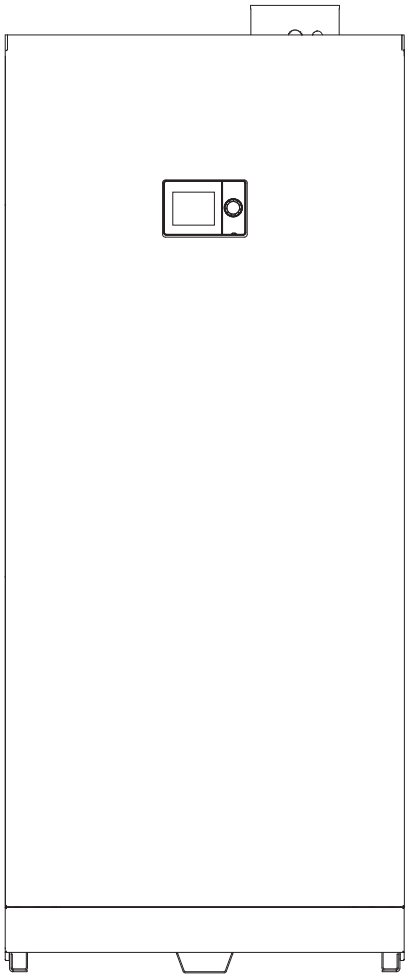
installation and maintenance manual

FOR THE INSTALLER AND THE USER

COILMASTER

60 · 70 · 80 · 100 · 120 kW

FLOOR — STANDING COMBINATION BOILER



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Appliance Naming

In the documentation, products of the CoilMaster range can be designated indifferently using a full name or abbreviated name:

"CoilMaster CM 60" ► **CoilMaster 60** or **CM 60**

"CoilMaster CM 70" ► **CoilMaster 70** or **CM 70**

"CoilMaster CM 80" ► **CoilMaster 80** or **CM 80**

"CoilMaster CM 100" ► **CoilMaster 100** or **CM 100**

"CoilMaster CM 120" ► **CoilMaster 120** or **CM 120**

Liabilities of the Manufacturer, the Installer and the End user

Manufacturer

Our products are manufactured in compliance with the requirements of the applicable European Directives and standards, and are therefore delivered with all the required documentation and markings.

The quality of our products is essential to us, and we aim therefore at improving them continually. To this end, we reserve the right to change the technical characteristics and features of our products without prior notice. Please check for the latest revision of the manual on our website (www.myaic.eu).

The manufacturer shall not be held liable for any malfunction of the product resulting from:

- *The failure to comply with the safety and installation instructions provided herein,*
- *The failure to comply with the safety and operation instructions and recommendations provided herein,*
- *The failure to have the appliance maintained regularly,*
- *A modification of the appliance that is not approved by the manufacturer,*
- *The use the product for any other purpose than its intended use,*
- *The use of components and accessories that are not approved by the manufacturer.*

Installer

The installer is responsible for the correct installation, conversion (as required) and commissioning of the appliance according to:

- *The instructions and recommendations provided herein*
- *The applicable regulations and standards*

The installer shall provide the end-user with:

- *Any relevant explanation about the operation of the appliance and the heating system as well as the safety devices that are provided,*
- *Any instruction regarding periodic checks to be performed and possible anomaly to be reported*
- *All the documentation delivered with the appliance and installed accessories.*

The installer shall also inform the end-user of the necessity to have the appliance checked and maintained regularly by a qualified professional.

End-user

To ensure the best performances and safety of the appliance, the end-user shall:

- *Make sure that the appliance is installed, converted (as required), commissioned and adjusted by a qualified professional,*
- *Make sure that the appliance is checked and maintained regularly by a qualified professional,*
- *Comply with all the instructions and recommendations provided in the appliance documentation,*
- *Make sure to receive from the installer all the necessary explanations related to the operation of the appliance and the safety devices,*
- *Make sure to receive from the installer all the appliance and accessories documentation,*
- *Keep all the appliance documentation in a safe place for future use.*

The end-user shall use the product for its intended use.

- ***Should the installer or the end user not comply with the instructions and requirements stated in this manual, the warranty will be void.***
- ***For more information on the warranty terms and conditions, please connect to our website: www.myaic.eu.***

About this Manual

This documentation is part of the product. It will be handed over to the end-user who will keep it, with all the other applicable documents, in a safe place and readily available for use.

Before installing, operating or maintaining the appliance, please carefully read this manual and all the applicable documents provided with the components and accessories. They contain essential safety information.

Symbols in this Manual

Indicates an essential instruction which, if not followed, can result in a hazardous situation that can cause serious damage to equipment and/or injuries or death.

Indicates an essential instruction in relation with the presence of electrical power and a danger of electrical shock.

Indicates an important instruction which, if not followed, could result in a hazardous situation that could cause damage to equipment and/or injuries.

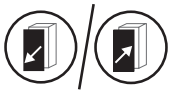
Indicates important information.

The electrical supply to the appliance must be activated/deactivated through the external circuit breaker or the power supply cable must be connected/disconnected.

The appliance must be started/stopped using the ON/OFF switch installed on the appliance.

The gas supply to the appliance must be provided/shut down through the external gas tap.

The water circuit of the appliance must be full of water (under pressure)/empty.



The front and top access panel(s) of the appliance must be removed/installed.

The appliance must have cooled down.

Gas connection.

Safety valve, connected to the drain.

Heating circuit supply connection.

Heating circuit return connection.

Domestic hot water outlet.

Cold water inlet.

DHW recirculation connection.

For an explanation of the symbols on the control panel, please see *"Symbols and Messages on the Control Panel" on page G-12.*

Symbols on the Appliance

High Voltage - danger of electric shock.

Ground / Earth.

Heating circuit connection.

DHW connection.

Gas connection.

Symbols on the Packaging

This side up

Keep dry

Fragile

Do not stack

The prefixes used in the page numbering indicate the following:

G- : General information

U- : Pages intended for the end user

I- : Pages intended exclusively for the qualified professional (e.g. installer)

Safety Instructions

IF YOU SMELL GAS:

→ **DO NOT:**

- Use an open flame
- Smoke
- Use electrical devices (phones, doorbell, etc.) or switches

→ **DO:**

- Close the gas supply
- Open all doors and windows to ventilate the room
- Inform the neighbours of the danger by knocking at the doors.
- Get out of the building
- Call the gas company

- This product is intended for heat generation in heating systems and the production of domestic hot water.
- This appliance must be installed according to the applicable local regulations and standards.
- This appliance can be used by children who are at least 8 years old and by persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge, provided that they are under supervision or have been given instructions concerning the use of the appliance in a safe way and that they understand the hazards involved.
- Cleaning and user maintenance shall not be performed by children without supervision. Children shall not play with the appliance.
- Any modification to the appliance and its components is strictly forbidden without the prior written consent of the manufacturer.
- If components need to be replaced, only genuine factory parts or components approved by the manufacturer must be used.

- When working on the appliance and the system, make sure to use the appropriate tools to avoid damaging the pipes and components.
- If works need to be performed close to the appliance (e.g. in the boiler room or close to the air inlets), make sure to shut down the appliance to prevent dust from entering and accumulating in the appliance.
- The appliance contains a frost-protection feature that will protect the appliance against frost, provided that the appliance remains in operation and the radiator valves are open.

- *When unpacking the appliance, check the integrity and condition of the packaging and that all the components and accessories described in the packing list are present. Contact your supplier in case of problem.*
- *When discarding the packaging, do not contaminate the environment. Dispose of it according to the applicable local regulations on recycling.*

Package Contents

- A CoilMaster combination boiler
- An Installation and Maintenance manual

Refer to ***"Unpacking the Product" on page I-30*** for the complete unpacking and installation instructions.

Boiler Marking

The data plate is located at the back of the boiler.

aic heating systems

CoilMaster 120

Floor-Standing Combination Boiler

Type: Range rated condensing boiler

PIN: _____
Serial no. : _____

Year built:

CE

MODEL: CM 120	**MASTER:**	**SLAVE:**

Standards: EN 15502-1/EN 15502-2-1
Power Supply:
Power Consumption:
IP Class:
Max. Working Pressure [PMS] :
Max. Working Pressure-DHW circuit [PWM]
Max. Working Temperature:
Flue appliance type:
NOx Class:

Heat Input
Q Min. [kW]:
Qn Nom. [kW]:

Useful Output at [90°C/60°C]
P Min. [kW]:
Pn Nom. [kW]:

Useful Output at [50°C/30°C]
P Min. [kW]:
Pn Nom. [kW]:

EXAMPLE

Gas appliance category	Gas type	Gas appliance pressure	Country of destination

The boiler shall be installed by a qualified installer in accordance with provided installation and maintenance technical manual, national and local requirements, gas safety regulations and relevant standards.

AIC Europe B.V.
Graafschap Hornelaan 163A
NL-6001 AC Weert
The Netherlands

Please read installation and maintenance manual before installing the boiler.

The boiler is pre-adjusted in the factory to the gas pressure of 20mbar for gas type G20.

Fig. 1. Data Plate - Typical

CoilMaster 60 - 70 - 80 - 100 - 120

General Description

This floor-standing CoilMaster combination boiler is a compact, low-emission condensing appliance with a pre-mix burner, a stainless steel heat exchanger and a lightweight casing. It also includes a built-in stainless steel coil that allows the instantaneous supply of hot water for domestic use.

The fully radial burner ensures a high modulation ratio, combustion stability and very low NOx emissions.

The unique and proven “fire-tube” heat exchanger offers a large heat exchange surface to optimise energy and heating efficiency.

The CoilMaster is designed for heating systems and for on-demand production of Domestic Hot Water, through the built-in stainless steel coil.

The appliances are built for natural gas but can be converted to operate with liquid gas (propane), using an optional conversion kit. The optional kit installation must take place before commissioning and comply with applicable local regulations and standards.

The CoilMaster boilers are able to control 3 heating circuits with mixing functions, through 3 optional extension modules. Each extension module requires a power supply and a bus connection. Refer to ***“Optional Modules” on page I-72*** for more information.

The primary circuit of the appliance **is not** provided with a built-in circulating pump. Therefore, the heating system must be equipped with at least one pump for standard system set up.

CoilMaster boilers can be connected in a cascade configuration, which means that the boilers are connected to the same water circuit and electronic controller, with one boiler operating as principal, and the others as subsequent. Refer to ***“Boilers in a Cascade System” on page I-73*** for more information on cascade system possibilities.

Frost Protection

The CoilMaster boilers have a built-in anti-frost protection. The pump and the burner are started as required when the return water temperature drops below 5°C (as measured by the boiler internal sensor installed on the return circuit).

The pump and/or burner will turn off when the return temperature reaches the required setpoint.

The anti-frost protection function only protects the boiler, not the entire system.

Safety Devices

The CoilMaster boilers are equipped with a series of sensors and switches that provide safety for your appliance and heating system, such as:

- Water circuit temperature sensors (supply, return, system, etc.)
- Gas pressure switch
- Flue pressure switch
- Water pressure sensor
- Flue temperature sensor
- Alarm contacts
- CH and DHW safety valves

The CoilMaster boilers **are not** provided with the following mandatory safety equipment that the installer must place in the system, in accordance with the applicable local standards and regulations:

- Expansion tank, suitable for the system size
- Safety group, composed of a safety valve (pressure rating adapted to the system), an automatic relief valve and a manometer
- Air relief valve(s), at the high point(s) of the system

Optional equipment

Some optional equipment can be used with the CoilMaster boilers. Please contact your AIC representative for more information and a list of available equipment.

To lengthen the life of your boiler and heating system, in addition to the recommended water characteristics described in ***“Water Quality Requirements to Prevent Scaling and Corrosion (Primary Circuit)” on page I-37,*** the following equipment can be installed in the heating circuit:

- Water filter / dirt separator
- Air separator
- Low loss header
- Plate heat exchanger

See ***“Requirements for the Hydraulic Circuits” on page I-32*** for more information on this equipment.

