler with SL / SSL type domestic hot water tank 2 = Boiler with HL / SHL type domestic hot water tank	1 or 2	1 or 2 [2]	1 or 2[2]
$P36$	Shutdown input function (BL)	0 = Heating activated 1 = Shutdown without frost-protection 2 = Shutdown with frost protection 3 = Lock-out with frost protection (Pump only)	1	1	1

(1) Do not modify these factory settings unless absolutely necessary. For example, for modification of the boiler for: G20 (H gas) or G31 (propane), high pressure systems, WTW coupling or CLV overpressure
(2) Factory setting depends on installation type
(3) The parameter is only displayed if the SCU-S191 and the solar control system are present
(4) The parameter is only displayed if the SCU-S191 is present
(5) The parameter is only displayed if the solar control system is connected

Parameter	Description	Adjustment range	Factory setting		
			CALORA TOWER GAS 15S EX	CALORA TOWER GAS 25S EX	CALORA TOWER GAS 35S EX
$P37$	Release function (RL)	0 = Hot water on 1 = Release input	1	1	1
$P38$	Release waiting time	0 to 255 seconds	0	0	0
$P39$	Gas valve switching time	0 to 255 seconds	0	0	0
$P40$	Fault relay function (Optional)	0 = Operation signal 1 = Alarm signal	1	1	1
$P41$	GpS connected (Optional)	0 = Not connected 1 = Connected	0	0	0
$P42$	HRU connected (Optional)	0 = Not connected 1 = Connected	0	0	0
$P43$	Mains detection phase	0 = Stop 1 = Start	0	0	0
$P44$	Maintenance message	Do not modify	1	1	1
$P45$	Service operating hours	Do not modify	175	175	175
$P46$	Service burning hours	Do not modify	30	30	30
$P47$ [3]	Maximum drop in the DHW set point when the solar pump is running at 100%	0 to 30 °C	5	5	5
$P48$ [4]	Activation of the Titan Active System® function	0 = No 1 = Yes	1	1	1
$P49$	Minimum loading time after burner start-up in DHW mode	10 to 255 seconds	80	80	80
$S.o.01$ [5]	Desired domestic hot water temperature in the DHW circuit	20 to 80 °C	55	55	55
$S.o.02$ [5]	Temperature difference that the solar pump tries to maintain between the solar DHW sensor and the panel	100 (x 0.1) to 200 (x 0.1 For example: 215 = 21.5°C	100	100	100
$S.o.03$ [5]	Temperature of the panel above which the solar pump starts up. The pump does not operate if the temperature of the solar tank is higher than 80°C	100 to 125 °C	100	100	100
$S.o.04$ [5]	Minimum operating duration of the solar pump at 100% on start-up	1 to 5 min	1	1	1
$S.o.05$ [5]	Minimum speed of the solar pump	50 to 100 %	50	50	50
$S.o.06$ [5]	Set to 1 if tubular collectors are used	1 / 0	0	0	0
$S.o.07$ [5]	Maximum flow rate of the solar pump ☞ See chapter: Maximum flow rate of the solar pump	0 to 20 l/min	6.7	6.7	6.7

(1) Do not modify these factory settings unless absolutely necessary. For example, for modification of the boiler for: G20 (H gas) or G31 (propane), high pressure systems, WTW coupling or CLV overpressure
(2) Factory setting depends on installation type
(3) The parameter is only displayed if the SCU-S191 and the solar control system are present
(4) The parameter is only displayed if the SCU-S191 is present
(5) The parameter is only displayed if the solar control system is connected

Parameter	Description	Adjustment range	Factory setting		
			CALORA TOWER GAS 15S EX	CALORA TOWER GAS 25S EX	CALORA TOWER GAS 35S EX
Ad	Detection of connected SCUs	0 = No detection 1 = Detection	0	0	0
dF and dU	Factory setting	To return to the factory settings or if replacing the PCU PCB, enter values dF and dU from the nameplate in parameters dF and dU	X	X	X
			Y	Y	Y

(1) Do not modify these factory settings unless absolutely necessary. For example, for modification of the boiler for: G20 (H gas) or G31 (propane), high pressure systems, WTW coupling or CLV overpressure
(2) Factory setting depends on installation type
(3) The parameter is only displayed if the SCU-S191 and the solar control system are present
(4) The parameter is only displayed if the SCU-S191 is present
(5) The parameter is only displayed if the solar control system is connected

■ **Maximum flow rate of the solar pump (if connected)**

In order for the regulator to calculate the quantity of heat produced by the installation (parameter kWh), input parameter $S.o.07$. The parameter $S.o.07$ is equal to the flow in litres per minute in the solar circuit.
Establish the $S.o.07$ value with the help of the table below, according to the configuration of the installation and the number or surface area of collectors.
When the flow is input incorrectly, the display kWh will also be incorrect.

ⓘ The quantity of heat (kWh value) can only be used for checks carried out for personal reasons.

Flat solar collectors				
Solar panel installation	Area (m²)	Number of panels	Flow rate (l/h)	Flow rate (l/min)
	3...5	1 or 2	400	6,7
	6...8	3 or 4	300	5,0
	8...10	4 or 5	250	4,1
	8...10	2x2	750	12,5
	12...15	2x3	670	11,2
	16...20	2x4	450	7,5
	12...15	3x2	850	14,2
	18...23	3x3	800	13,4
	24...30	3x4	650	10,9
	16...20	4x2	1200	20,0
	24...30	4x3	850	14,2

6.7.2. Modification of the installer-level parameters

Parameters $\boxed{P}\boxed{1}\boxed{7}$ to $\boxed{d}\boxed{F}$ must only be modified by a qualified professional. To prevent unwanted settings, some parameter settings can only be changed after the special access code $\boxed{0}\boxed{0}\boxed{1}\boxed{2}$ is entered.
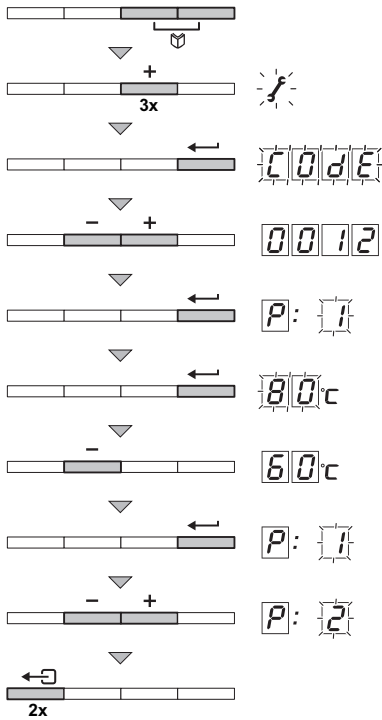
> ⚠️ **CAUTION**
>
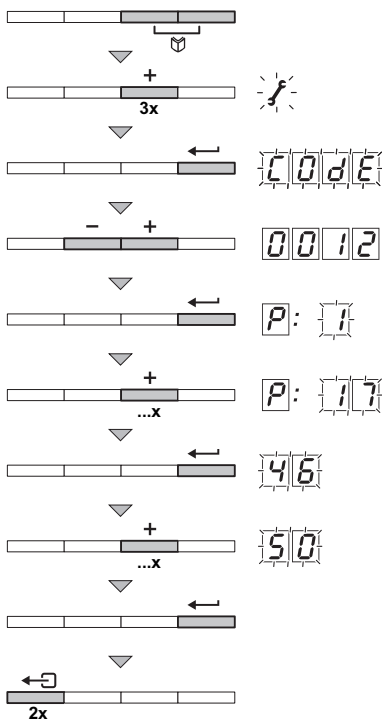> Modification of the factory settings may be detrimental to the functioning of the appliance.

1. Press the two keys 🔽 simultaneously and then key **[+]** until the symbol ⨍ flashes on the menu bar.
2. Select the fitter menu using the ↵ key. $\boxed{C}\boxed{O}\boxed{d}\boxed{E}$ appears on the display.
3. Use keys **[-]** or **[+]** to input the installer code $\boxed{0}\boxed{0}\boxed{1}\boxed{2}$.
4. Confirm using key ↵. $\boxed{P}\boxed{:}\boxed{1}$ is displayed with $\boxed{1}$ flashing.
5. Press the ↵ key a second time. The value $\boxed{8}\boxed{0}$°C appears and flashes (for example).
6. Change the value by pressing the **[-]** or **[+]** key. In this example using key **[-]** to $\boxed{6}\boxed{0}$°C.
7. Confirm the value with the ↵ key: $\boxed{P}\boxed{:}\boxed{1}$ is displayed with $\boxed{1}$ flashing.
8. If necessary, set other parameters by selecting them using the **[-]** or **[+]** keys.
9. Press the ↵� key 2 times to return to the current operating mode.

ℹ️ The boiler also returns to operating status if no keys are pressed for 3 minutes.