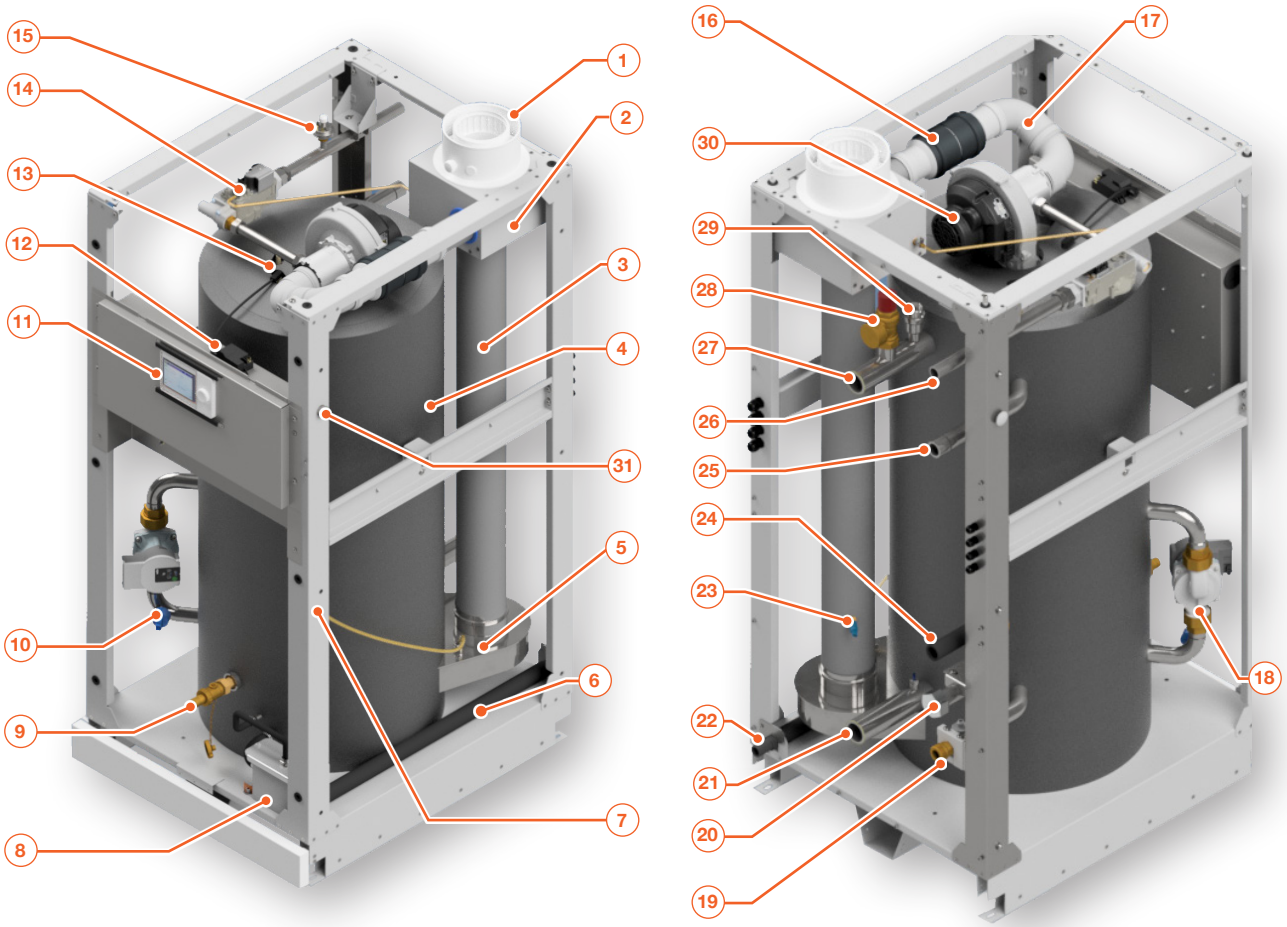


Fig. 2. CoilMaster 60 - 70 - 80 — Boiler Components

KEY

1. Concentric chimney connection (Ø 100/150 mm)
2. Flue gas/air inlet box
3. Flue exhaust pipe
4. Heating body (comprised of a stainless steel “fire tube” heat exchanger and DHW coil, not shown) with insulation
5. Stainless steel condens dish
6. Condensate drain
7. Flue pressure switch (not shown - located behind the electronic junction box)
8. Condensate trap
9. Drain connection
10. Pressure sensor
11. Control panel and electronic junction box (with boiler management unit)
12. Ignition transformer
13. Ignition and ionization electrodes
14. Gas valve
15. Gas pressure switch
16. Air inlet noise-reduction adaptor
17. Air inlet pipe to air-gas mixer
18. Internal exchange circulation pump
19. Cold water inlet, with flow sensor
20. DHW recirculation connection
21. Heating return connection
22. Condensate drain connection
23. Flue temperature sensor
24. DHW safety valve (not shown)
25. DHW outlet, with temperature sensor
26. Gas connection
27. Heating supply connection
28. Heating circuit safety valve
29. Automatic air vent
30. Burner assembly, with fan and air-gas mixer
31. On-Off switch

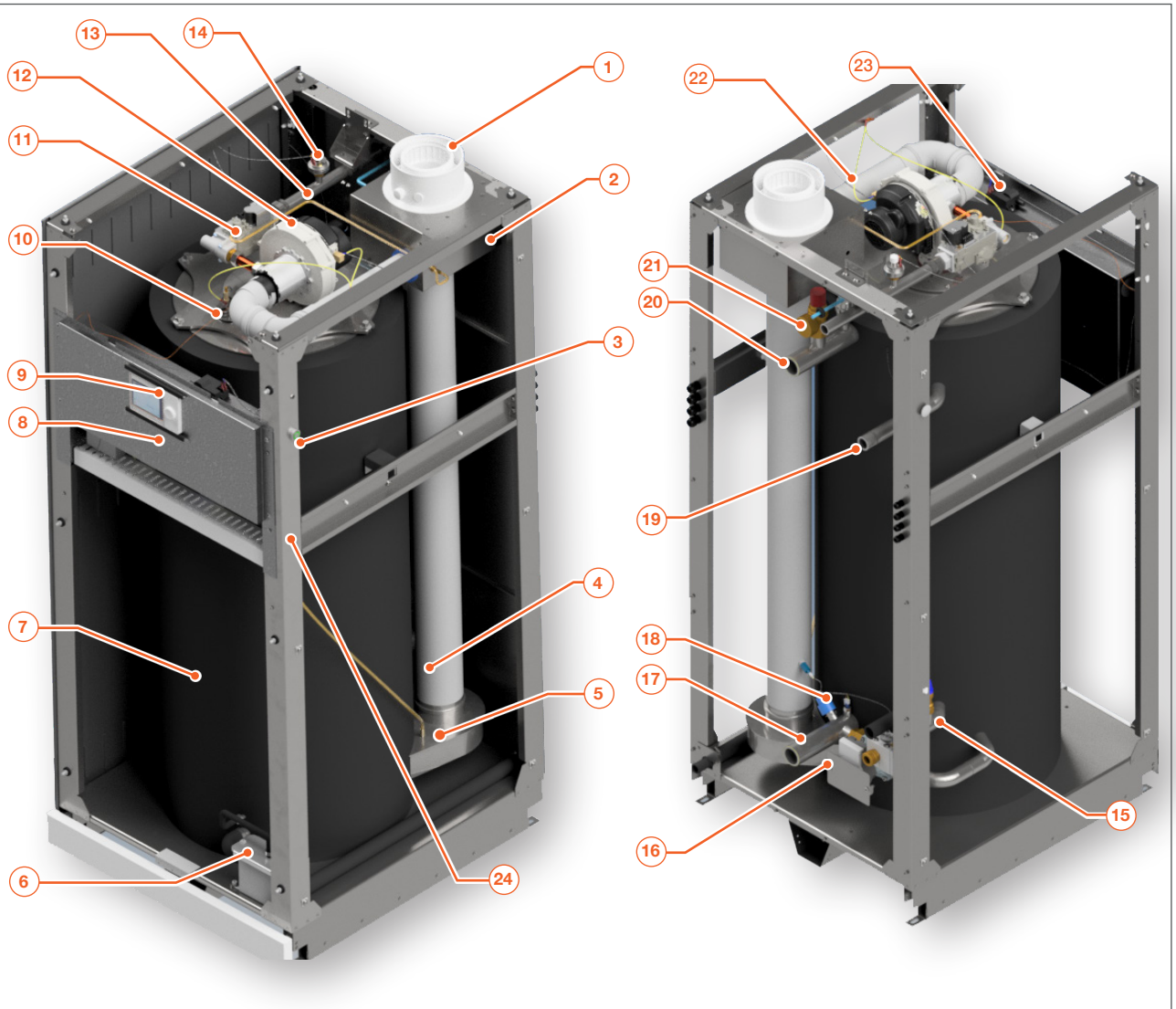


Fig. 3. CoilMaster 100 - 120 — Boiler Components

KEY

1. Concentric chimney connection (Ø 100/150 mm)
2. Flue gas/air inlet box
3. On-Off switch
4. Flue exhaust pipe, with temperature sensor
5. Stainless steel condens dish
6. Condensate trap
7. Heating body (comprised of a stainless steel “fire tube” heat exchanger and DHW coil, not shown) with insulation
8. Electronic junction box (with boiler management unit - not shown)
9. Control panel with LCD display
10. Ignition and Ionization electrodes
11. Gas valve
12. Burner assembly, with fan and air-gas mixer
13. Gas pipe
14. Gas pressure switch
15. Cold water inlet and DHW safety valve (not shown)
16. Internal exchange circulation pump
17. Heating return, with temperature sensor
18. Pressure sensor (on return circuit)
19. DHW outlet, with temperature sensor
20. Heating supply
21. Heating circuit safety valve
22. Air inlet to air-gas mixer
23. Ignition transformer (not shown)
24. Flue pressure switch (pressure switch located behind the electronic box, not shown)

Control Panel and Main Functions

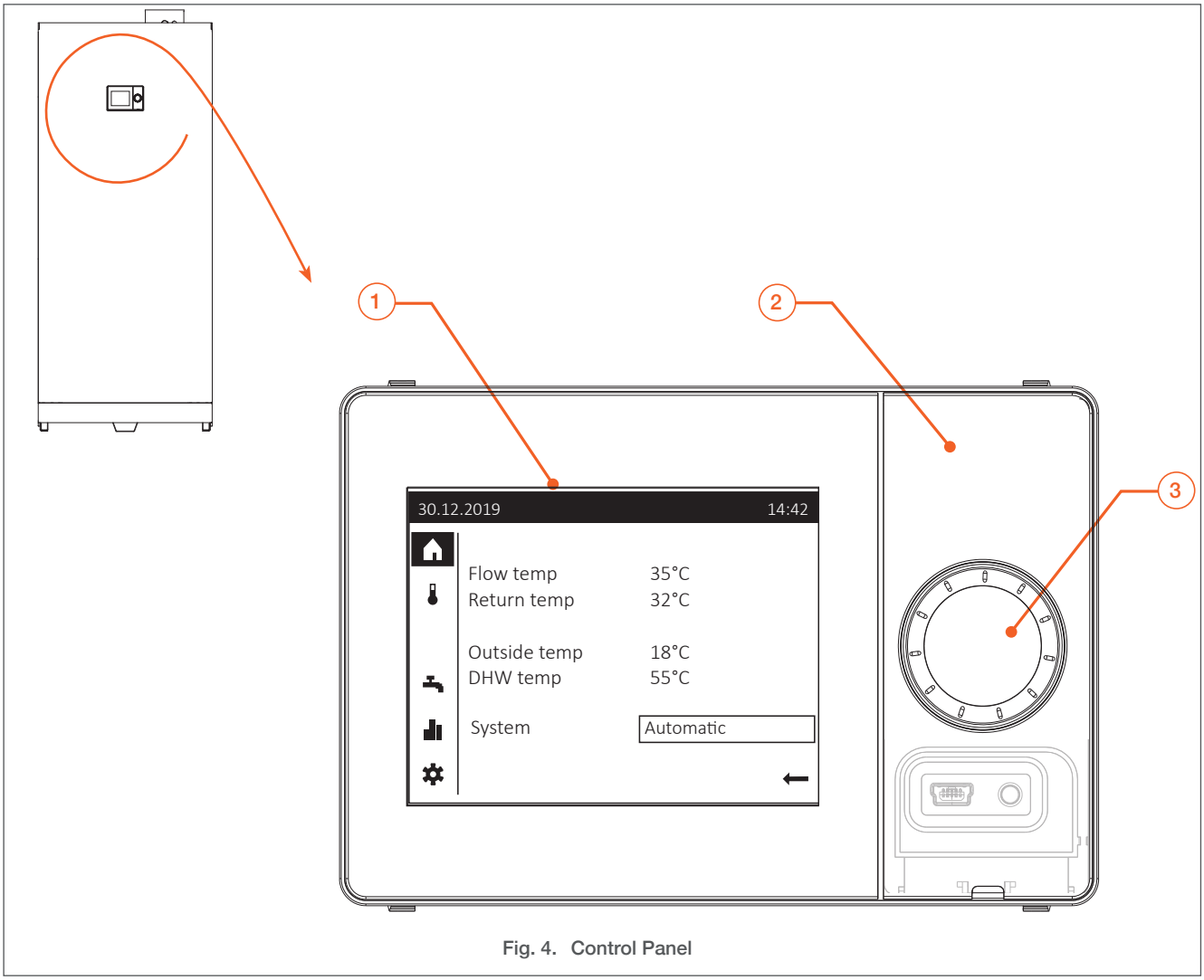


Fig. 4. Control Panel

KEY

1. LCD Display - The display illuminates whenever the rotary selector is rotated or depressed, and remains on for 8 minutes. For a detail of the symbols and messages displayed on the screen, see ***"Symbols and Messages on the Control Panel" on page G-12.***
2. Removable cover - To access the USB connector and Reset button located underneath (showed in light grey on the picture, for information).
3. Rotary selector - It can be used in 3 different ways:
   - Turning the selector to the left or to the right allows to scroll through the menus (icons/functions) or increase/decrease a value after selecting a function.

When entering a menu/sub-menu, the slow rotation of the selector to the right (clockwise) allows to scroll through the menu, down to the last function. Turning the selector to the left (counter-clockwise) allows to scroll up to the first function of the menu.

   - Depressing the selector (short push) allows to select a function/value and validate a choice.
   - Depressing the selector for more than 3 sec. when an error is displayed on the screen, takes you back to the Home screen. Doing the same in Expert menus brings back to the Expert view start page.

For more information on the symbols and the operation of the controller, see ***"Symbols and Messages on the Control Panel" on page G-12*** and ***"Operating the Controller - End User Level" on page U-24***.

Symbols and Messages on the Control Panel

The control panel display is divided into several zones (See ***Fig. 5):***

- a **vertical menu bar** (**1**) on the left side of the screen, comprising a series of icons to access various menus. When one of the icon is selected and active, it displays against a black background (**2**). When one icon is selected and activated by pressing the selector, the menu bar disappears and gives way to the work area.
- a **horizontal status bar** (**3**) at the top of the screen. It permanently displays the time and, according to the situation, specific icons (Alarm, Maintenance, Event, Manual adjustment, User level and Producer in operation). See a detail of the symbols below.
- a **work area** (**4**), comprising menu and function-specific information as well as operating mode. It also displays a **back arrow** (**5**), allowing to exit the work area and go back to the vertical menu bar.

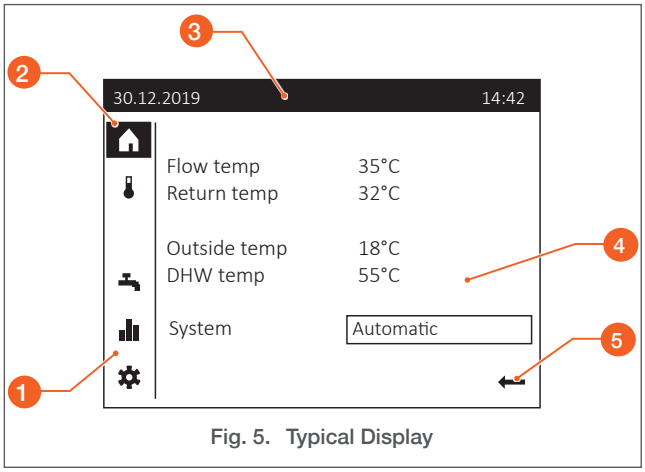


Fig. 5. Typical Display

Symbols of the **vertical menu bar**:

Home. Gives access to the System status and change it from *automatic* to ***off***.

Temperature. Gives access to the heating functions and setpoints.

Ventilation. Not used.

Domestic Hot Water. Gives access to the DHW-related functions.

Info. Gives access to messages (history, errors, etc.), system information and consumption information.

Service/settings. Gives access to setting options on device or system, allows to operate special operations (e.g. for maintenance work) and allows to log in, in expert view (access to additional pages for the Installer only).

Diagnostics (Expert only). Analyze and test info on the system.

Adjust/repair (Expert only). Allows to adjust the parameters in the 'Complete parameter list', and to access the commissioning wizard.

Symbols appearing in the **horizontal status bar**:

Alarm. Indicates an error in the system.

Maintenance/Special operations. It indicates the presence of a maintenance message or special operation feedback.

Manual mode. Indicates that the operating modes on the topic pages are set to manual.