## 6.7.3. Setting the maximum heat input for central heating operation

The speed can be changed using parameter $\boxed{P}\boxed{1}\boxed{7}$. To do this, proceed as follows:

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1. Press the two keys ⚇ simultaneously and then key **[+]** until the symbol ∫ flashes on the menu bar.
2. Select the installers menu using the key ↵. $\boxed{C}\boxed{O}\boxed{d}\boxed{E}$ appears on the display.
3. Use keys **[-]** or **[+]** to input the installer code $\boxed{0}\boxed{0}\boxed{1}\boxed{2}$.
4. Confirm using key ↵. $\boxed{P}:\boxed{1}$ is displayed with $\boxed{1}$ flashing.
5. Press the **[+]** key to go to parameter $\boxed{P}:\boxed{1}\boxed{7}$.
6. Confirm using key ↵.
7. Use the **[+]** key to increase the speed of rotation from $\boxed{4}\boxed{6}$ to $\boxed{5}\boxed{0}$, for example.
8. Confirm the value with the ↵ key.
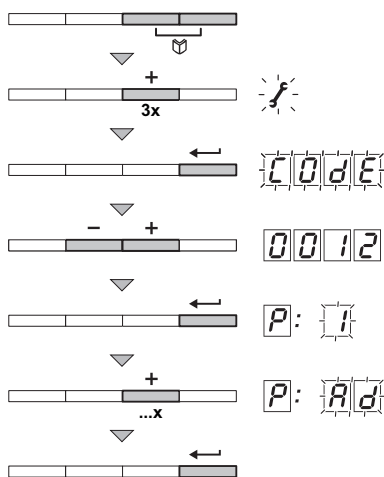9. Press the ⬅⊐ key 2 times to return to the current operating mode.

6.7.4.   Return to the factory settings Reset Param
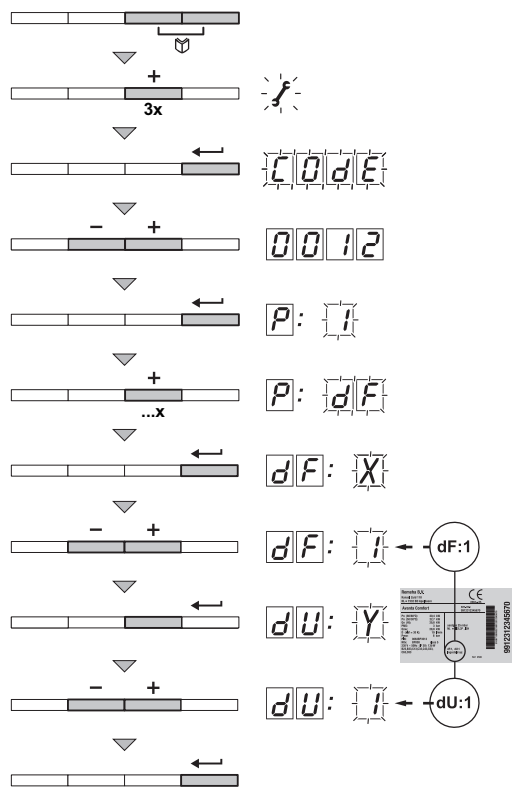
1. Press the two keys ⚇ simultaneously and then key **[+]** until the symbol ∫ flashes on the menu bar.
2. Select the installers menu using the key ↵. $\boxed{C}\boxed{O}\boxed{d}\boxed{E}$ appears on the display.
3. Use keys **[-]** or **[+]** to input the installer code $\boxed{0}\boxed{0}\boxed{1}\boxed{2}$.
4. Confirm using key ↵. $\boxed{P}:\boxed{1}$ is displayed with $\boxed{1}$ flashing.
5. Press the **[+]** key several times. $\boxed{P}:\boxed{d}\boxed{F}$ is displayed with $\boxed{d}\boxed{F}$ flashing.
6. Press the ↵ key. $\boxed{d}\boxed{F}:\boxed{X}$ is displayed with $\boxed{X}$ flashing. This is the current value of X for dF. Check this against the value of X on the type plate.
7. Enter the value of X shown on the type plate using the **[-]** or **[+]** key.
8. Confirm the value with the ↵ key, $\boxed{d}\boxed{F}:\boxed{Y}$ is displayed with $\boxed{Y}$ flashing. This is the current value of Y for dU. Check this against the value of Y on the type plate.
9. Enter the value of Y shown on the type plate using the **[-]** or **[+]** key.
10. Confirm the value with the ⊐ key. The factory settings are reset.
11. The display returns to the current operating mode.

T000820-H

6.7.5.   Carrying out an auto-detect

After removing a control PCB, an auto-detect must be carried out. To do this, proceed as follows:

1. Press the two keys ⩗ simultaneously and then key **[+]** until the symbol ∫ flashes on the menu bar.

2. Select the installers menu using the key ←┘. $\boxed{C}\boxed{O}\boxed{d}\boxed{E}$ appears on the display.

3. Use keys **[-]** or **[+]** to input the installer code $\boxed{0}\boxed{0}\boxed{1}\boxed{2}$.

4. Confirm using key ←┘. $\boxed{P}:\boxed{1}$ is displayed with $\boxed{1}$ flashing.

5. Press the **[+]** key several times. $\boxed{P}:\boxed{A}\boxed{d}$ is displayed with $\boxed{A}\boxed{d}$ flashing.

6. Confirm using key ←┘. Auto-detect is carried out.

7. The display returns to the current operating mode.

T000445-B

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7 Switching off the appliance

7.1 Installation shutdown

If the central heating system is not used for a long period, we recommend switching the boiler off.

▸ Switch the On/Off switch to Off.
▸ Switch off the boiler electrical power supply.
▸ Shut off the gas supply.
▸ Ensure that the boiler and system are protected against frost damage.

7.2 Antifreeze protection

When the heating water temperature in the boiler is too low, the integrated boiler protection system starts up. This protection functions as follows:

▸ If the water temperature is lower than 7°C, the heating pump starts up.
▸ If the water temperature is lower than 4°C, the boiler starts up.
▸ If the water temperature is higher than 10°C, the boiler shuts down and the circulation pump continues to run for a short time.
▸ If the water temperature in the storage tank is less than 4°C, it is reheated to its set point.

8   Checking and maintenance

8.1   Preventive maintenance with automated service message

When it is time to carry out maintenance on the boiler, the following instructions are shown on the display:

In a yellow display:

▸ The symbol 𝑓
▸ The symbol **SERVICE**
▸ Maintenance message $\boxed{A}$, $\boxed{b}$ or $\boxed{C}$

Thanks to the automatically transmitted maintenance message, it is possible to carry out preventive maintenance and therefore use the maintenance kits defined by **Remeha**, thus reducing breakdowns to a minimum. The maintenance message indicates which kit should be used. These maintenance kits (A, B or C) are available from your spare parts supplier. If no other faults are noted during the inspection initiated subsequent to the maintenance message, these maintenance kits include all of the parts needed for the maintenance concerned (such as the gaskets, for example).

ℹ   ▸   When a maintenance message is displayed, it must be acted upon within the 2 months following the appearance of the message.
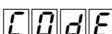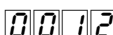
⚠ CAUTION

Reset the maintenance message to zero after each inspection.

### 8.1.1.   Resetting the automatic maintenance message

A service message on the boiler display must be reset by a qualified installer after the maintenance service has been carried out using the relevant service set. To do this, proceed as follows:

1. When the maintenance message is displayed, press key **RESET** 1 time. $\boxed{C}\boxed{O}\boxed{d}\boxed{E}$ appears on the display.
2. Use keys **[-]** or **[+]** to input the installer code $\boxed{0}\boxed{0}\boxed{1}\boxed{2}$.
3. Confirm using key ↵. The maintenance message is reset. The display returns to the current operating mode.
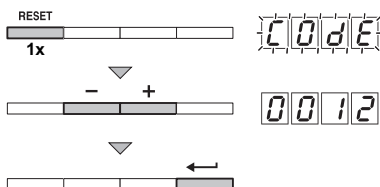
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8.1.2. Dealing with the next maintenance message and starting the new maintenance period
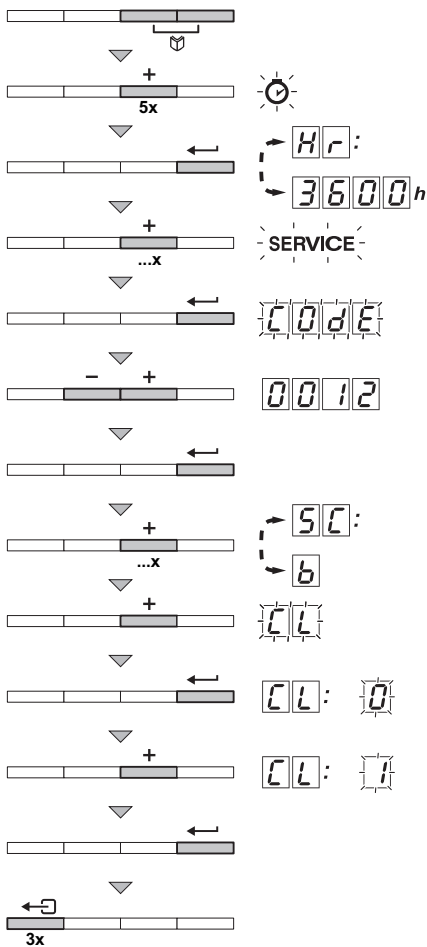
For an interim service it is advisable to read out in the boiler service menu what maintenance service should be carried out. Use the indicated **Remeha** service sets (A, B or C). This service message must be prevented by carrying out a reset. Start the next service interval. To do this, proceed as follows:

1. Press the two keys ⓨ simultaneously and then key **[+]** until the symbol ⓞ flashes on the menu bar.
2. Press the ↵ key. H_r and the number of hours of boiler operation $\boxed{3600}$ (for example) are displayed alternately.
3. Press key **[+]** several times until SERVICE flashes on the menu bar.
4. Press the ↵ key. $\boxed{CODE}$ appears on the display.
5. Use keys **[-]** or **[+]** to input the installer code $\boxed{0012}$.
6. Confirm using key ↵.
7. Press key **[+]** several times until $\boxed{SC}:\boxed{b}$ is displayed with $\boxed{b}$ (for example) flashing. In this example, the next service message is SERVICE $\boxed{b}$.
8. Press the **[+]** key a second time. $\boxed{CL}$ appears on the display.
9. Press the ↵ key. $\boxed{CL}:\boxed{0}$ is displayed with $\boxed{0}$ flashing.
10. Press key **[+]** to modify the value to $\boxed{1}$.
11. Confirm using key ↵. The new maintenance period begins.
12. Press the ⟵ key 3 times to return to the current operating mode.

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8.2 Standard inspection and maintenance operations

⚠️ **CAUTION**

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

8.2.1. Checking the hydraulic pressure

The hydraulic pressure must reach a minimum of 0,8 bar. If the water pressure is lower than 0,8 bar, the symbol ⌐ⅲ will appear.

ⓘ If necessary, top up the water level in the heating system (recommended hydraulic pressure between 1,5 and 2 bar).

8.2.2. Checking the expansion vessel

1. Remove the cover from the sealed chamber.
   ☞ see chapter: "Removing the cover from the sealed chamber", page 57
2. Check the expansion vessel and replace it if necessary.

8.2.3. Checking the ionization current

Check the ionization current at full load and low load. The value is stable after 1 minute. If the value lies below 3 µA, replace the ignition electrode.

☞ See chapter: "Reading out measured values", page 65.

8.2.4. Checking the tightness of the flue gas evacuation and air inlet connections

Check the tightness of the flue gases evacuation and air inlet connections.

8.2.5. Checking combustion

The check on combustion is done by measuring the percentage of O_2 in the flue gas discharge flue. To do this, proceed as follows:

1. Unscrew the plug of the flue gas measurement point.
2. Insert the probe for the flue gas analyser into the measurement opening.

⚠ **WARNING**

Ensure that the opening around the sensor is completely sealed when taking measurements.

⚠ **CAUTION**

The flue gas analyser must have a minimum accuracy of 0,25 % O_2.

3. Set the boiler to full load.
   ☞ see chapter: "Checking/setting values O_2 at full load", page 61
   The boiler is now operating at full load. Measure the percentage of O_2 and compare this value with the checking values given.
4. Set the boiler to part load
   ☞ see chapter: "Checking/setting values O_2 at low load", page 62
   The boiler is now operating on part load. Measure the percentage of O_2 and compare this value with the checking values given.

8.2.6. Checking the automatic air vent

1. Switch off the boiler electrical power supply.
2. Close the main gas inlet valve.
3. Remove the front panel.
4. Tilt the control panel into the high position.
5. Remove the cover from the sealed chamber.
   ☞see chapter: "Removing the cover from the sealed chamber", page 57
6. If any leaks are detected, replace the air vent.

8.2.7. Checking the safety valve

1. Check whether there is any water in the safety valve flow pipe.
2. If any leaks are detected, replace the safety valve.

8.2.8. Checking the condensate trap

1. Remove the cover from the sealed chamber.
   ☞see chapter: "Removing the cover from the sealed chamber", page 57
2. Remove the condensate trap and clean it.
3. Fill the siphon with water.
4. Put the condensate trap back in place.

8.2.9. Checking the burner and cleaning the heat exchanger
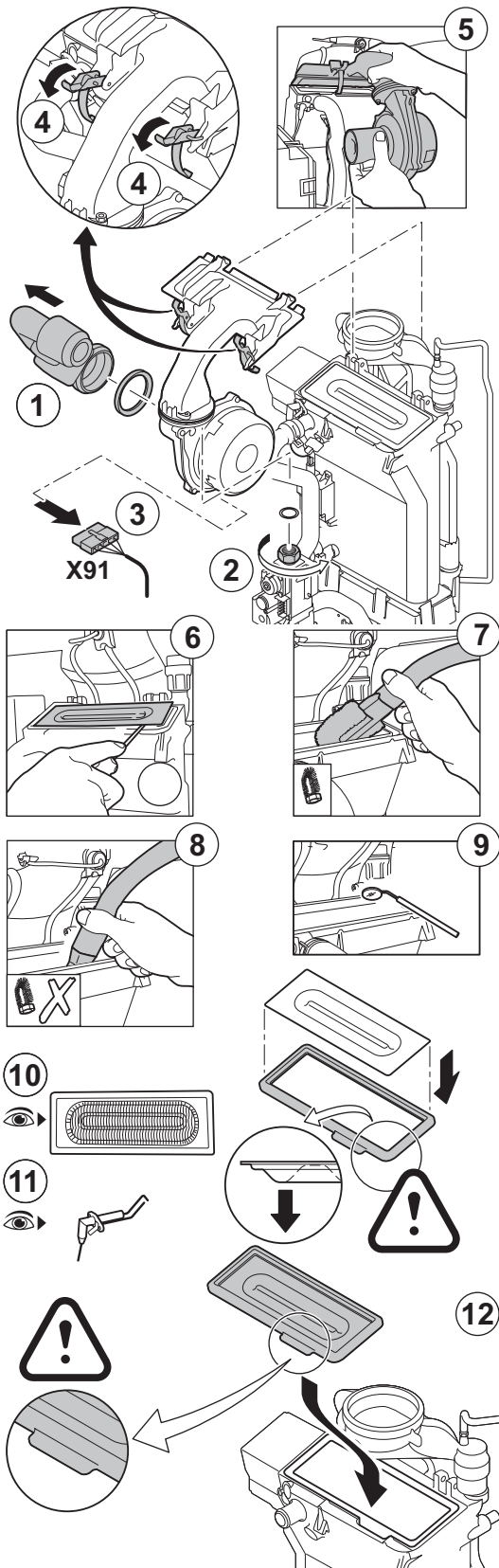
⚠️ **CAUTION**

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

1. Remove the air inlet flue on the venturi.
2. Unscrew the top connection on the gas valve unit.
3. Disconnect the connector located under the fan.
4. Release the 2 clips holding the fan/mixing elbow unit in place on the heat exchanger.
5. Completely remove the fan/mixing elbow unit.
6. Tilt the burner and remove it, along with the heat exchanger gasket.
7. Use a vacuum cleaner fitted with a special endpiece (accessory) to clean the top part of the heat exchanger (combustion chamber).
8. Thoroughly clean with the vacuum cleaner again without the top cleaning brush on the endpiece.
9. Check (using a mirror, for example) whether any dust can still be seen. If so, hoover it up.
10. The burner does not require any maintenance, it is self-cleaning. Check that there are no cracks and/or other tears on the surface of the dismantled burner. If this is not the case, replace the burner.
11. Checking the ignition electrode / ionization sensor. The gap must be between 3,5 and 4 mm.
12. To re-assemble, perform the above actions in reverse order.

⚠️ **CAUTION**

‣ Remember to reconnect the connector to the fan.

‣ Check that the gasket is correctly positioned between the mixing elbow and the heat exchanger.
(Completely flat in the appropriate groove means it is leak proof).

13. Open the gas inlet valve and restore the mains supply to the boiler.

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9 Troubleshooting

9.1 Error codes

The boiler is fitted with an electronic regulation and control unit. The heart of the control system is a microprocessor, the **Comfort Master©**, which controls the boiler and also protects the boiler. If a fault is detected anywhere in the boiler, the boiler locks out and the display will show the fault code as follows:

In a red flashing display:

▸ The symbol ⚠

▸ The symbol **RESET**

▸ The fault code (for example $E{:}\boxed{0}\boxed{1}$)

The meaning of the error codes is given in the error table. To do this, proceed as follows:

▸ Note the error code displayed.