User type. This symbol with number 1, 2 or 3 indicates the access level:

1 - End user/commissioning
2 - Heating engineer/installer
3 - OEM

Producer. This symbol indicates the main producer (e.g. oil/gas boiler, heat pump) that is currently switched on.

Symbols and indications In the **work area**:

abc — Selected item (text or icon)

abc — Activated item (text or icon)

Back To go back to higher level in the menu

To return to the vertical menu bar icons

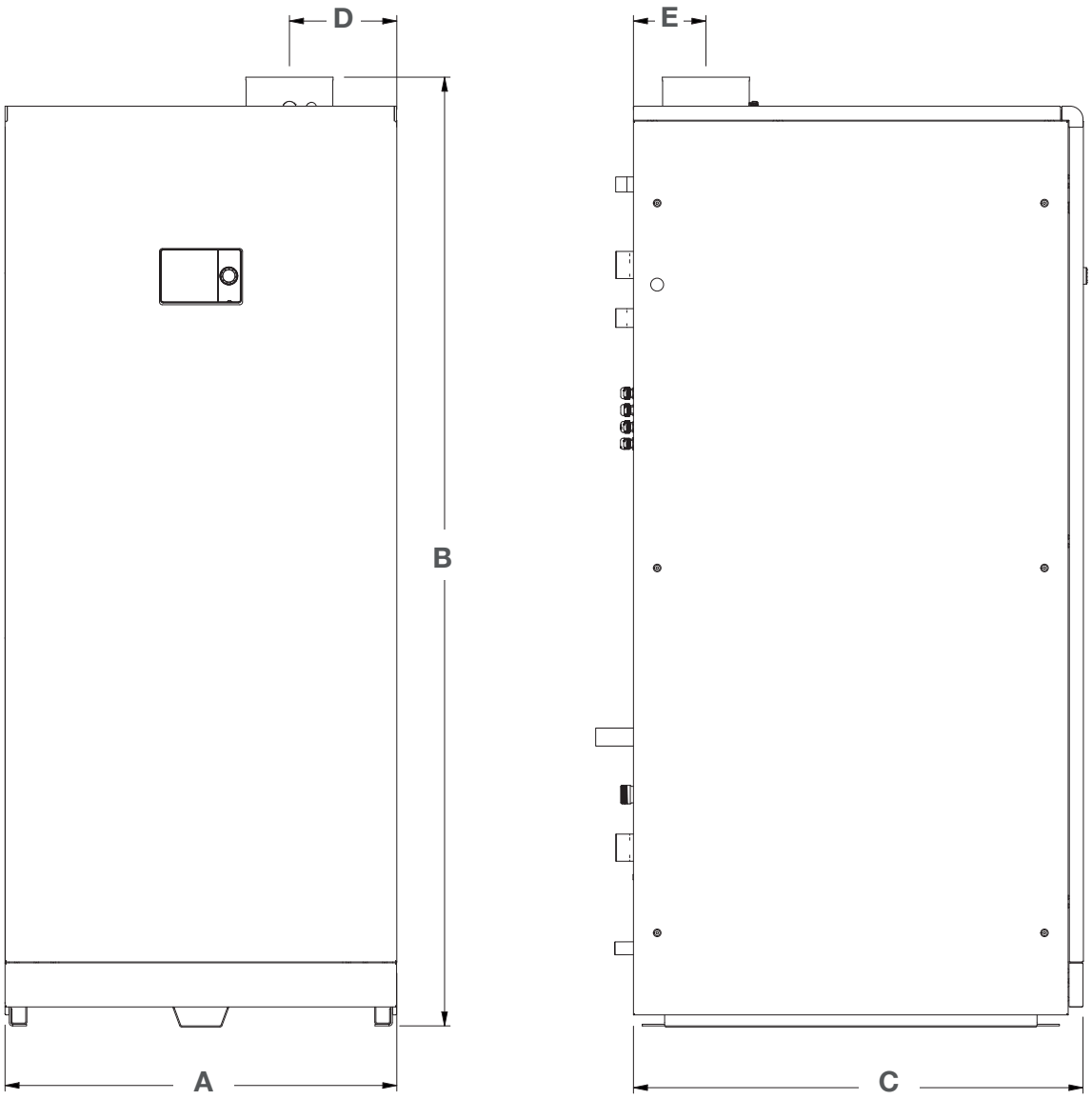
Symbols used in the manual to illustrate the **operation of the selector**:

turn the selector to the left or to the right

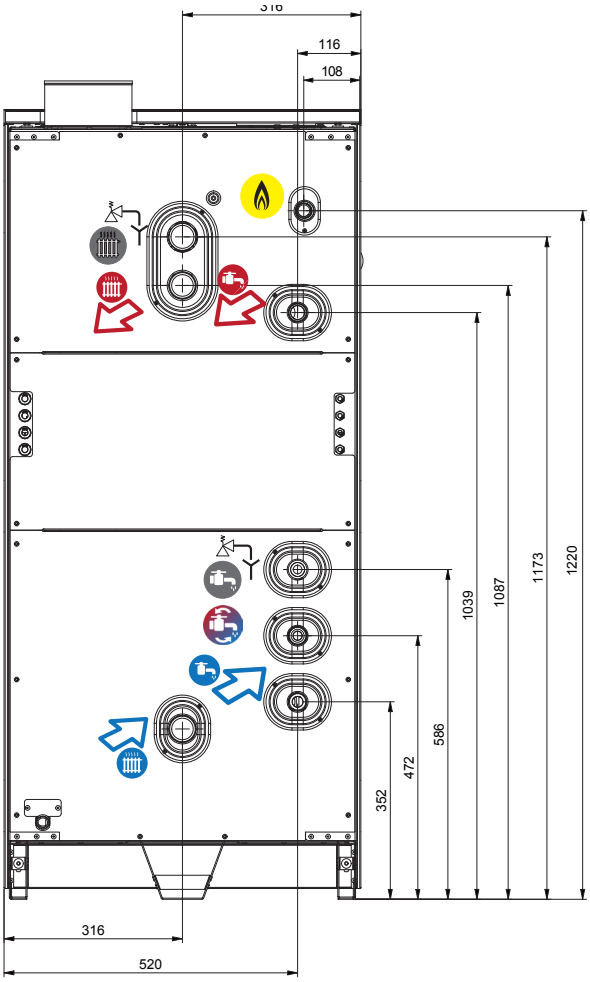
depress shortly the rotary selector

depress the rotary selector for more than 3 seconds.

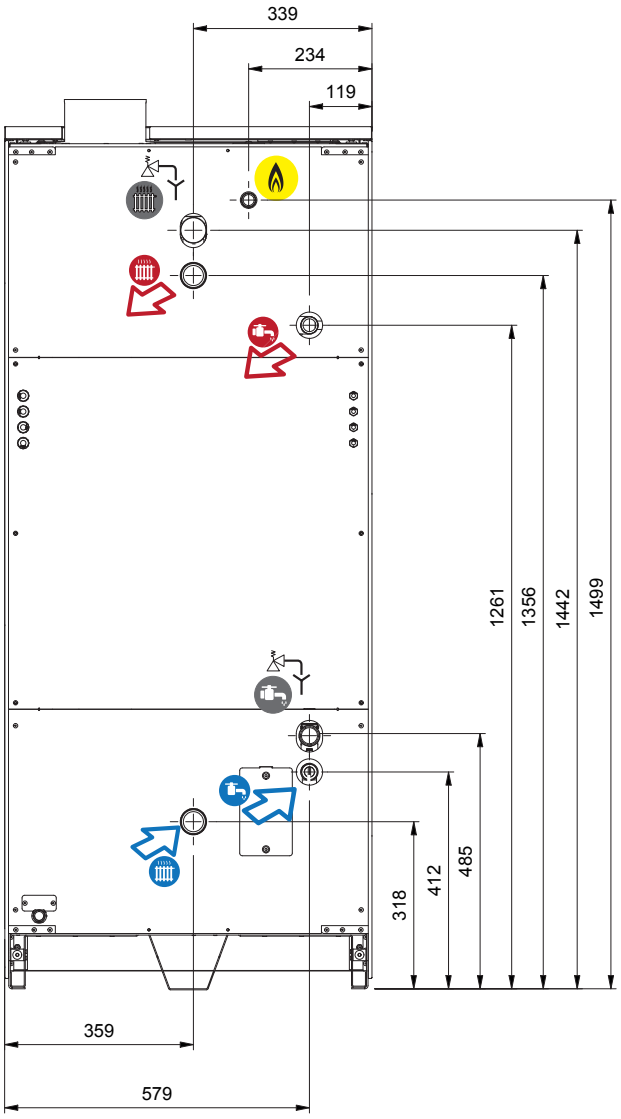
Dimensions



		CM 60 - 70 - 80	CM 100 - 120
A	mm	632	698
B	mm	1 446	1 650
C	mm	774	801
D	mm	141	191
E	mm	125	129



CoilMaster 60 - 70 - 80



CoilMaster 100-120

		CM 60 - 70 - 80	CM 100 - 120
dry weight	kg	200	285
connections (Ø)			
supply/return ( ) [M]	in.	11/2	
inlet/outlet ( ) [M]	in.	1	
DHW recirculation ( ) [M]	in.	3/4	–
safety valve ( )	in.	11/4	
safety valve ( )	in.	1	
drain	in.	1	
gas ( ) [M]	in.	3/4	
chimney	mm	100/150	
condensate drain	mm	23	

Clearances

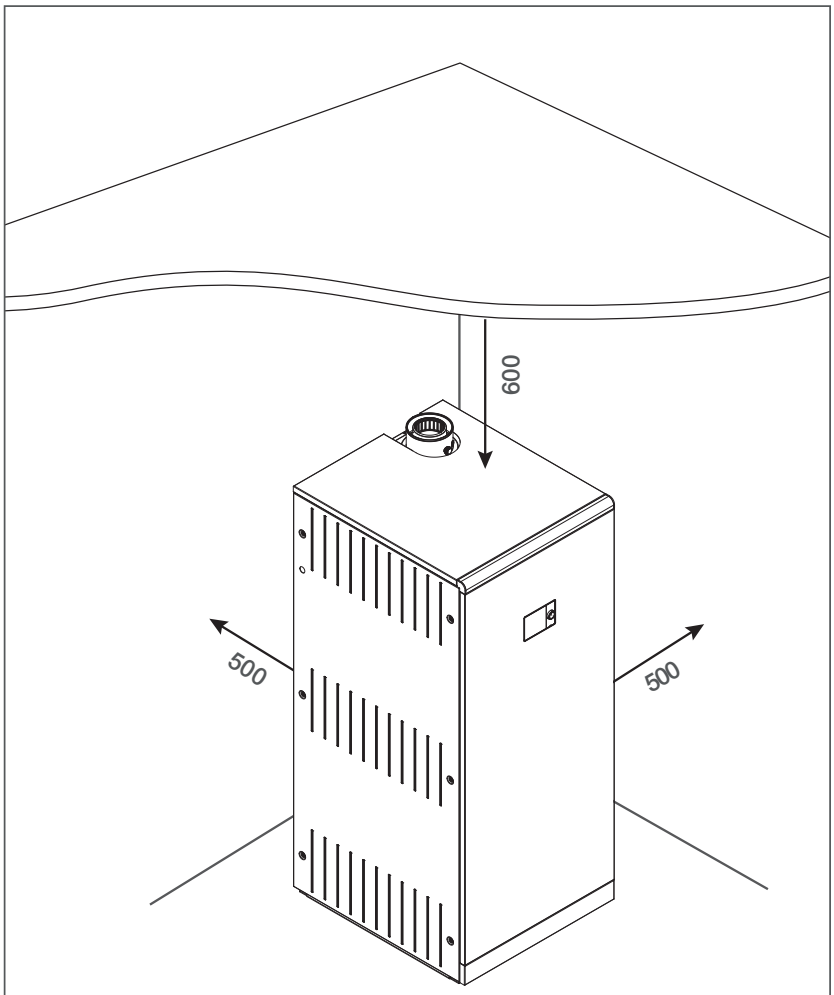


Fig. 6. Single Boiler Clearances

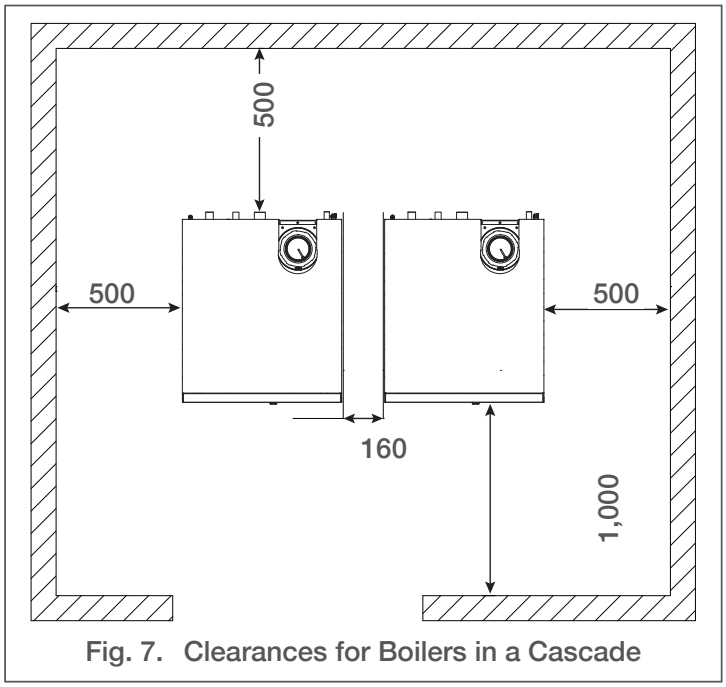


Fig. 7. Clearances for Boilers in a Cascade

Clearances		Min.	Recommended
top	mm	600	800
back	mm	500	800
front	mm	1 000	1 000
sides	mm	500*	

* in a cascade configuration, boilers can be installed side-by-side with a 160 mm clearance between them. Side clearance must be complied with for the “outer” side of the first and last boiler in the chain.