> ℹ The error code is important for rapid and correct tracking of the type of problem and for any technical assistance from **Remeha**.

▸ Press the **RESET** key for 2 seconds. If the error code continues to display, search for the cause in the error table and apply the solution.

> ℹ If the display does not show **RESET** but rather ⏻, the boiler must be switched off and then switched on again after 10 seconds before the fault can be reset.

Code	Cause of the fault	Description	Checking / solution
$E{:}\boxed{0}\boxed{0}$	SU / PCU	PSU PCB not connected	Bad connection ▸ Check the wiring between the PCU and PSU PCBs PSU PCB faulty ▸ Replace the PSU PCB
$E{:}\boxed{0}\boxed{1}$	PSU	The safety parameters are incorrect	Bad connection ▸ Check the wiring between the PCU and PSU PCBs PSU PCB faulty ▸ Replace the PSU PCB

Code	Cause of the fault	Description	Checking / solution
E:02	SU/PCU	The boiler flow sensor has short-circuited	**Bad connection** ▸ Check the wiring between the PCU PCB and the sensor ▸ Check that the SU PCB is correctly in place ▸ Check that the sensor has been correctly fitted **Sensor fault** ▸ Check the Ohmic value of the sensor ▸ Replace the sensor if necessary
E:03	SU/PCU	The boiler flow sensor is on an open circuit	**Bad connection** ▸ Check the wiring between the PCU PCB and the sensor ▸ Check that the SU PCB is correctly in place ▸ Check that the sensor has been correctly fitted **Sensor fault** ▸ Check the Ohmic value of the sensor ▸ Replace the sensor if necessary
E:04	SU/PCU	Boiler temp too low	**Bad connection** ▸ Check the wiring between the PCU PCB and the sensor ▸ Check that the SU PCB is correctly in place ▸ Check that the sensor has been correctly fitted **Sensor fault** ▸ Check the Ohmic value of the sensor ▸ Replace the sensor if necessary **No water circulation** ▸ Vent the air in the heating system ▸ Check the circulation (direction, pump, valves) ▸ Check the water pressure ▸ Check the cleanliness of the heat exchanger
E:05	SU/PCU	Boiler temperature too high	**Bad connection** ▸ Check the wiring between the PCU PCB and the sensor ▸ Check that the SU PCB is correctly in place ▸ Check that the sensor has been correctly fitted **Sensor fault** ▸ Check the Ohmic value of the sensor ▸ Replace the sensor if necessary **No water circulation** ▸ Vent the air in the heating system ▸ Check the circulation (direction, pump, valves) ▸ Check the water pressure ▸ Check the cleanliness of the heat exchanger
E:06	SU/PCU	The return temperature sensor has short-circuited	**Bad connection** ▸ Check the wiring between the PCU PCB and the sensor ▸ Check that the SU PCB is correctly in place ▸ Check that the sensor has been correctly fitted **Sensor fault** ▸ Check the Ohmic value of the sensor ▸ Replace the sensor if necessary

Code	Cause of the fault	Description	Checking / solution
E:07	SU/PCU	The return temperature sensor is on an open circuit	**Bad connection** ▸ Check the wiring between the PCU PCB and the sensor ▸ Check that the SU PCB is correctly in place ▸ Check that the sensor has been correctly fitted **Sensor fault** ▸ Check the Ohmic value of the sensor ▸ Replace the sensor if necessary
E:08	SU/PCU	Return temperature too low	**Bad connection** ▸ Check the wiring between the PCU PCB and the sensor ▸ Check that the SU PCB is correctly in place ▸ Check that the sensor has been correctly fitted **Sensor fault** ▸ Check the Ohmic value of the sensor ▸ Replace the sensor if necessary **No water circulation** ▸ Vent the air in the heating system ▸ Check the circulation (direction, pump, valves) ▸ Check the water pressure ▸ Check the cleanliness of the heat exchanger
E:09	SU/PCU	Return temperature too high	**Bad connection** ▸ Check the wiring between the PCU PCB and the sensor ▸ Check that the SU PCB is correctly in place ▸ Check that the sensor has been correctly fitted **Sensor fault** ▸ Check the Ohmic value of the sensor ▸ Replace the sensor if necessary **No water circulation** ▸ Vent the air in the heating system ▸ Check the circulation (direction, pump, valves) ▸ Check the water pressure ▸ Check the cleanliness of the heat exchanger
E:10	SU/PCU	Difference between the flow and return temperatures insufficient	**Sensor fault** ▸ Check the Ohmic value of the sensor ▸ Replace the sensor if necessary **Bad connection** ▸ Check that the sensor has been correctly fitted **No water circulation** ▸ Vent the air in the heating 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

Code	Cause of the fault	Description	Checking / solution
E:11	SU/PCU	Difference between the flow and return temperatures too great	**Sensor fault** ▸ Check the Ohmic value of the sensor ▸ Replace the sensor if necessary **Bad connection** ▸ Check that the sensor has been correctly fitted **No water circulation** ▸ Vent the air in the heating 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
E:12	SU/PCU	Maximum boiler temperature exceeded (STB thermostat maximum)	**Bad connection** ▸ Check the wiring between the PCU PCB and the STB ▸ Check that the SU PCB is correctly in place ▸ Check the electrical continuity of the STB ▸ Check whether the STB has been correctly fitted **Sensor fault** ▸ Replace the STB if necessary **No water circulation** ▸ Vent the air in the heating system ▸ Check the circulation (direction, pump, valves) ▸ Check the water pressure ▸ Check the cleanliness of the heat exchanger
E:14	SU	5 burner start-up failures	**No ignition** ▸ Check the wiring between the PCU PCB and the ignition transformer ▸ Check that the SU PCB is correctly in place ▸ Check the ionization/ignition electrode ▸ Check the earthing ▸ SU PCB faulty: Change the PCB **Ignition arc, but no flame formation** ▸ Vent the gas flues ▸ Check that the gas valve is fully opened ▸ Checking the gas supply pressure ▸ Check the operation and setting of the gas valve unit ▸ Check that the air inlet and flue gas discharge flues are not blocked ▸ Check the wiring on the gas valve unit ▸ SU PCB faulty: Change the PCB **Presence of the flame but insufficient ionization (<3 μA)** ▸ Check that the gas valve is fully opened ▸ Checking the gas supply pressure ▸ Check the ionization/ignition electrode ▸ Check the earthing ▸ Check the wiring on the ionization/ignition electrode

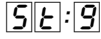| Code	Cause of the fault	Description	Checking / solution
E:16	SU	Detection of a parasite flame	Ionization current present even though there is no flame Ignition transformer defective ▸ Check the ionization/ignition electrode Gas valve defect ▸ Check the gas valve and replace if necessary The burner remains very hot: O_2 too low ▸ Set the O_2
E:17	SU	Problem on the gas valve	Bad connection ▸ Check that the SU PCB is correctly in place SU PCB faulty ▸ Inspect the SU PCB and replace it if need be
E:34	PCU	The fan is not running at the right speed	Bad connection ▸ Check the wiring between the PCU PCB and the fan Fan defective ▸ Check for adequate draw on the chimney connection ▸ Replace the fan if need be ▸ Check the state of cleanliness of the exchangers ▸ Check the connection direction of the flow and return pipes to the DHW tank (if present)
E:35	SU/PCU	Flow and return reversed	Bad connection ▸ Check that the sensor has been correctly fitted Sensor fault ▸ Check the Ohmic value of the sensors ▸ Replace the sensor if necessary Water circulation direction reversed ▸ Check the circulation (direction, pump, valves)
E:36	SU/PCU	The flame went out more than 5 times in 24 hours while the burner was operating	No ionization current ▸ Purge the gas supply to remove air ▸ Check that the gas valve is fully opened ▸ Checking the gas supply pressure ▸ Check the operation and setting of the gas valve unit ▸ Check that the air inlet and flue gas discharge flues are not blocked ▸ Check that there is no recirculation of flue gases ▸ Check the state of cleanliness of the exchangers ▸ Check the connection direction of the flow and return pipes to the DHW tank (if present)
E:37	SU/PCU	Communication failure with the SU PCB	Bad connection ▸ Check whether the SU PCB has been correctly fitted into the connector on the PCU PCB ▸ Change the SU PCB
E:38	PCU	Communication failure between the PCU and SCU PCBs	Bad connection ▸ Check the wiring between the PCU and SCU PCBs ▸ Perform the automatic detection function ☞ see chapter "Carrying out an auto-detect", page 75 SCU PCB not connected or faulty ▸ Replace the SCU PCB

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Code	Cause of the fault	Description	Checking / solution
E:39	PCU	The **BL** inlet is open	Bad connection ▸ Check the wiring
			External cause ▸ Check the device connected to the **BL** contact
			Parameter incorrectly set ▸ Check the parameter **IN.BL**
E:40	PCU	HRU/URC unit test error	Bad connection ▸ Check the wiring
			External cause ▸ Suppress the external cause
			Parameter incorrectly set ▸ Check the parameters

9.2   Shutdowns and lock-outs

9.2.1.   Lock out

If the blocking conditions still exist after several start up attempts, the boiler will switch into locking mode (fault). The boiler can only start operating again once the causes of the lock-out have been rectified and after pressing the ◀◻ key.

9.2.2.   Blocking

A (temporary) blocking mode is a boiler operating function caused by an unusual situation. In this case, the display gives a code of blocking (code $St:9$). The boiler control will try to re-start several times. The boiler will start up again after the blocking conditions have been eliminated.

To display the current blocking code, proceed as follows:

1. Press the two 🛡 keys simultaneously.
2. Confirm by pressing key ◀. St is displayed, alternating with the shutdown code 9.
3. Press the **[+]** key. Su is displayed, alternating with the shutdown code $X.X$.

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ⓘ   The boiler starts up again automatically when the reason for the blocking has been removed.

Code	Description	Checking / solution
Su:00	The PSU PCB is incorrectly configured	Parameter error on the PSU PCB ▸ Revert to the factory settings: ☞ See chapter "Return to the factory settings Reset Param", page 74
Su:01	Maximum flow temperature exceeded	The water flow in the installation is insufficient ▸ Check the circulation (direction, pump, valves)
Su:02	The increase in flow temperature has exceeded its maximum limit	The water flow in the installation is insufficient ▸ 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 whether the boiler sensor has been correctly fitted
Su:07	Maximum difference between the flow and return temperature exceeded	The water flow in the installation is insufficient ▸ 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 whether the boiler sensor has been correctly fitted
Su:08	The **RL** inlet on the PCU PCB terminal block is open	Parameter error ▸ Revert to the factory settings: ☞ See chapter "Return to the factory settings Reset Param", page 74 Bad connection ▸ Check the wiring
Su:09	Live/neutral inversion	Parameter error ▸ Check the parameter $P43$ ▸ Revert to the factory settings: ☞ See chapter "Return to the factory settings Reset Param", page 74
Su:10 Su:11	The **BL** inlet on the PCU PCB terminal block is open	The contact connected to the **BL** inlet is open ▸ Check the contact on the **BL** inlet Parameter error ▸ Check the parameter **IN.BL** Bad connection ▸ Check the wiring
Su:13	Communication error with the SCU PCB	Bad connection ▸ Check the wiring SCU PCB not installed in the boiler ▸ Install an SCU PCB
Su:14	The water pressure is lower than 0,8 bar	Not enough water in the circuit ▸ Top up the installation with water Parameter error ▸ Check the parameter $P22$ Failure water pressure switch ▸ Replace the water pressure sensor

Code	Description	Checking / solution
SU:15	Gas pressure too low	Incorrect setting of the gas pressure switch on the SCU PCB ▸ Check that the gas valve is fully opened ▸ Checking the gas supply pressure ▸ Check whether the gas pressure control system has been correctly fitted ▸ Replace the gas pressure control system if need be
SU:16	The SU PCB is not recognised	Wrong SU PCB for this boiler ▸ Replace the SU PCB
SU:17	The parameters saved on the PCU PCB are impaired	Parameter error on the PCU PCB ▸ Replace the PCU PCB
SU:18	The PSU PCB is not recognised	Wrong PSU PCB for this boiler ▸ Replace the PSU PCB
SU:19	The boiler has not been configured	The PSU PCB has been changed ▸ Revert to the factory settings: ☞ See chapter "Return to the factory settings Reset Param", page 74
SU:21	Communication error between the PCU and SU PCBs	Bad connection ▸ Check that the SU PCB has been correctly put in place on the PCU PCB ▸ Replace the SU PCB
SU:22	No flame during operation	No ionization current ▸ Purge the gas supply to remove air ▸ Check that the gas valve is fully opened ▸ Check the supply pressure ▸ Check the operation and setting of the gas valve unit ▸ Check that the air inlet and flue gas discharge flues are not blocked ▸ Check that there is no recirculation of flue gases
SU:25	Internal error on the SU PCB	▸ Replace the SU PCB
SU:26	The DHW tank sensor is disconnected or short circuited	Sensor error ▸ Check that the sensors are operating correctly ▸ Check that the sensor has been correctly fitted
SU:27	The sensor on the plate exchanger outlet is disconnected or short circuited	Sensor error ▸ Check that the sensors are operating correctly ▸ Check that the sensor has been correctly fitted
SU:28	An HL tank is detected whilst the boiler cannot control it. This message disappears after 10 seconds if the boiler can control the HL tank	▸ Wait for 10 seconds to see whether the error persists
SU:29	Communication error between the PCU and SCU-s191 PCBs	Bad connection
SU:30	Communication error between the SCU-s191 PCBs and the solar control system	Bad connection
SU:31	The TAS is in open circuit	▸ Bad connection ▸ No water in the DHW tank Remarks: Domestic hot water production is stopped but may nevertheless be restarted for 72 hours after the boiler is switched off. The tank is no longer protected. If a tank without Titan Active System® is connected to the boiler, check that the TAS simulation connector is fitted to the SCU-s191 PCB.

Code	Description	Checking / solution
$Su:32$	The TAS is short circuited	▶ Bad connection
		Remarks: Domestic hot water production is stopped but may nevertheless be restarted for 72 hours after the boiler is switched off. The tank is no longer protected. If a tank without Titan Active System® is connected to the boiler, check that the TAS simulation connector is fitted to the SCU-s191 PCB.
$Su:33$	The header sensor in the solar control system is defective	▶ Bad connection ▶ Sensor fault
$Su:34$	The sensor in the solar tank is defective	▶ Bad connection ▶ Sensor fault

9.3   Error memory

The boiler control is equipped with an error memory. The last 16 errors encountered are recorded in this memory.

In addition to the error codes, the following data are also saved:

▶ Number of times that the error occured: ($n\ :X\,X$).

▶ Boiler operating mode selected ($St:X\,X$).

▶ The flow temperature ($t\,1:X\,X$) and the return temperature ($t\,2:X\,X$) when the error occured.

To view the error memory, you first have to enter access code $0\,0\,1\,2$.

9.3.1. Error readout memorised
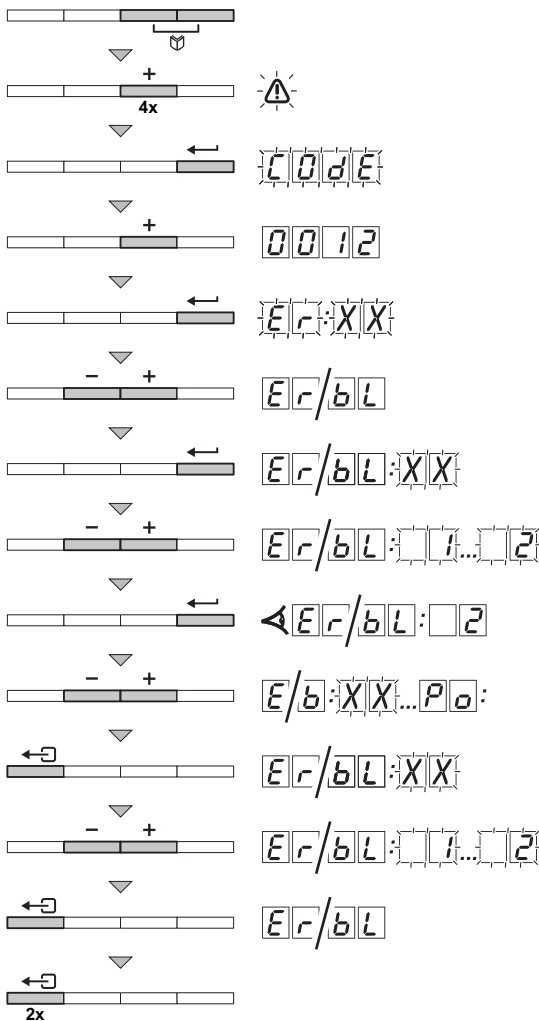
1. Press the two keys ᗰ simultaneously and then key **[+]** until the symbol ⚠ flashes on the menu bar.
2. Select the installers menu using the key ↵. $\boxed{C}\boxed{0}\boxed{d}\boxed{E}$ appears on the display.
3. Use keys **[-]** or **[+]** to input the installer code $\boxed{0}\boxed{0}\boxed{1}\boxed{2}$.
4. Press the ↵ key. $\boxed{E}\boxed{r}:\boxed{X}\boxed{X}$ appears on the display.
5. The fault list or shutdown list can be displayed by pressing the **[-]** or **[+]** key.
6. Confirm using key ↵. $\boxed{E}\boxed{r}:\boxed{X}\boxed{X}$ is displayed with $\boxed{X}\boxed{X}$ flashing = Last error which occured, For example $\boxed{\ }\boxed{2}$.
7. Use the **[-]** or **[+]** key to scroll through the faults or shutdowns.
8. Press the ↵ key to display the details of the faults or shutdowns.
9. Press the **[-]** or **[+]** key to view the following information:
   $\boxed{n}:\boxed{1}$ = Number of times that the error occured.
   $\boxed{H}\boxed{r}$ = The number of operating hours.
   $\boxed{5}\boxed{t}$ = State.
   $\boxed{5}\boxed{u}$ = Sub-status.
   $\boxed{t}\boxed{1}$ = Flow temperature (° F / ° C).
   $\boxed{t}\boxed{2}$ = Return temperature (° F / ° C).
   $\boxed{t}\boxed{3}$ = Calorifier temperature (° F / ° C).
   $\boxed{t}\boxed{4}$ = Outside temperature (° F / ° C) (Only with an outside temperature sensor).
   $\boxed{t}\boxed{5}$ = Solar boiler temperature (° F / ° C).
   $\boxed{5}\boxed{P}$ = Internal set point (° F / ° C).
   $\boxed{F}\boxed{L}$ = Ionization current (µA).
   $\boxed{n}\boxed{F}$ = Fan speed in rpm.
   $\boxed{P}\boxed{r}$ = Water pressure (bar (MPa)).
   $\boxed{P}\boxed{o}$ = Supplied relative heat output (%).
10. Press the ⬅ key to interrupt the display cycle. $\boxed{E}\boxed{r}:\boxed{X}\boxed{X}$ is displayed with $\boxed{X}\boxed{X}$ flashing = Last error which occured.
11. Use the **[-]** or **[+]** key to scroll through the faults or shutdowns.
12. Press the ⬅ key to show the fault list or shutdown list.
13. Press 2 times on the key ⬅ to exit the error memory.