Performance and Efficiency Data

			CM 60 (min. - max.)	CM 70 (min. - max.)	CM 80 (min. - max.)
heat input (net)	G20/G25	kW	9,5 - 57,5	9,5 - 69,9	9,5 - 80,0
	G31		9,5 - 57,5	9,5 - 69,9	9,5 - 80,0
heat output at 80/60°C	G20/G25	kW	9,2 - 55,9	9,2 - 68,2	9,2 - 77,8
heat output at 50/30°C	G20/G25	kW	10,3 - 61,6	10,3 - 74,9	10,3 - 85,9
heating efficiency 80/60°C	G20/G25	%	97,1 - 97,3	97,3 - 97,5	97,2 - 97,3
heating efficiency 50/30°C	G20/G25	%	108,2 - 107,2	108,0 - 107,2	108,4 - 107,4
useful efficiency at 30% (return at 30°C)		%	108,2	108,0	108,4
seasonal efficiency		%	92,4	92,3	93,0

ErP Data

boiler type and model		CM 60	CM 70	CM 80
condensing boiler	Y/N	Y	Y	Y
low temp boiler	Y/N	Y	Y	Y
combination heater	Y/N	Y	Y	Y
useful heat output				
at 30% of rated heat output (P_1)	kW	18,6	22,6	26,0
at rated output and high-temp regime (P_4)	kW	56,1	68,2	77,9
useful efficiency				
at 30% of rated heat output (η_1)	%	97,4	97,3	97,6
at rated output and high-temp regime (η_4)	%	87,6	87,6	87,8
auxiliary electricity consumption				
at full load (elmax)	kW	0,073	0,120	0,150
at part load (elmin)	kW	0,028	0,032	0,040
in standby mode (P_{SB})	kW	0,003	0,003	0,003
standby heat loss (P_{stby})	kW	0,20	0,20	0,20
annual energy consumption for space heating	kWh	29254	34672	–
sound power level indoors LWA	dB	61	61	61
seasonal space heating energy efficiency class		A	A	A
water heating efficiency class		A	A	A
declared load profile for water heating		XXL	XXL	XXL

Performance and Efficiency Data			CM 100 (min. - max.)	CM 120 (min. - max.)
heat input (net)	G20/G25	kW	12,5 - 99,0	12,5 - 115,0
	G31		14,0 - 99,0	14,0 - 115,0
heat output at 80/60°C	G20/G25	kW	12,1 - 97,2	12,1 - 112,9
heat output at 50/30°C	G20/G25	kW	13,4 - 106,9	13,4 - 124,2
heating efficiency 80/60°C	G20/G25	%	97,5 - 97,8	97,5 - 97,9
heating efficiency 50/30°C	G20/G25	%	107,7 - 108,0	107,7 - 108,0
useful efficiency at 30% (return at 30°C)		%	108,2	108,2
seasonal efficiency		%	93,0	93,0

boiler type and model		CM 100	CM 120
condensing boiler	Y/N	Y	Y
low temp boiler	Y/N	Y	Y
combination heater	Y/N	Y	Y
useful heat output			
at 30% of rated heat output (P_1)	kW	32,1	37,5
at rated output and high-temp regime (P_4)	kW	97,3	113,1
useful efficiency			
at 30% of rated heat output (η_1)	%	97,5	97,5
at rated output and high-temp regime (η_4)	%	88,1	88,5
auxiliary electricity consumption			
at full load (elmax)	kW	0,257	0,300
at part load (elmin)	kW	0,052	0,060
in standby mode (P_{SB})	kW	0,003	0,003
standby heat loss (P_{stby})	kW	0,30	0,30
sound power level indoors LWA	dB	55	55
seasonal space heating energy efficiency class		A	A
water heating efficiency class		A	A
declared load profile for water heating		XXL	XXL

Combustion and Gas Data			CM 60 (min. - max.)	CM 70 (min. - max.)	CM 80 (min. - max.)
chimney type(s)			B23, B23p, C13, C33, C43, C53, C63, C83, C93		
flue gas temperature at 80/60°C		°C	47,9 - 53,8	47,9 - 54,2	47,9 - 55,1
flue gas temperature at 50/30°C		°C	26,4 - 28,3	26,4 - 28,5	26,4 - 28,8
overheat flue gas temperature		°C		110	
max, flue gas pressure (incl, max wind condition)		Pa		190	
Max, chimney length (100/150)		m	25	25	25
mass flow rate of flue gases		g/s	26,0	31,6	36,7
max, condensate volume		kg/h	7,1	8,6	10,0
CO emissions		mg/kWh		43,3	
CO_2 contents (G20/G25)		%		8,4 (± 0,1) - 8,8 (+0,2)	
CO_2 contents (G31)		%		10,0 (± 0,2) - 10,5 (± 0,2)	
O_2 contents (G20)		%		5,9 (± 0,18) - 5,2 (-0,36)	
O_2 contents (G25)		%		5,7 (± 0,18) - 4,9 (-0,36)	
O_2 contents (G31		%		5,7 (± 0,30) - 4,9 (± 0,30)	
NOx level (weighted)		mg/kWh		30,3	
NOx class				6	
gas type(s)				G20 , G25, G25.3, G31	
gas categories				I2E(S), I2E, I2Er, I2H, I3P, II2E3P, II2EK3P, II2ELL3P, II2Esi3P, II2H3P, II2L3P	
gas pressure	G20 (20 mbar)	mbar		17 - 25	
	G25 (25 mbar)	mbar		20 - 30	
	G25,3 (25 mbar)	mbar		18 - 33	
	G31 (30/37/50 mbar)	mbar		25,0-35,0 / 25,0-45,0 / 42,5-57,5	
gas flow rate (G20)*		m^3/h	0,98 - 5,99	0,98 - 7,28	0,98 - 8,44
gas flow rate (G25)*		m^3/h	1,10 - 7,01	1,10 - 8,54	1,10 - 9,76
gas flow rate (G31)*		m^3/h	0,40 - 2,34	0,40 - 2,84	0,40 - 3,25

* 15°C, 1013,25 mbar, dry gas

Combustion and Gas Data

			CM 100 (min. - max.)	CM 120 (min. - max.)
chimney type(s)			B23, B23p, C13, C33, C43, C53, C63, C83, C93	
flue gas temperature at 80/60°C		°C	60,0 - 62,3	60,0 - 63,2
flue gas temperature at 50/30°C		°C	30,0 - 31,6	30,0 - 32,4
overheat flue gas temperature		°C	110	
max, flue gas pressure (incl, max wind condition)		Pa	300	
Max, chimney length (100/150)		m	18	16
mass flow rate of flue gases		g/s	45,5	52,8
max, condensate volume		kg/h	12,4	14,4
CO emissions		mg/kWh	28,4	
CO_2 contents (G20/G25) (± 0,1)		%	8,4 - 8,8	
CO_2 contents (G31) (± 0,2)		%	10,0 - 10,5	
O_2 contents (G20) (± 0,15)		%	5,9- 5,2	
O_2 contents (G25) (± 0,15)		%	5,7- 5,0	
O_2 contents (G31) (± 0,15)		%	5,7- 4,9	
NOx level (weighted)		mg/kWh	39,7	
NOx class			6	
gas type(s)			G20 , G25, G25.3, G31	
gas categories			I2E(S), I2E, I2Er, I2H, I3P, II2E3P, II2EK3P, II2Esi3P, II2H3P, II2L3P	
gas pressure	G20 (20 mbar)	mbar	17 - 25	
	G25 (25 mbar)	mbar	20 - 30	
	G25,3 (25 mbar)	mbar	18 - 33	
	G31 (30/37/50 mbar)	mbar	25,0-35,0 / 25,0-45,0 / 42,5-57,5	
gas flow rate (G20)*		m^3/h	1,32 - 10,47	1,32 - 12,16
gas flow rate (G25)*		m^3/h	1,54 - 12,18	1,54 - 14,15
gas flow rate (G31)*		m^3/h	0,56 - 4,05	0,56 - 4,56

* 15°C, 1013,25 mbar, dry gas

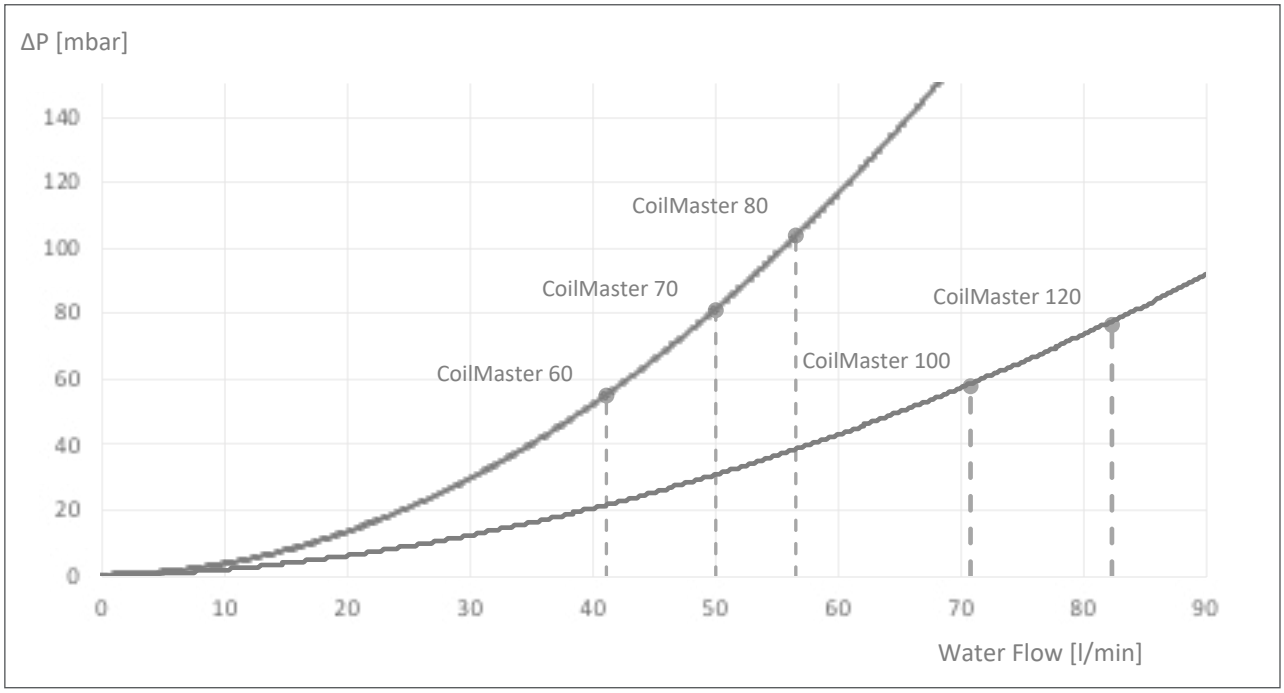
Electrical Data

		CM 60 - 70 - 80 - 100 - 120
supply voltage / frequency / current	V / Hz / A	230 / 50 / 6
protection class	IP	IP20

Technical Specifications

Hydraulic Data			CM 60	CM 70	CM 80	CM 100	CM 120
	water content	l		63		83	
	pressure drop at ΔT = 20k	mbar	55,0	81,0	104,0	53,0	71,0
	minimum operating pressure	bar			0,8		
	maximum operating pressure	bar			3		
	maximum primary temperature	°C			95		
	water content	l		18		25	
	maximum operating pressure	bar			8		
	maximum DHW temperature	°C			80		

Pressure Drop Curve



Flow Rate		CM 60	CM 70	CM 80	CM 100	CM 120
minimum water flow rate at ΔT = 20k	l/min	20	25	28	44	49
nominal water flow rate at ΔT = 20k	l/min	41	50	57	69	81

DHW Performance*			CM 60	CM 70	CM 80	CM 100	CM 120
constant flow @	40 °C [ΔT = 30 K]	l/min	27,2	32,8	37,2	47,5	54,5
	50 °C [ΔT = 40 K]	l/min	20,4	24,5	27,9	41,5	46,5
	60 °C [ΔT = 50 K]	l/min	16,3	19,5	22,3	26,0	30,5
DHW efficiency @	ΔT=30k	%		104		104	

*operating condition : DHW @ 60°C

Safety Instructions for the User

IF YOU SMELL GAS:

→ DO NOT:

- Use an open flame
- Smoke
- Use electrical devices (phones, doorbells, etc.) or switches

→ DO:

- Close the gas supply
- Open all doors and windows to ventilate the room
- Inform your neighbours of the danger by knocking at the doors.
- Get out of the building
- Call your installer or gas company

- This appliance can be used by children who are at least 8 years old and by persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge, provided that they are under supervision or have been given instructions concerning the use of the appliance in a safe way and that they understand the hazards involved.
- Cleaning and user maintenance shall not be performed by children without supervision. Children shall not play with the appliance.
- For safety reasons, we recommend that smoke and carbon monoxide detectors are installed in the living areas of your building according to the applicable local regulations.
- If smoke is present, shut down the appliance, ventilate the room and exit the building. Then call your installer to investigate and solve the problem.
- Do not store any flammable, corrosive or explosive products near the appliance.
- Do not modify or deactivate any component, nor any safety device in the system.
- Do not operate the appliance when the casing is open.

- Do not modify any part of the electrical system or access internal components.
- Do not touch the appliance with any wet body parts when the appliance is supplied with electrical power.

- Do not modify or block the condensate outlet(s).
- Do not open any sealed part or component. Failure to comply with this instruction can result in damages and/or injuries.
- The sight glass can be very hot when the appliance is in operation. Do not touch the sight glass or its immediate surroundings.
- Make sure that the appliance and the heating system are prevented from freezing.
- In case of water leakage, disconnect the appliance from the power supply and gas source, turn off the water supply and call a qualified professional.

- If works need to be performed close to the appliance (e.g. in the boiler room or close to the air inlets), make sure that the appliance is shut down to prevent the ingress and accumulation of dust.
- In case of abnormal noises in the system or the appliance, please notify a qualified professional.
- Any setting of the appliance by the end-user using the installer-specific functions, that would cause the appliance to malfunction, could result in damages to the equipment. Only the end-user settings described in this manual are available to the end-user.
- If a condensate neutralisation system is installed, have it checked and cleaned at least once a year.

When cleaning the appliance cabinet panels, do not use solvents or aggressive/abrasive cleaning agents. Wipe the surfaces using a soft clean cloth, water and soap.

Disposal of the Product at the End of Service Life

At the end of service life, the product should not be disposed of as solid urban waste, but should be handed over to a differentiated waste collection centre.

Periodic checks

- Check regularly that the water pressure of the system is at least 1.2 bar when cold. If not, top up the system with water as instructed by the installer at appliance installation or call your installer.
- If a topping up of the system is required to maintain the minimum recommended water pressure, always turn the appliance off and only add small quantities of water at a time. If a large amount of cold water is added in a hot appliance, the appliance can be damaged permanently.
- If the system needs to be topped up regularly, there may be a leak in the system. In that case, call your installer.
- Check regularly that there is no water below the appliance. If there is, call your installer
- Check regularly that there is no error code displayed on the control panel screen. Call your installer as required.

Starting the Appliance

*The first start-up of the boiler after its installation must be performed by a qualified professional, according to the procedure in **"Start-up and Commissioning" on page I-53.***

Conditions:

Procedure:

1. Make sure that the power supply cable is connected to the boiler.
2. Push the On/Off switch located on the right side of the boiler.

When in the ON position, the switch remains pushed in and is illuminated.