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9.3.2. Deletion of the error display
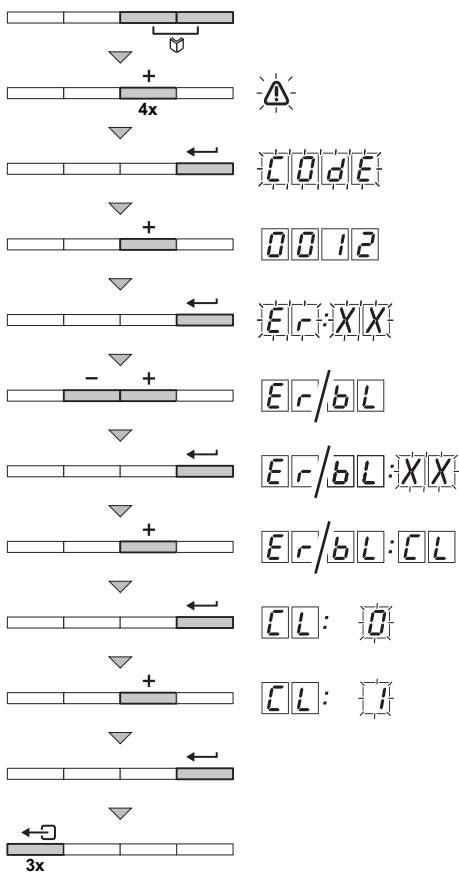
1. Press the two keys ⏷ simultaneously and then key **[+]** until the symbol ⚠ flashes on the menu bar.
2. Select the installers menu using the key ⏎. $\boxed{C}\boxed{O}\boxed{d}\boxed{E}$ appears on the display.
3. Use keys **[-]** or **[+]** to input the installer code $\boxed{0}\boxed{0}\boxed{1}\boxed{2}$.
4. Press the ⏎ key. $\boxed{E}\boxed{r}:\boxed{X}\boxed{X}$ appears on the display.
5. The fault list or shutdown list can be displayed by pressing the **[-]** or **[+]** key.
6. Confirm using key ⏎. $\boxed{E}\boxed{r}:\boxed{X}\boxed{X}$ is displayed with $\boxed{X}\boxed{X}$ flashing.
7. Press the **[+]** key several times until $\boxed{E}\boxed{r}:\boxed{C}\boxed{L}$ is displayed on the screen.
8. Press the ⏎ key. $\boxed{C}\boxed{L}:\boxed{0}$ is displayed with $\boxed{0}$ flashing.
9. Press key **[+]** to modify the value to $\boxed{1}$.
10. Press the ⏎ key to delete the errors from the error memory.
11. Press 3 times on the key ⏎ to exit the error memory.

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10 Spare parts

10.1 General

When it is observed subsequent to inspection or maintenance work that a component in the appliance needs to be replaced, use only original spare parts or recommended spare parts and equipment.

Send the component to be replaced to your supplier's Returned Goods Department if the component in queston is under warranty (see general terms and conditions of sale and delivery).

i Always ensure that your return package is accompanied by the completed return form, see attached example. In this way, your supplier can fulfil his warranty obligations more easily and more effectively.

Customer						
Reference			Date			
Name						
Address						
Town/Postcode						
Telephone						
Contact person						
Order number						

Code no.	**Description**	**Serial number**[1]	**Type**	**Installation date**	**Reason for the exchange**	**Reference**

(1) This information can be found on the rating plate.