3. Select the heating mode as required.
4. Activate the DHW mode as required.

Follow-on tasks:

Check the pressure of the primary circuit in operation. It should be between 1,2 and 3 bar (with pump on).

Stopping the Appliance

Conditions:

None

Procedure:

1. Push the On/Off switch located on the right side of the boiler.

When in the OFF position, the switch is released from its pushed in position. Its built-in light goes off and the button comes flush with the outer frame.

2. To completely cut the power supply to the boiler, either disconnect the power supply cable from the boiler, or use the external circuit breaker.

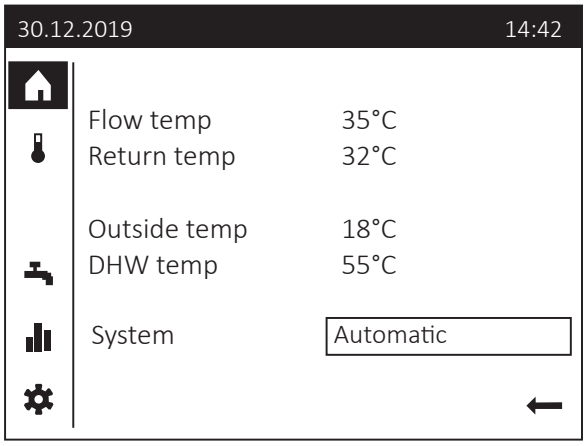
Follow-on tasks:

None

What to Do if...	Cause	Action
Boiler does not start	No power supply	1. Check that the power button is in ON position (pushed in and illuminated). 2. Make sure the power supply is connected to the mains. 3. Check the external power supply box (circuit breaker) and reset it as required.
No water comes out of the hot water taps	The hot water circuit from the water heater is closed	Open the hot water circuit stop valve
	There is air in the water circuit	1. Make sure that the tank is filled with water 2. Bleed air from the circuit by opening a hot water tap until water flows out
Only cold water is coming out of the hot water tap	Appliance not in operation	Check the correct operation of the appliance
Error code 133 displayed	Time out for flame ignition	1. Open controller removable panel and depress Reset button. Refer to ***"Control Panel and Main Functions" on page G-11***. 2. If the fault appears several times, call your installer.
Error code 111 displayed	Temperature limit switch open	Check that radiator valves are open/that there is flow across the boiler.
Error code 105 displayed Maintenance icon ( )	Maintenance message	Select and activate the Information icon ( ) for details on the error and maintenance code.
Error code 118 displayed	Low water pressure	Top up the heating system.

To remove an error code from the display temporarily and go back to the Home screen, depress the rotary selector for more than 3 seconds.

Operating the Controller - End User Level



Some parameters are only visible if the circuit is installed and enabled.

Icons	In the work area	Selectable/ Adjustable Parameters	Remark
Home	Boiler temp: ---°C	—	These items indicate the current temperatures, as detected by the system sensors
	Outside temp: ---°C	—	
	DHW temp : --°C		
	► System	• Off • Automatic	In the 'Off' position, the plant or zones are switched off. Energy consumption is reduced to a minimum. The building or zones remain, however, protected (e.g. in protection mode)
Temp. setting	► Operating mode	• Protection • Automatic • Reduced • Comfort	In "Protection", the system operates in frost protection mode. In Automatic, the system is operated as per the time switch program, or energy savings functions (e.g. summer/winter mode).
	► Temporary	• Warmer • ... • Cooler	Temporary temperature adjustment and time program are available exclusively to the Automatic operating mode. Setting "..." disables the function.
	► Comfort setpoint	• 20°C	
	► Time program	• Monday • Tuesday • ... • Sunday	Clock to be setup from 00 to 24 (default: 06:00 to 22:00). Up to 3 phases of heating per day can be set per zone.

Icons	In the work area	Selectable/ Adjustable Parameters	Remark
DHW temp. setting	► Operating mode	• Off • On	When “off”, Hot water heating is switched off; when “On”, Hot water is heated to the nominal setpoint as per time program
	► Temporary	• ... • Recharging	“Recharging” is used to bring the storage tank to the nominal setpoint when there was a high consumption. “...” deactivates the function.
	► Nominal setpoint	• 60°C	
	► Time program	—	Active if operating mode is set to “On”.
Info	► Error (error code and description)	—	
	► Maintenance (maintenance code and description)	—	
	Boiler ► Boiler Temp .... °C ► Water pressure ... 0bar	—	
	Heating zone 1 ► Off ► Room temperature ... °C	—	
	Domestic hot water ► Charged ► DHW temp ... °C	—	
	Outside temp ► Outside temp ...°C ► Outside temp min ... °C ► Outside temp max ... °C	—	
	Customer service ► Tel. Number		Can be defined at commissioning

Icons	In the work area	Selectable/ Adjustable Parameters	Remark
Settings	Regional settings ► Regional settings (1/3)	• Time 01:00 • Date 01.01.2030	
	► Regional settings (2/3)	• Start of summertime 25.03 • End of summertime 25.10	
	► Regional settings (3/3)	• Language	(English - Deutsch - Français - Italiano - Nederlands - Español - Portuguese - Dansk - Suomi - Svenska - Polski - Slovensky - Česky - Slovenščina - русский - Magyar - Ελληνικά - Türkce - Serbian - Lietuvių)
	Special operations ► Special operations (1/3)	• Chimney sweep function	These functions can be set to “On” or “Off”.
	► Special operations (2/3)	• Manual control	When set to “On”, the Chimney Sweep Function remains so for 1 hour, then turns off automatically.
	► Special operations (3/3)	• Economy mode --	
	Settings ► Heating zone (1/2)	• Comfort setpoint 20.0°C • Reduced setpoint 16.0°C • Frost protection setpoint 10.0°C	The setpoints can be adjusted here, in steps of 0.5°C
	► Heating zone (2/2)	• Heating curve slope 1.50 • Summer/winter heating limit 18.0°C	Heating curve can be defined when outside temp is used to control the system temperature
	Expert ► Select user level	• Enduser • Commissioning • Engineer • OEM	
	► Enter password	• - - - -	For OEM access

Basic Settings

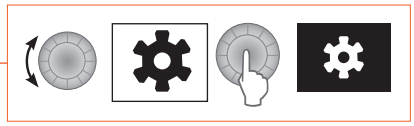
Symbols used for the **operation of the selector**:

turn the selector to the left or to the right.

depress shortly the rotary selector.

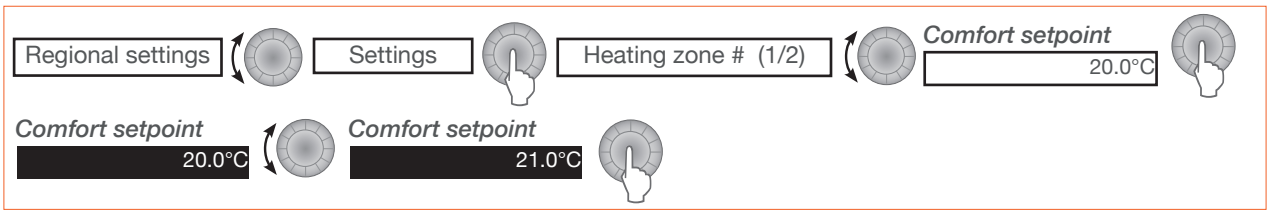
turn the selector to adjust the value, then depress the selector to validate.

1 - Time and Date Adjustment



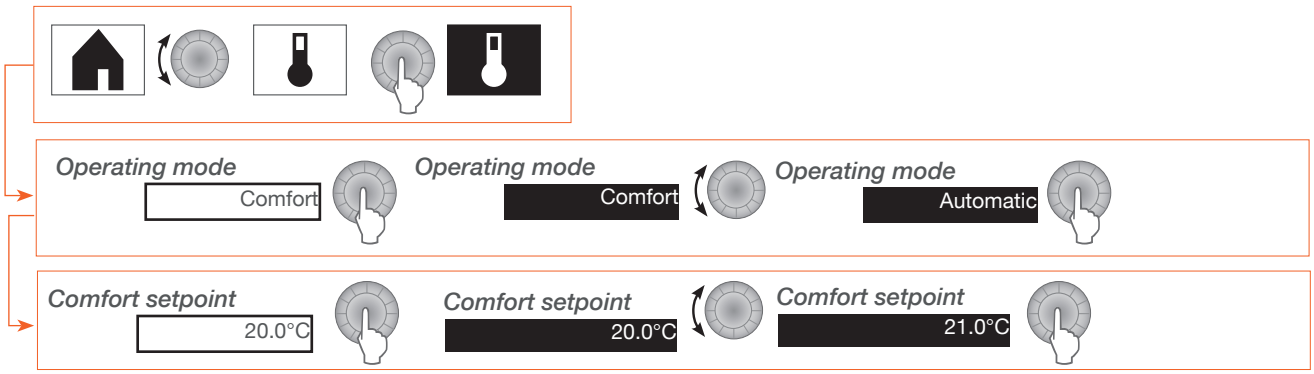
2 - Language Selection

3 - Defining setpoints (Heating)

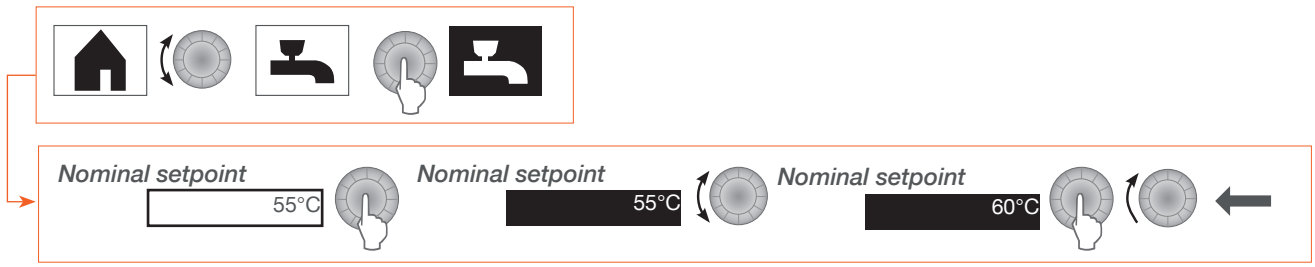


Proceed the same way to adjust "Reduced setpoint" and "Frost protection setpoint".

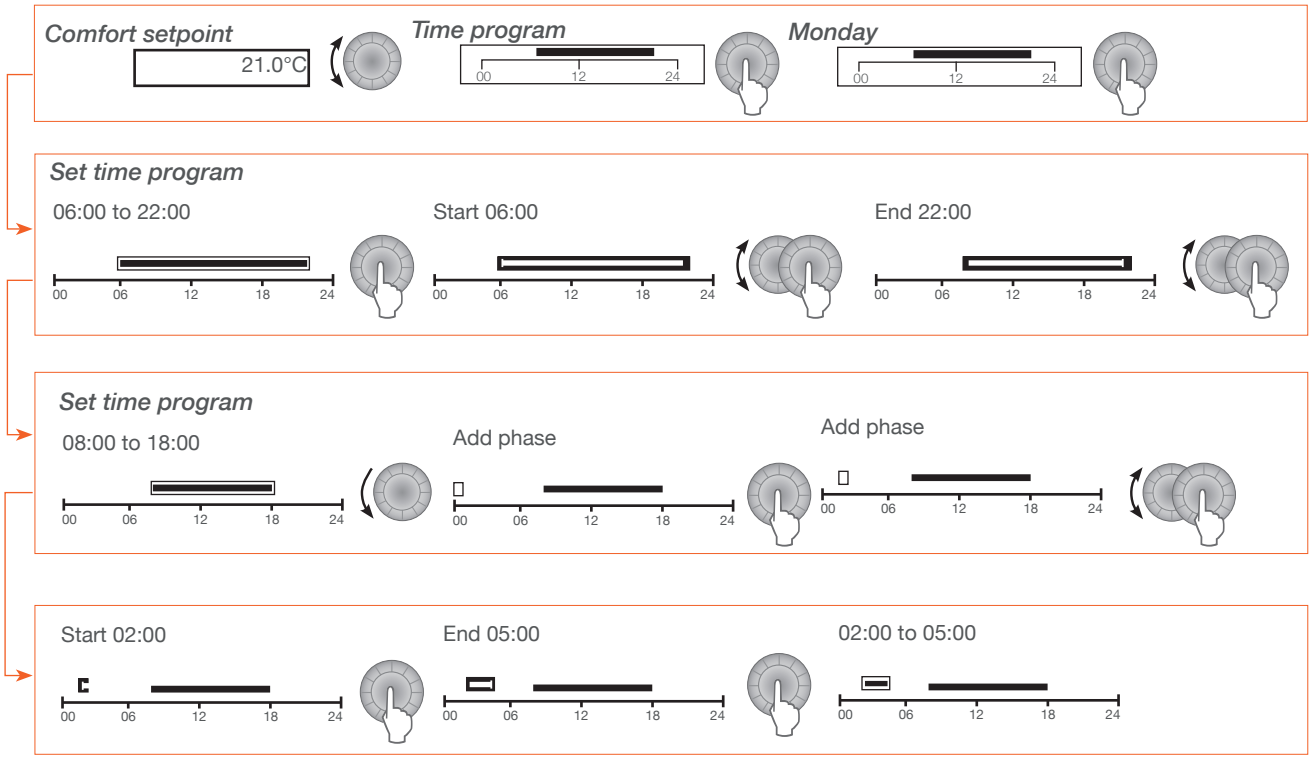
4 - Heating Settings - Quick Setup



5 - DHW Settings - Quick Setup



6 - Time Program Definition



- *Up to 3 phases can be defined per day.*
- *The programming process is the same for Heating and Domestic Hot Water circuits.*

Safety Instructions for the Installation

- All connections (electrical, flue pipe, hydraulic, gas) must be carried out in accordance with current standards and regulations in force.
- If the appliance is installed against a wall made of heat-sensitive material, such as wood, a suitable insulation must be provided by the installer between the appliance and the wall surface.
- Comply with the clearance dimensions provided in this manual, to prevent any hot part of the appliance from being too close to the walls or any combustible material.
- Make sure to maintain a safe distance of 200 mm from flammable materials; the boiler room may not be used as a storage location for material.
- Do not store any flammable, corrosive or explosive products next to the appliance.
- Do not install the appliance in a location where chemical vapours or dust are present in the ambient or combustion air.
- If the appliance is used on professional premises such as hairdresser's, cleaning company, painter's, etc. where chloride products, solvents, paints, dust, etc. are likely to contaminate the air, make sure to install the appliance in a dedicated boiler room so that the appliance is supplied with clean combustion air.
- Install a condensate neutralisation system according to the applicable local regulations and standards.
- If the appliance is intended to be used with G31 liquefied petroleum gas (propane), installing the appliance below ground level can be hazardous and prohibited in some countries. Please refer to applicable local regulations for installation requirements.

- When the appliance is connected to the electrical network, it must be earthed.
- Make sure that a fuse or circuit breaker of the recommended rating is installed outside the appliance, so as to be able to shut the power down.
- Do not touch the appliance with any wet body parts when it is supplied with electrical power.
- Before performing any operation on the electrical circuit, isolate the electrical supply of the appliance through the external power-cutting device (fuse, circuit breaker, etc.)

- The appliance must be installed in a dry and protected area, with an ambient temperature comprised between 0 and 45°C.
- Make sure to protect the appliance and the water circuit against freezing.
- The appliance must be installed to ensure easy access at all times.
- Use an appropriate means of handling, suitable to the appliance size and weight.
- Floor-standing appliances must be installed on a level base and wall-hung appliances, on a vertically plumb support. Material used for base and support must have sufficient strength to support the appliance weight, water included.
- Make sure that the appliance is installed with a sufficient height to allow the condensates to flow to the sewer, and/or allow the installation of a condensate neutralisation system (as required).
- When lifting, moving or installing the appliance, be careful not to drop it. Once in position, make sure that the appliance is secured.
- Install all pipes and ducts without stress to prevent any leaks from occurring.

Handling the Product

- **This appliance is heavy and requires sufficient workforce to move and handle it, as well as an appropriate means of transport. Make sure to comply with applicable local standards and regulations on product handling.**
- **It is prohibited to handle the boiler using protruding components or rest the boiler on protruding components.**
- **Failure to comply with these recommendations can result in damage to the boiler or injuries to the personnel**

Using a hand truck or another appropriate means, move the appliance in its packaging close to the installation location.

Unpacking the Product

The boiler is delivered on a wooden pallet and is secured to the pallet with four screws. The boiler is protected by a foam protection and plastic wrapping.

Once the appliance is in the boiler room or close to the installation location:

1. Carefully remove the plastic packaging and foam protections.
2. Discard packaging according to applicable local regulations.

Installing and Preparing the Boiler

1. Slide the arms of the fork lift underneath the boiler, from the front of the appliance (See ***Fig. 8)***.

- **Make sure that the front bottom panel is removed for transport.**
- **Make sure to insert the fork lift arms from the front of the boiler.**
- **Do not insert the fork lift arms from the back, as it may damage the connections.**

2. Move the appliance carefully to its final position. Make sure to comply with the recommended clearances (See ***"Dimensions" on page G-13.***
3. If some height is required for condensate flow to the sewer system or if a condensate neutralisation system needs to be installed, place the appliance on a base with sufficient height (recommended slope to the drain: 3%).

Follow-on task(s):

None

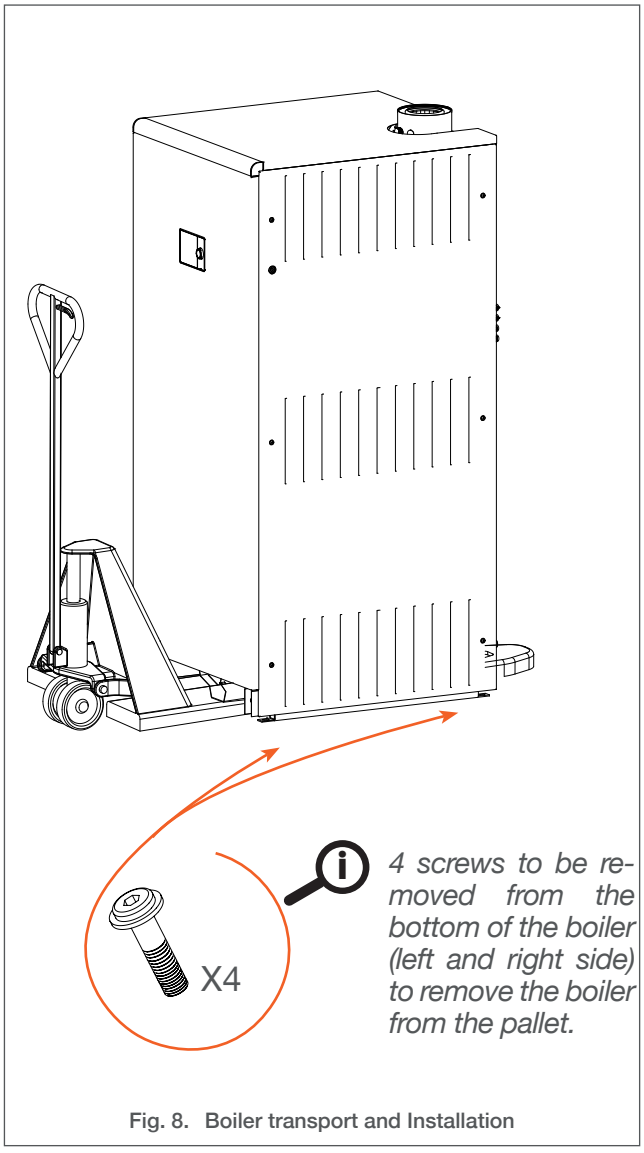


Fig. 8. Boiler transport and Installation

Removing and Installing the Access Panels

Conditions: OFF

Tools and Material:

- Wrench, hex head, size 4

Removal Procedure:

Bottom front panel

1. Pull the panel towards you to disengage the studs from their receptacle.

Center Front Panel

1. Release two top screws (**1**) located in the top section of the left and right side panels. Retain for reinstallation.
2. Pull the front panel (**4**) towards you to disengage the receptacles from their stud.

Top panel

The center front panel must be removed to be able to remove the top panel

3. Release the center front screw (**2**). Retain for reinstallation.
4. Push the top panel (**5**) upwards to disengage the receptacles from their stud.

Side Panels

1. Remove six screws (**3**) (or five if the front panel has been removed). Retain hardware for reinstallation.

Installation procedure

Side Panels

1. Install six retained screws (**3**) (or five if the front panel needs to be reinstalled).

Top panel

1. Push the top panel (**5**) downwards to engage the studs into their receptacles.
2. Install one center screw (**2**) retained at removal.

Center Front Panel

If the top panel must be reinstalled, make sure to reinstall it before installing the center front panel.

1. Push the panel (**4**) in position to engage the studs into their receptacles.
2. Install and tighten two top screws (**1**) on the left and right side panels (if the panels have not been removed).

Bottom Front Panel

1. Push the panel in position to engage the center stud into its receptacle.

Follow-on task(s):

None

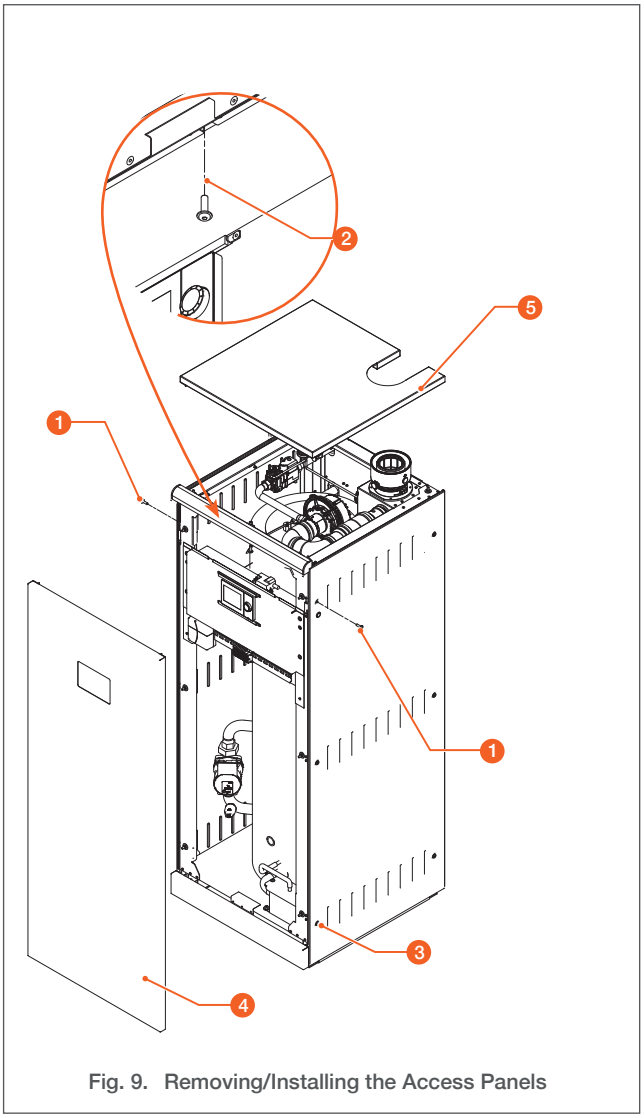


Fig. 9. Removing/Installing the Access Panels

Requirements for the Hydraulic Circuits

G3 Requirements (UK only)

Discharge pipe from safety valves

The Building Regulation G3 requires that any discharge from an unvented system is conveyed to where it is visible, but will not cause danger to persons in or about the building.

The tundish and discharge pipes should be fitted in accordance with the requirements and guidance notes of Building Regulation G3. The G3 Requirements and Guidance sections 3.50 - 3.63 are detailed below.

For discharge pipe arrangements not covered by G3 Guidance advice should be sought from your local Building Control Officer.

Main characteristics :

- Any discharge pipe connected to the pressure relief devices (Expansion Valve and Temperature/Pressure Relief Valve) must be installed in a continuously downward direction and in a frost-free environment.
- Water may drip from the discharge pipe of the pressure relief device.
- This pipe must be left open to the atmosphere.
- The pressure relief device is to be operated regularly to remove lime deposits and to verify that it is not blocked.
- A typical discharge pipe arrangement is shown on next page.

- *Discharge pipe-work D2 can now be a plastic pipe but only pipes that have been tested to a minimum 110°C must be used.*
- *Discharge pipe D2 can now be plumbed into the soil stack but only soil stacks that can handle temperatures of 99°C or greater should be used.*

Extract from "The Building Regulation G3" :

Discharge pipe D1

3.50 Safety devices such as temperature relief valves or combined temperature and pressure and pressure relief valves should discharge either directly or by way of a manifold via a short length of metal pipe (D1) to a tundish.

3.51 The diameter of discharge pipe (D1) should be not less than the nominal outlet size of the temperature relief valve.

3.52 Where a manifold is used it should be sized to accept and discharge the total discharge from the discharge pipes connected to it.

3.53 Where valves other than the temperature and pressure relief valve from a single unvented hot water system discharge by way of the same manifold that is used by the safety devices, the manifold should be factory fitted as part of the hot water storage system unit or package.

Tundish

3.54 The tundish should be vertical, located in the same space as the unvented hot water storage system and be fitted as close as possible to, and lower than, the valve, with no more than 600mm of pipe between the valve outlet and the tundish.

To comply with the Water Supply (Water Fittings) Regulations, the tundish should incorporate a suitable air gap.

3.55 Any discharge should be visible at the tundish. In addition, where discharges from safety devices may not be apparent, e.g. in dwellings occupied by people with impaired vision or mobility, consideration should be given to the installation of a suitable safety device to warn when discharge takes place, e.g. electronically operated.

Discharge pipe D2

3.56 The discharge pipe (D2) from the tundish should:

a. have a vertical section of pipe at least 300mm long below the tundish before any elbows or bends in the pipework; and
b. be installed with a continuous fall thereafter of at least 1 in 200.

3.57 The discharge pipe (D2) should be made of:

a. metal; or
b. other material that has been demonstrated to be capable of safely withstanding temperatures of the water discharged and is clearly and permanently marked to identify the product and performance standard (e.g. as specified in the relevant part of BS 7291)

3.58 The discharge pipe (D2) should be at least one pipe size larger than the nominal outlet size of the safety device unless its total equivalent hydraulic resistance exceeds that of a straight pipe 9m long, i.e. for discharge pipes between 9m and 18m the equivalent resistance length should be at least two sizes larger than the nominal outlet size of the safety device; between 18 and 27m at least 3 sizes larger, and so on; bends must be taken into account in calculating the flow resistance. See figure, table and the example.

3.59 Where a single common discharge pipe serves more than one system, it should be at least one pipe size larger than the largest individual discharge pipe (D2) to be connected.

3.60 The discharge pipe should not be connected to a soil discharge stack unless it can be demonstrated that that the soil discharge stack is capable of safely withstanding temperatures of the water discharged, in which case, it should:

a. contain a mechanical seal, not incorporating a water trap, which allows water into the branch pipe without allowing foul air from the drain to be ventilated through the tundish;
b. be a separate branch pipe with no sanitary appliances connected to it;
c. if plastic pipes are used as branch pipes carrying discharge from a safety device they should be either polybutalene (PB) to Class S of BS 7291-2:2006 or cross linked polyethylene (PE-X) to Class S of BS 7291-3:2006; and (d) be continuously marked with a warning that no sanitary appliances should be connected to the pipe.

- *Plastic pipes should be joined and assembled with fittings appropriate to the circumstances in which they are used as set out in BS EN ISO 1043-1.*

- *Where pipes cannot be connected to the stack it may be possible to route a dedicated pipe alongside or in close proximity to the discharge stack.*

Termination of discharge pipe

3.61 The discharge pipe (D2) from the tundish should terminate in a safe place where there is no risk to persons in the vicinity of the discharge.

3.62 Examples of acceptable discharge arrangements are:

a. to a trapped gully with the end of the pipe below a fixed grating and above the water seal;
b. downward discharges at low level; i.e. up to 100mm above external surfaces such as car parks, hard standings, grassed areas etc. are acceptable providing that a wire cage or similar guard is positioned to prevent contact, whilst maintaining visibility; and
c. discharges at high level: e.g. into a metal hopper and metal downpipe with the end of the discharge pipe clearly visible or onto a roof capable of withstanding high temperature discharges of water and 3m from any plastic guttering system that would collect such discharges.

3.63 The discharge would consist of high temperature water and steam. Asphalt, roofing felt and non-metallic rainwater goods may be damaged by such discharges.