10.2 Spare parts

10.2.1. Casing
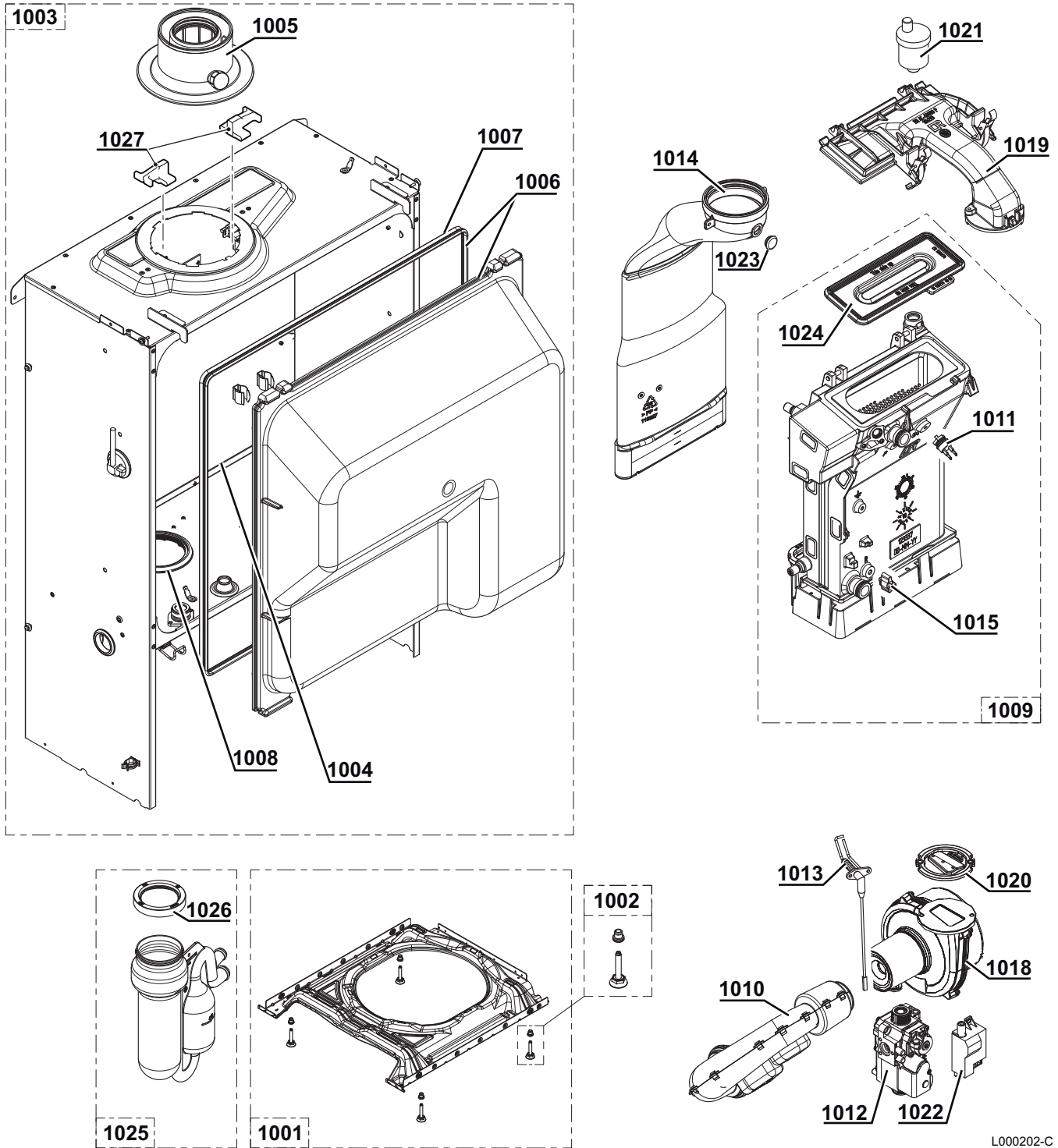
L000202-C

10.2.2.   Water unit

L000208-C

10.2.3. Control panel

C003824-C

10.2.4. Casing

L000206-D

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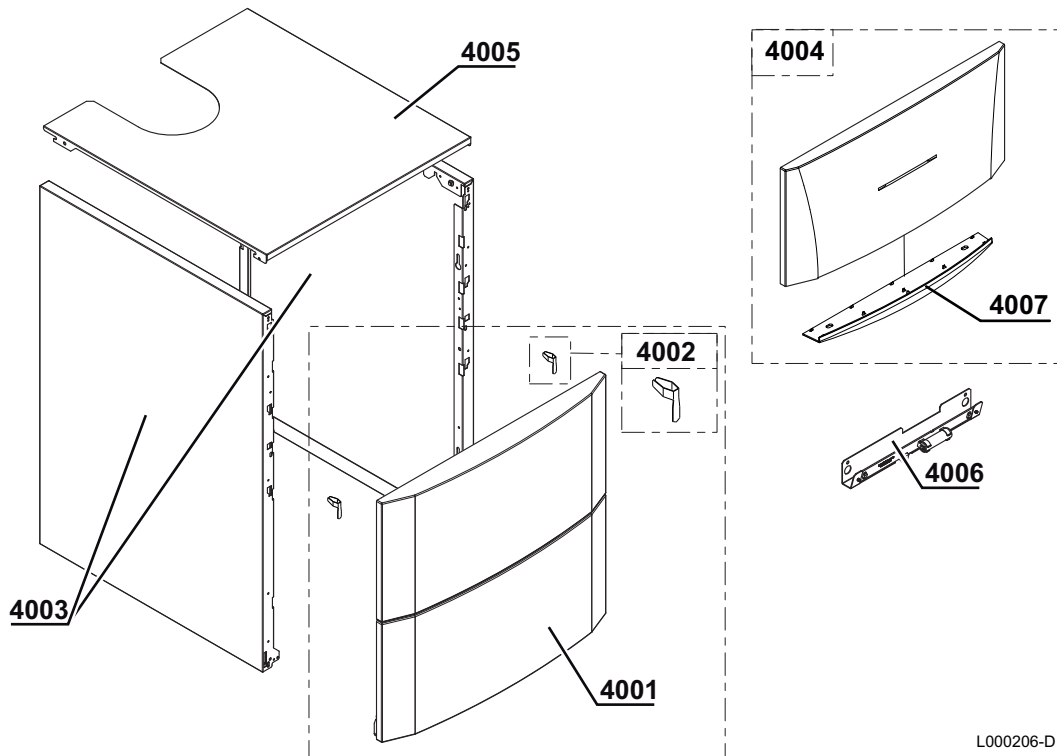
10.2.5. Spare parts list

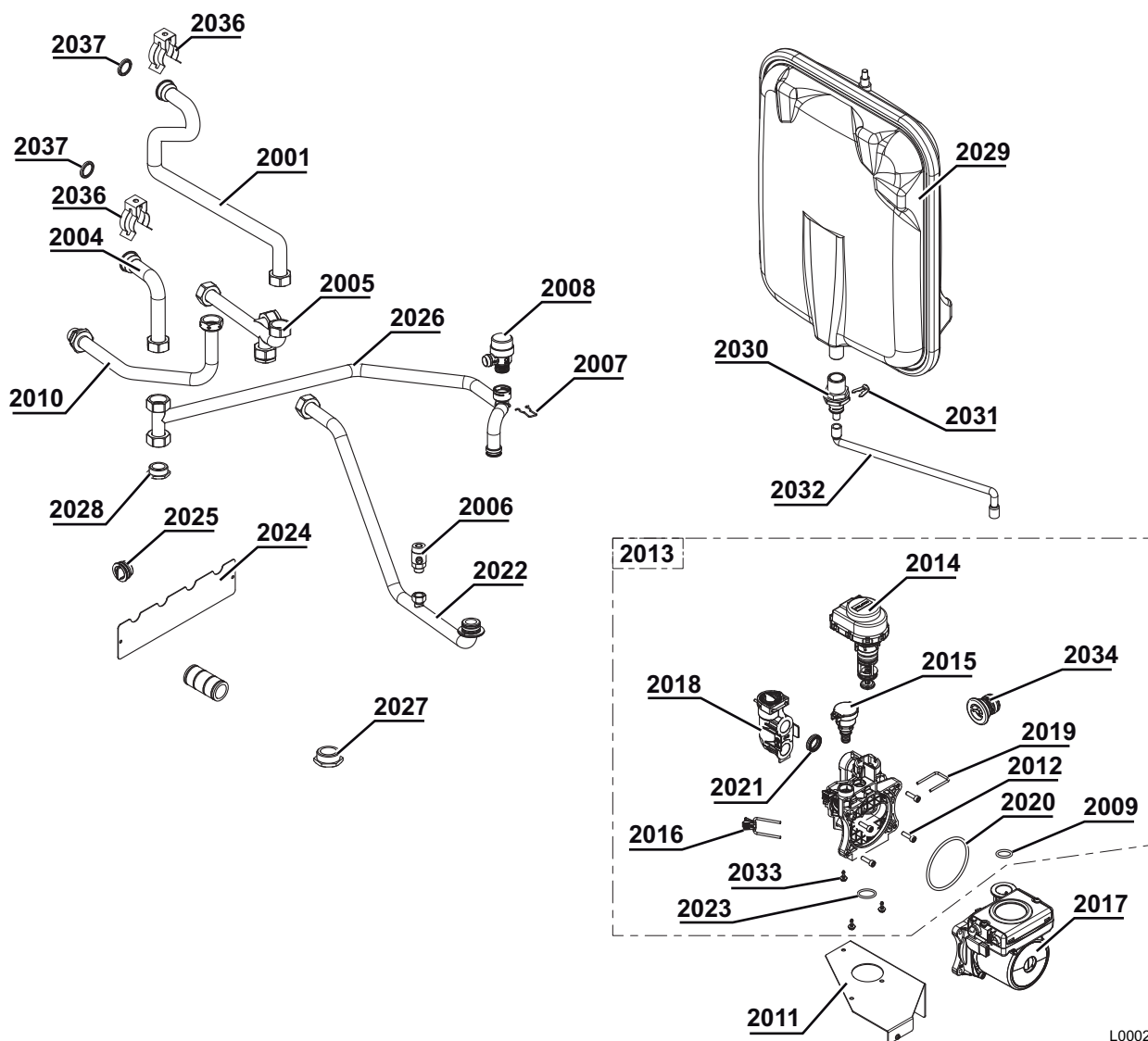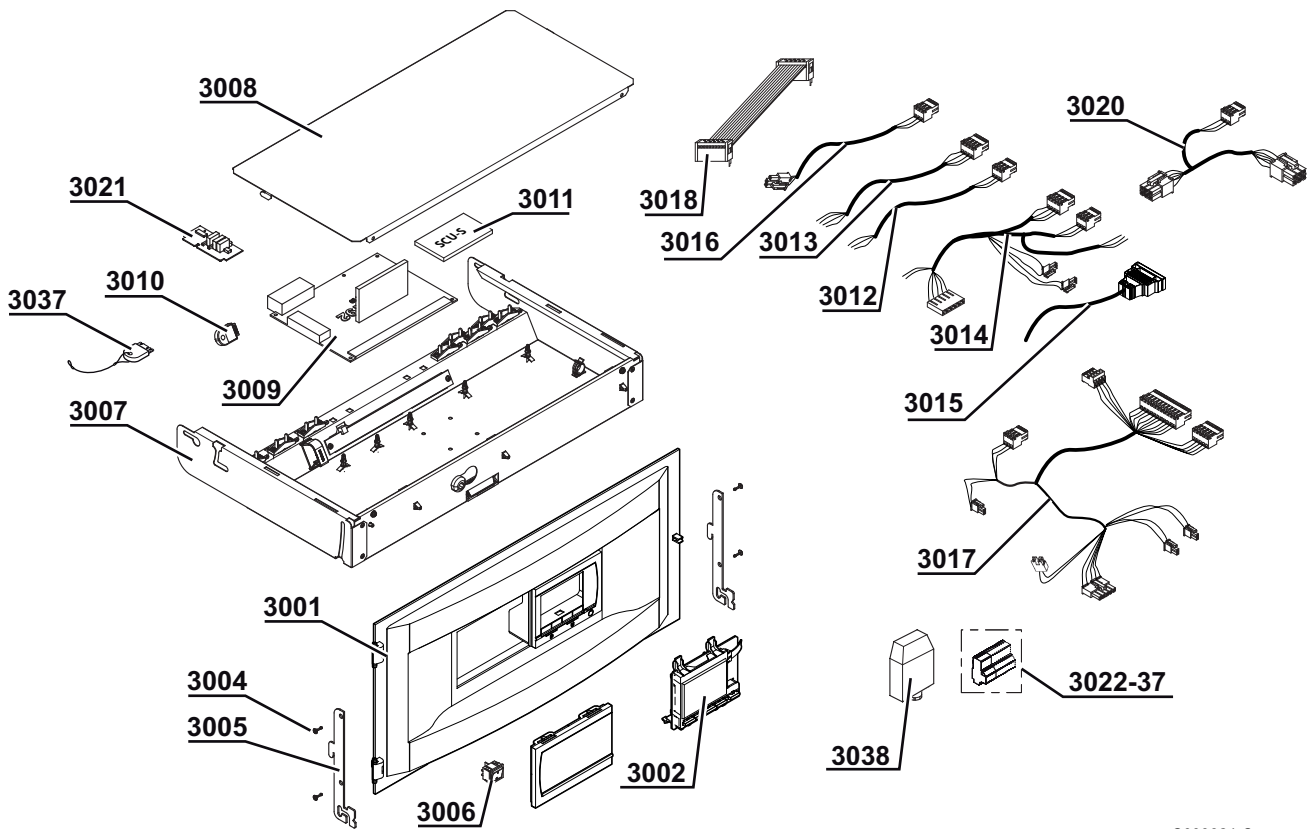| Markers	Code no.	Description
Exchanger - Casing		
1001	200018958	Complete base frame
1002	300024451	Adjustable foot M8-45 mm
Casing		
1003	200020609	Sealed chamber withour vessel 25 kW - Flue gas nozzle 80/125
1004	95013180	Sealing 9x2 mm
1005	S101669	Flue gas nozzle 80/125
1006	200018975	Complete cover
1007	300024870	Hood seal
1008	300024391	Chamber - siphon gasket
1009	200018960	Heating body 25 kW
1010	S100911	25 kW silencer
1011	S101005	HL temperature sensor
1012	S101507	Gas block
1013	S100890	Ignition/ionization electrode
1014	S100854	Flue gas discharge pipe 25 kW
1015	S101003	NTC temperature sensor
1018	S100878	Fan NRG 118- D19.5 25 kW
1019	S100882	Gas / air mixing part 25 kW
1020	S100881	83 mm gasket with flap 25 kW
1021	85000023	Automatic air vent 3/8"
1022	S100572	Ignition transformer
1023	S100850	Protective plug for the combustion gas evacuation measurement point (x5)
1024	S100879	Burner 25 kW - 198 mm
1025	300024610	Complete siphon
1026	S100906	Siphon gasket
Water unit - Circulation pump		
2001	300026383	Exchanger flow pipe
2004	300026381	Exchanger return pipe
2005	300024415	Flow distributor pipe
2006	94902000	Drain cock
2007	S100835	Pin spring 16 mm (10x)
2008	200022010	3.5-bar safety valve
2009	S59597	18x2.8 O-ring (10x)
2010	300024413	Gas inlet pipe G1/2"
2011	300024447	Pump bracket
2012	S59141	Screw M5x18 (15x)
2013	S100822	Water unit, right + 3-way valve + Pressure sensor
2014	S100823	Motor + 3-way valve insert
2015	S100821	Pressure sensor
2016	S100832	26 clip with lever (10x)
2017	S100703	Circulation pump
2018	S100827	Connection for hydroblock 2S
2019	S100813	Clip 26 (20x)
2020	S100815	76x4 O-ring (5x)
2021	S100810	25,2x17 O-ring (20x)
2022	300025159	Return pipe under complete pump