- **The temperature/pressure relief valve should only be replaced by a qualified professional.**
- **Do not tamper with control or safety valves or use them for any other purpose than what they are intended for.**
- **Make sure that the discharge pipe is not blocked or used for any other purpose than what is is intended for.**
- **Do not locate the tundish close to any electrical components.**

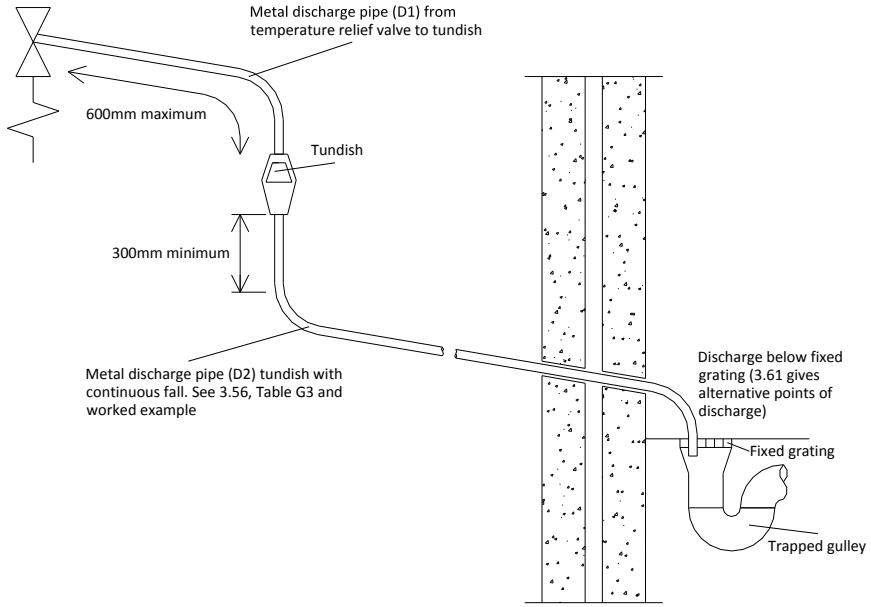


Figure G3: Typical discharge pipe arrangement

Valve outlet size	Minimum size of discharge pipe D1	Minimum size of discharge pipe D2 from tundish	Maximum resistance allowed, expressed as a length of straight pipe (i.e. no elbows or bends)	Resistance created by each elbow or bend.
G½	15mm	22mm	Up to 9m	0.8m
		28mm	Up to 8m	1.0m
		35mm	Up to 27m	1.4m
G¾	22mm	28mm	Up to 9m	1.0m
		35mm	Up to 8m	1.4m
		42mm	Up to 27m	1.7m
G1	28mm	35mm	Up to 9m	1.4m
		42mm	Up to 8m	1.7m
		54mm	Up to 27m	2.3m

Table G3 – Sizing of copper discharge pipe 'D2' for common temperature relief valve outlet sizes

Example of discharge pipe sizing

Figure on previous page shows a G1/2 temperature relief valve with a discharge pipe (D2) having 4 No. 22mm elbows and length of 7m from the tundish to the point of discharge.

From Table:

Maximum resistance allowed for a straight length of 22mm copper discharge pipe (D2) from a G1/2 temperature relief valve is 9.0m.

- Subtract the resistance for 4 No. 22mm elbows at 0.8m each = 3.2m
- Therefore the permitted length equates to: 5.8m
- 5.8m is less than the actual length of 7m therefore calculates the next largest size.

Maximum resistance allowed for a straight length of 28mm pipe (D2) from a G1/2 temperature relief valves equates to 18m.

- Subtract the resistance of 4 No. 28mm elbows at 1.0m each = 4.0m
- Therefore the maximum permitted length equates to: 14m
- As the actual length is 7m, a 28mm (D2) copper pipe will be satisfactory.

Safety Instructions for the DHW Circuit

- **Make sure that the circuit is provided with a safety group. It must be composed of a safety valve set at 8 bar, a check valve and a stop valve.**
- **Hot water can cause sever burns! The hot water produced in the circuit can reach temperatures higher than 60°C and cause scalding when drawn unmixed from a tap. The installation of a thermostatic mixing valve is therefore recommended.**
- **Do not leave young children, elderly or disabled people in the bath or the shower without supervision, as they could be exposed to extremely hot water if they use the hot water tap by themselves.**
- **The temperature of the DHW circuit shall be set according to local plumbing regulations and usage.**

- **The device is designed for heating drinking water. The drinking water shall comply with the regulations applicable to drinking water for human consumption.**
- **The pressure of the water network used to fill the appliance must be at least 1,2 bar.**
- **The supply pressure from the network must be comprised between 1,2 and 6 bar. If the pressure is higher than 6 bar, a pressure reducing valve must be installed.**
- *Flush thoroughly the circuit before operation.*
- *It is recommended to install a filter <100µm to prevent residues to contaminate the circuit.*
- *To prevent the early formation of scale and maintain a good operational condition of the water heater, soften the water to reach a pH comprised between 6.5 and 8.5.*
- *It is recommended that the water after passing through the softening installations and mixed with the unsoftened water should contain about 1.5 mol/m3 of calcium.*

- *The installation of an expansion vessel in the DHW circuit is recommended to prevent the water hammer effect in the pipework and the frequent opening of the safety valve. In addition, the circuit between the tank and the safety valve must always remain open.*
- *To prevent the development of the bacteria Legionella Pneumophilia in the DHW circuit, it is recommended to either activate the antilegionella function of the appliance (if any) or to increase regularly the DHW circuit temperature to 70° for a short period.*
- *The circuit diagrams are theoretical representations that do not necessarily include all the required safety devices. Make sure to correctly plan your system according to the applicable local regulations and standard practice.*

Safety Instructions for the Primary Circuit

Make sure that the circuit is provided with a safety pressure relief valve and an expansion vessel that is appropriate for the appliance power and the system size, and the increase in temperature and pressure.

- **The pressure of the water network used to fill the appliance must be at least 1,2 bar.**
- **If the supply pressure from the network is higher than 6 bar, make sure to install a pressure reducing valve set at 4,5 bar.**
- **Verify the water quality of the network according to the requirements defined in this manual.**
- **In case inhibitors are used in the system, consult the manufacturer for product suitability.**
- **Any antifreeze used in the primary circuit must comply with Public Hygiene Regulations and must be non-toxic. A food-grade Propylene Glycol is recommended. It must be diluted according to the ratio recommended in the local regulations, but with a maximum ratio of 30%.**
- **Consult the appliance manufacturer to determine the compatibility of the antifreeze product with the appliance materials.**

- **It is recommended to install the following devices in the system to prevent water contamination:**
- **Water filter and/or dirt separator installed on the return circuit. Have the water circulate for 2 hours after installation and prior to appliance start up in order to clean the circuit of contaminants.**
- **Plate heat exchanger, combined with a micro-pollutant separator, which will protect the appliance from any contaminants present in an old heating system, where fittings and pipes can be corroded. This is also mandatory for open systems where oxygen can penetrate the system and cause corrosion.**

- *The use of antifreeze in the primary circuit will lead to a reduction in the heating performance. The higher the concentration of antifreeze in the circuit, the lower the performance. Maximum output must be adjusted accordingly.*
- *The circuit diagrams are theoretical representations that do not necessarily include all the required safety devices. Make sure to correctly plan your system according to the applicable local regulations and standard practices.*

Water Quality Requirements to Prevent Scaling and Corrosion (Primary Circuit)

To prevent the formation of scale and sludge in a closed heating circuit through the penetration of oxygen and carbonates, follow the recommendations below:

- Before filling the system, clean it according to standard EN14336. Chemical cleaning agents can be used.
- If the circuit is in bad condition, or the cleaning operation was not efficient, or there is a large volume of water in the system (e.g. cascade), it is recommended to separate the appliance from the heating circuit using a plate-to-plate heat exchanger or an equivalent accessory. In that case, it is recommended to install a hydrocyclone or magnetic filter on the system side.
- Limit the fill operations. To control the quantity of water added into the system, install a water meter on the filling line of the primary circuit. No more than 5% of the total content of the system is allowed annually.
- Automatic filling systems are not recommended unless the fill frequency is checked and the levels of scale and corrosion inhibitor are maintained at an appropriate level.
- If the system needs to be refilled frequently, check for leaks in the primary circuit.
- Inhibitors may be used according to standard EN 14868.
- An air separator (on the appliance supply circuit) combined with a dirt separator (upstream of the appliance) must be installed according to the manufacturer's instructions.
- Additives can be used to keep the oxygen in solution in the water.
- Use the additives in accordance with the instructions of the manufacturer of the water treatment product.

Water Hardness

- If the hardness of the fill water is higher than 20° fH (11,2° dH), soften it. At commissioning, the water should be soft.
- Check the water hardness regularly and enter the values in the maintenance log sheet (provided at the end of the manual).

Water hardness	°fH	°dH	mmolCa(HCO3)2 / l
Very soft	0 - 7	0 - 3,9	0 - 0,7
Soft	7 - 15	3,9 - 8,4	0,7 - 1,5
Fairly hard	15 - 25	8,4 - 14	1,5 - 2,5
Hard	25 - 42	14 - 23,5	2,5 - 4,2
Very hard	> 42	> 23,5	> 4,2

Water Parameters

- In addition to the oxygen and the water hardness, other parameters of the water must be checked. Treat the water if the measured values are outside the range of the table below.
- In case the system operates at low temperature, it may be necessary to use an agent that inhibits the spread of bacteria.

Water Parameters	Range
Acidity	8,2 < pH < 9,0
Conductivity	< 400 µS/cm (at 25°C)
Chlorides	< 125 mg/l
Iron	< 0,5 mg/l
Copper	< 0,1 mg/l

Typical Hydraulic Connections - Heating and DHW Circuits

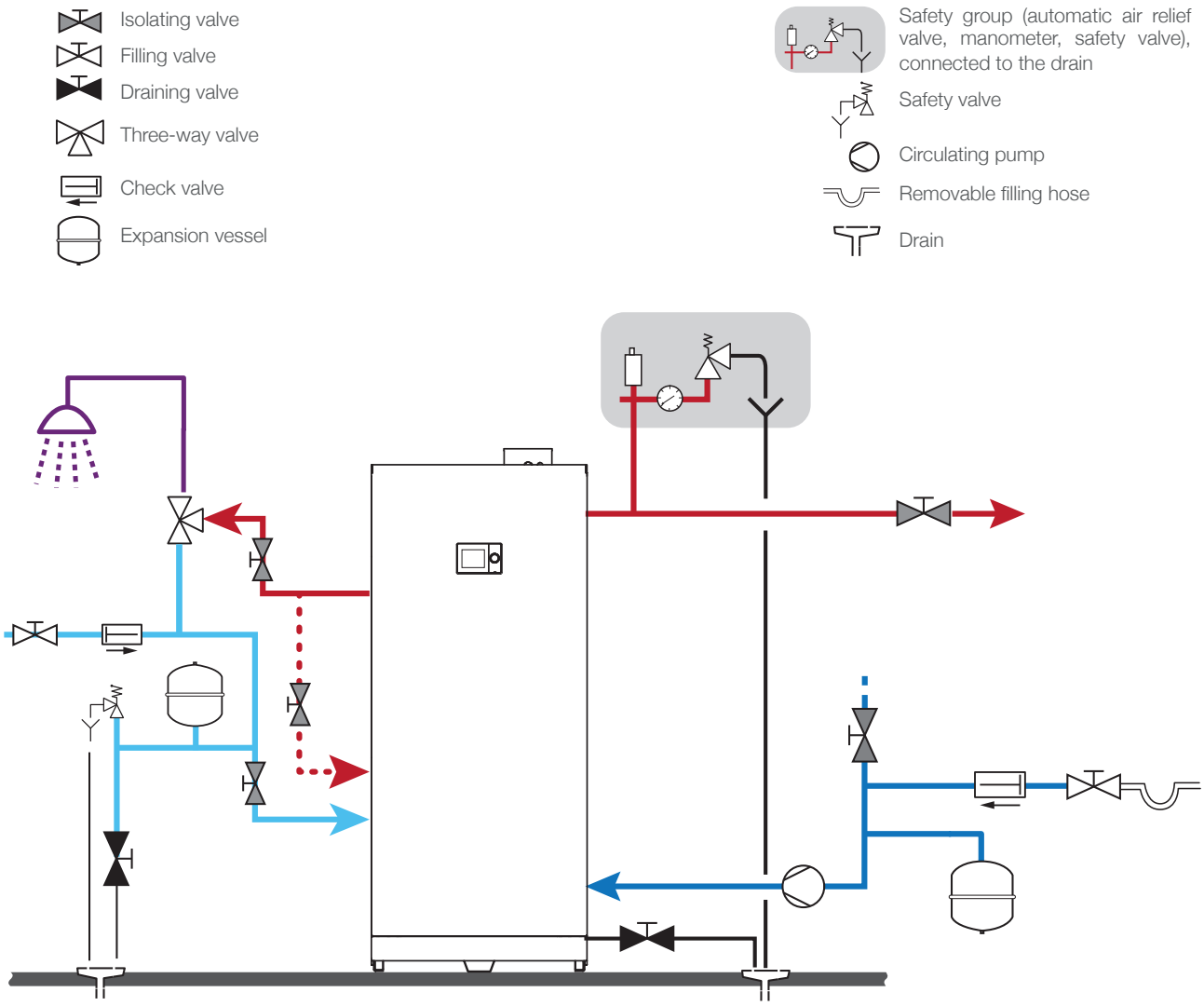


Fig. 10. Typical Heating and DHW Circuits

Safety Instructions for the Chimney Connections

- Verify installed combustion air and flue gas piping are tight and meet all provided instructions and applicable codes and standards.
- Failure to properly support the flue system can cause failure, resulting in flue gases contaminating the ambient air.
- The appliance must be equipped with flue system components from the same manufacturer and be approved by the appliance manufacturer. Ensure that the pipe and connection diameters all match to prevent any leaks from occurring.
- Any gas-fired appliance generates carbon monoxide. Failure to install carbon monoxide detectors with alarm in the boiler room can result in serious injury, or death. Refer to applicable local regulations.
- A condensate neutralisation system needs to be installed according to the applicable local regulations and standards. It must be cleaned and serviced regularly.

- Do not install the appliance into a common flue pipe with other gas or oil appliances. This will cause flue gas spillage or appliance malfunction. Please contact your AIC Technical Support for more information.
- A condensation outlet connected to the sewer must be fitted close to the appliance.

- Make sure to secure the flue piping to a solid structure.
- Exclusively use the provided brackets to support the flue system.
- When assembling the pipes, make sure not to put any stress on the components.
- Install the horizontal flue pipes with a slight slope of 5 cm per meter (3°) back towards the appliance.
- It is mandatory to ventilate the boiler room. The high or low air vent opening dimensions depend on the appliance power and the boiler room size. Refer to the local regulations in force.
- If the combustion air inlet is located in an area likely to cause or contain contamination, or if products which could contaminate the air cannot be removed, the combustion air must be repiped and terminated at another location.
- If the appliance is used on professional premises such as hairdresser's, cleaning company, painter's, etc. where chloride products, solvents, paints, dust etc. are likely to contaminate the air, make sure to install the appliance in a dedicated boiler room so that the appliance is supplied with clean combustion air.
- In the case of parallel flue systems, make sure to maintain sufficient distance (at least 40 mm) between the appliance flue piping and combustible materials, and between the flue pipe and air inlet pipe if the latter is made of plastic material.