Markers	Code no.	Description
2023	S100816	22x22.5 O-ring (10x)
2024	300025174	Pipe holding plate
2025	300025173	Plug
2026	300025162	Return pump pipe - complete exchanger
2027	94950154	G1" plug
2028	300000021	G3/4" plug
2029	300028266	Expansion vessel 12 litres 25 kW
2030	300024509	1/2" junction 25 kW
2031	S100814	Clip 10.3 (5x)
2032	300024428	Expansion vessel hose
2033	S100825	Screw K50x12 (20x)
2034	S100837	13,9 plug (10x)
2036	114341	Exchanger connection clip
2037	200021826	20.3x2.62 O-ring (x 10)
Control panel		
3001	300025178	Front strip on the control panel
3003	300024405	TILTING ADV CONTROL SYSTEM BRACKET
3004	200019769	Screw EJOT KB35X10 (10x)
3005	300024464	Hook
3006	300024488	WHITE BIPOLAR SWITCH
3007	200019187	Complete board support
3008	300025092	Painted control panel cover
3009	200018121	PCU-192 control board
3010	300025621	2 connector assembled OT - Green
3010	300009075	Connector RAST 5 3611 03 F44 K03 M08 P621
3011	200018713	SCU-S191 control board
3012	300024876	Power supply cable 230 V
3013	300024878	PCU cable - General switch 230 V
3014	300024879	cable form 230 V
3015	300024881	3-way valve cable
3016	300024882	Pump cable
3017	300024883	cable form 24 V
3018	300024886	10-pin ribbon cable
3020	300024884	Interface BUS cable
3021	S103300	SU-01 PCB
3037	7601744	Parameter Storage Unit PSU01
Casing		
4001	200019180	Front casing
4002	200019786	Spring kit for front panel (10x)
4003	200019179	Side panels Left + right
4004	200019851	Front casing with hinges
4005	300024448	Top panel
4006	200020598	Boiler back light
4006	200020598	Boiler back light

Appendix

Information on the ecodesign and energy labelling directives

Contents

1   Specific information

1.1   Recommendations

> **i** **Note**
> Only qualified persons are authorised to assemble, install and maintain the installation.

1.2   Ecodesign Directive

This product conforms to the requirements of European Directive 2009/125/EC on the ecodesign of energy-related products.

1.3   Technical data

Tab.1   Technical parameters for boiler space heaters

Product name			CALORA TOWER GAS 15S EX	CALORA TOWER GAS 25S EX	CALORA TOWER GAS 35S EX
Condensing boiler			Yes	Yes	Yes
Low-temperature boiler[1]			No	No	No
B1 boiler			No	No	No
Cogeneration space heater			No	No	No
Combination heater			No	No	No
Rated heat output	$Prated$	kW	15	25	35
Useful heat output at rated heat output and high temperature regime[2]	P_4	kW	14.9	24.8	34.8
Useful heat output at 30% of rated heat output and low temperature regime[1]	P_1	kW	5.0	8.3	11.6
Seasonal space heating energy efficiency	η_s	%	94	94	94
Useful efficiency at rated heat output and high temperature regime[2]	η_4	%	89.5	89.4	89.3
Useful efficiency at 30% of rated heat output and low temperature regime[1]	η_1	%	99.3	99.2	99.6
Auxiliary electricity consumption					
Full load	$elmax$	kW	0.031	0.045	0.062
Part load	$elmin$	kW	0.021	0.019	0.021
Stand-by	P_{SB}	kW	0.004	0.004	0.004
Other characteristics					
Standby heat loss	P_{stby}	kW	0.078	0.078	0.085
Ignition burner power consumption	P_{ign}	kW	-	-	-
Annual energy consumption	Q_{HE}	GJ	46	77	107
Sound power level, indoors	L_{WA}	dB	46	51	53
Emissions of nitrogen oxides	NO_X	mg/kWh	30	34	38

(1) Low temperature means for condensing boilers 30°C, for low temperature boilers 37°C and for other heaters 50°C return temperature (at heater inlet).
(2) High temperature regime means 60°C return temperature at heater inlet and 80°C feed temperature at heater outlet.

See
The back cover for contact details.

1.4 Circulation pump

Note
The benchmark for the most efficient circulators is EEI ≤ 0.20.

1.5 Disposal and Recycling

Fig.1 Recycling

MW-3000179-03

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

If you need to remove the boiler, proceed as follows:

1. Switch off the boiler.
2. Cut the electrical power to the boiler.
3. Close the main gas valve.
4. Close the water mains.
5. Close the gas valve on the boiler.
6. Drain the installation.
7. Remove the air vent hose above the siphon.
8. Remove the siphon.
9. Remove the air/flue gas pipes.
10. Disconnect all pipes on the underside of the boiler.
11. Dismantle the boiler.

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