- **Flue pipe elements or PP air inlet elements should not be screwed together.**

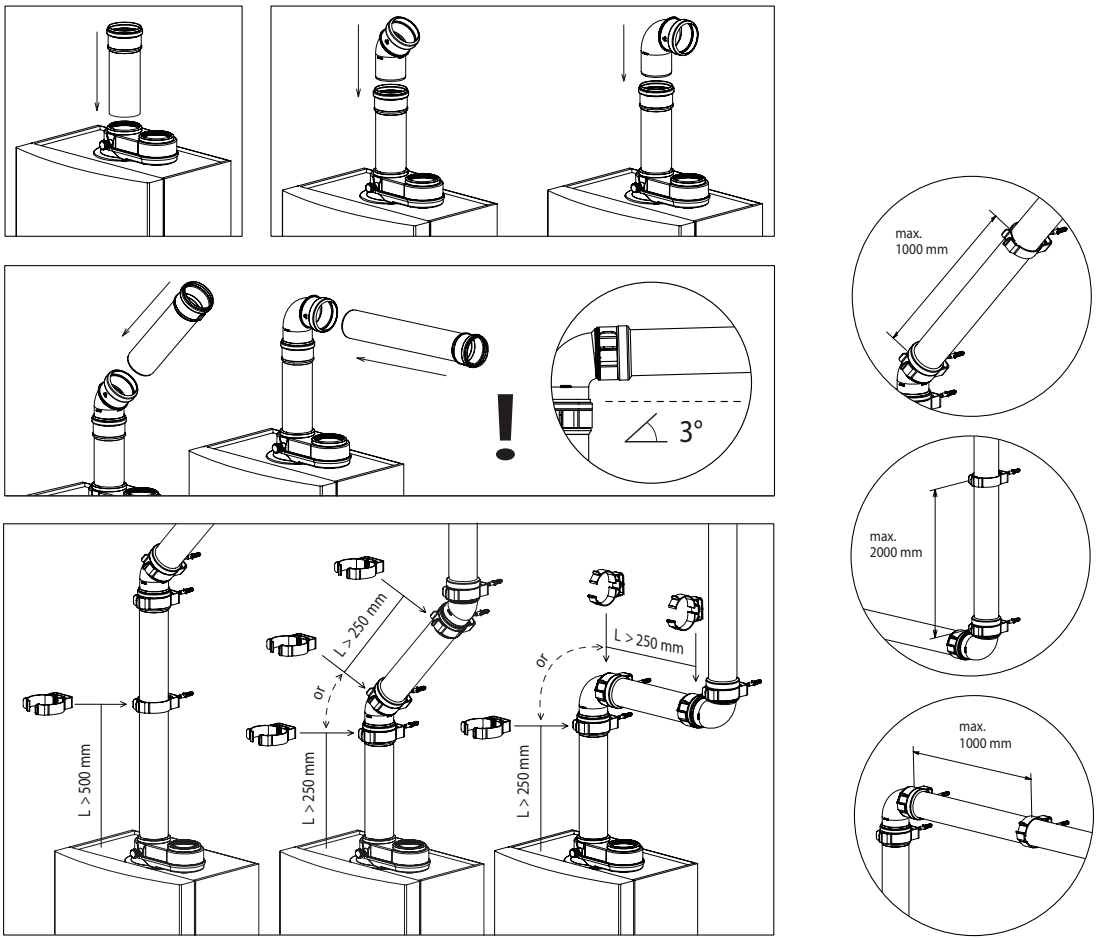
- **Piping elements should not be bonded together using glue (e.g. silicone) or foam (e.g. PUR).**

- *Make sure to insulate the flue piping in damp rooms to avoid condensation water from forming and dripping.*
- *Cut the pipes squarely and deburr the edges. This will ensure correct sealing and prevent seals from being damaged.*
- *To ease the assembly of pipes, use exclusively a mixture of water and soap (1%) on the extremity of the pipe to be fit in.*
- *Metal flue pipes should always be fitted into the sleeve to the end stop.*

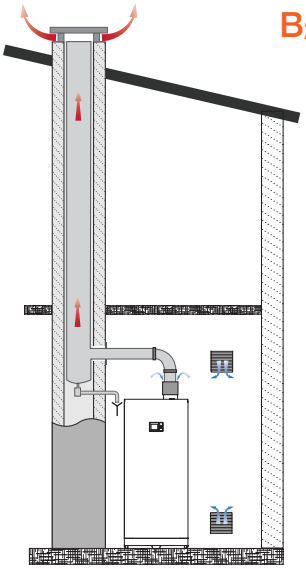
- *Plastic flue pipes should be allowed to expand under the effect of heat. Leave about 10 mm between the pipe and the sleeve end stop.*
- *The flue system should be fitted with an inspection opening.*
- *Do not exceed the maximum length recommended for the product when connecting the flue pipes, or the system power might decrease.*
- *For C-type appliances, the flue gas exhaust pipes must at least comply with the category T120 H1 W1/2 O30 LI E U when using parallel piping and T120 H1 W1/2 O00 LI/LE E U0 when using concentric piping (EN 14471).*

- *The maximum length of duct must be calculated according to the permissible difference in pressure indicated in the technical specifications.*

General Instructions for the Installation of AIC-approved Chimney Components

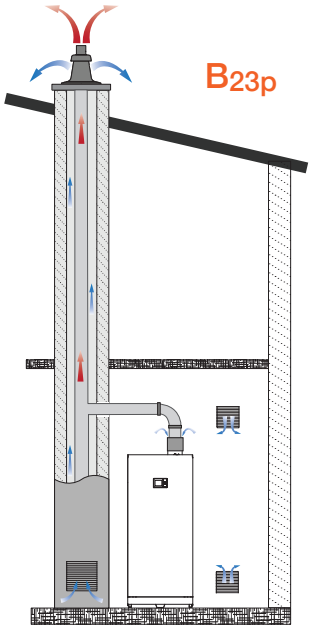


Chimney Connection



Combustion circuit	Open
Flue	Discharged to the outside
Combustion air	Drawn from the boiler room
Remark	Can be used for cascading

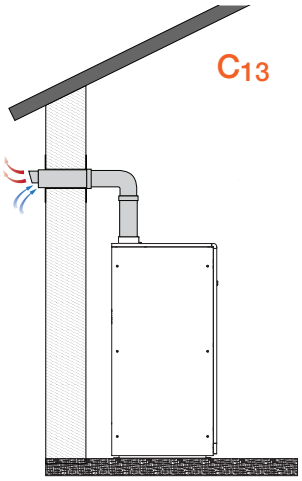
Make sure that the ventilation openings remain unobstructed at all times.



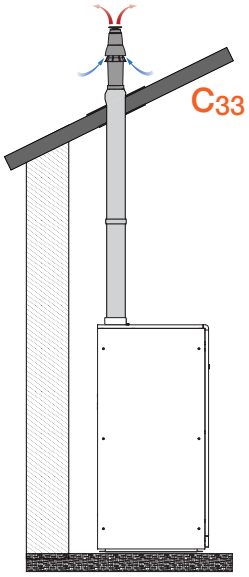
Combustion circuit	Open
Flue	Discharged to the outside, through positive pressure
Combustion air	Drawn from the boiler room
Remark	Can be used for cascading

Make sure that the ventilation openings remain unobstructed at all times.

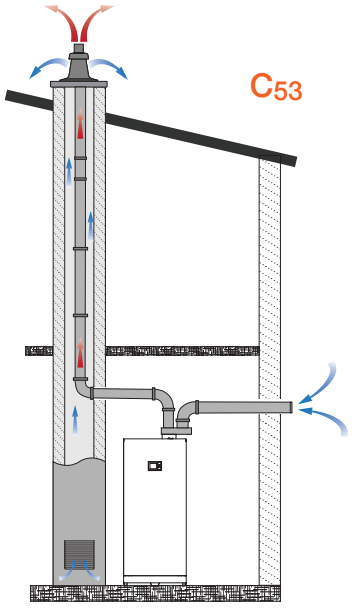
Make sure to install AIC-approved components when building B23 and B23p systems. See *"AIC-Approved Chimney Components" on page I-44.*



Combustion circuit	Sealed
Connection	Horizontal (wall) terminal
Air inlet/flue outlet orifices	Concentric - to a terminal for admission of combustion air from the outside AND flue discharge to the outside

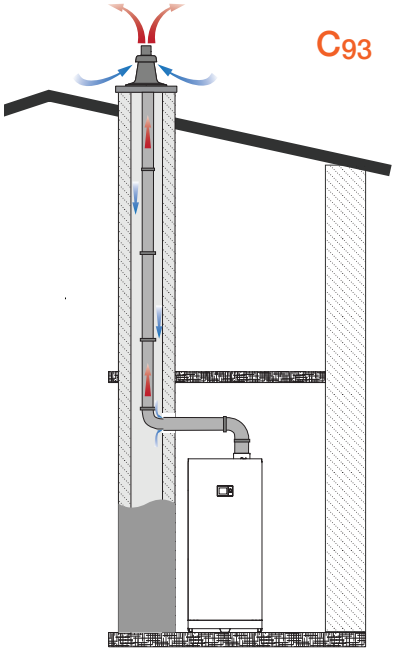


Combustion circuit	Sealed
Connection	Vertical terminal
Air inlet/flue outlet orifices	Concentric - to a terminal for admission of combustion air from the outside AND flue discharge to the outside



Combustion circuit	Sealed
Connection	Via separate ducts
Air inlet/flue outlet orifices	Through separate terminals that may terminate in zones of different pressures
Additional requirement	Orifices may NOT terminate on opposite walls of the building

C93



Combustion circuit	Sealed
Connection	Vertical terminal
Air inlet/flue outlet orifices	**Separate ducts**, both connected to a **roof terminal**: › Flue duct: connected to a vertical terminal › Air inlet: through an existing duct › Roof terminal admits combustion air from the outside AND discharges flue to the outside OR › Both orifices are close enough to come under similar wind conditions.
Remark	Airtight operation is possible in existing chimney, provided that: › It has been cleaned prior to installation › Clearance area is sufficient for combustion air (min the size of 2 separate ducts)

Make sure to install AIC-approved components from Muelink & Grol when building C13, C33, C53 and C93systems. See *"AIC-Approved Chimney Components" on page I-44*

C63

Combustion circuit	Sealed
Connection	To a system that is approved and sold separately (external supplier)
Air inlet/flue outlet orifices	May terminate in zones of different pressure
Additional requirement	› Maximum allowable draught is 200 Pa. › Maximum allowable pressure difference between combustion air inlet and flue gas outlet (including wind pressures) is indicated in the technical specifications. › maximum allowable temperature of combustion air is 40°C. › Condensate flow is allowed into the appliance. › Maximum allowable recirculation rate of 10% under wind conditions › Orifices may NOT terminate on opposite walls of the building › The flue gas exhaust pipes must at least comply with the category T120 H1 W1/2 O30 LI E U when using parallel piping and T120 H1 W1/2 O00 LI/LE E U0 when using concentric piping (EN 14471).

This type of connection is prohibited in some countries - refer to local regulations and standards in force

Please also refer to the additional information in ***"Engineering the Chimney System" on page I-45*** *for the construction of your chimney system.*

AIC-Approved Chimney Components

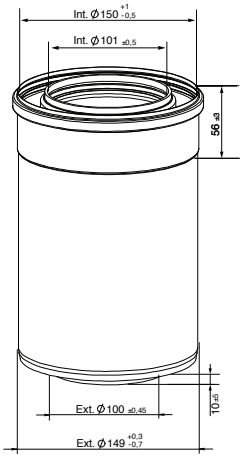
	Art. Designation	Art. code
M&G Twin Pipe System 100 mm	Adaptor PP 150/100-100/100	41.008.57.22
	Roof terminal skyline PP 100/100	41.008.48.53
	Wall terminal mugro 100/100 incl. Wall plates	41.007.63.35
	Extension PP 100x500 EPDM	41.008.54.81
	Extension PP 100x1000 EPDM	41.008.54.82
	Extension PP 100x2000 EPDM	41.008.54.84
	Extension adjuster PP 100 EPDM	41.008.51.28
	Elbow PP 100 90° EPDM	41.008.51.41
	Elbow PP 100 45° EPDM	41.008.51.42
	Support elbow PP 100 90° EPDM	41.008.51.45
	Tee PP 100 90° + cover EPDM	41.008.51.46
	Chimney top PP 100 + incl inox pipe	41.008.54.97
	Support strip	41.008.74.37
	Chimney shaft cover 100	41.008.74.13
	Shaft distance holder PP 100 (2 pcs)	41.008.75.04
	Wall bracket 100 PP	41.007.19.02
M&G Concentric System 100/150 mm	Roof terminal skyline std pp 100/150	41.008.48.62
	Weather slate steep lead 100/150 25°-45°	41.008.79.13
	Weather slate flat al 100/150 0°	41.008.73.79
	Wall terminal mugro std 100/150 incl. Wall plates	41.007.63.43
	Extension pp 100/150x 500 EPDM	41.008.43.51
	Extension pp 100/150x1000 EPDM	41.008.43.52
	Extension pp 100/150x2000 EPDM	41.008.43.54
	Extension adjuster pp 100/150 EPDM	41.008.43.58
	Elbow pp 100/150 90° short EPDM	41.008.43.60
	Elbow pp 100/150 45° long EPDM	41.008.43.63
	Tee pp 100/150 + cover EPDM	41.008.43.66
	Chimney connection 100/150	41.008.43.78
	Wall bracket 150	41.008.43.31

Engineering the Chimney System

The chimney system must be engineered by a qualified professional, according to local standards and regulations. The overall installation resistance of each boiler should not exceed the value indicated in the combustion table (including maximum wind condition) measured at the outlet of each boiler at maximum output. Refer to ***"Combustion and Gas Data" on page G-18.***

Please contact your AIC representative for more information

- *The flue system length must be calculated so as to ensure a safe performance of the system. See* ***"Calculation of the chimney length" on the right.***
- *Make sure to install the boiler with the shortest length of combustion air and flue ducts.*
- *When several boilers need to be connected to a common duct, please contact your AIC representative for more information.*
- *For C43, C63 and C83 chimney type connections, please consider the following dimensions of the concentric connection for the definition of the components in your chimney system.*



Accessories

If required by local regulations, install a condensate neutralisation system. In that case, it may be necessary to install the boiler on a base to get sufficient downward flow. If flow is not sufficient, install a condensate pump.

Calculation of the Chimney Length

The chimney length must be calculated using the values in the tables below for both parallel and concentric configurations.

1. Compose your system.
2. Add up the values from the tables below (straight pipes and elbows), of all the components used in the chimney system.
3. Compare the resulting value with the maximum length value for your type of chimney connection (parallel or concentric.)

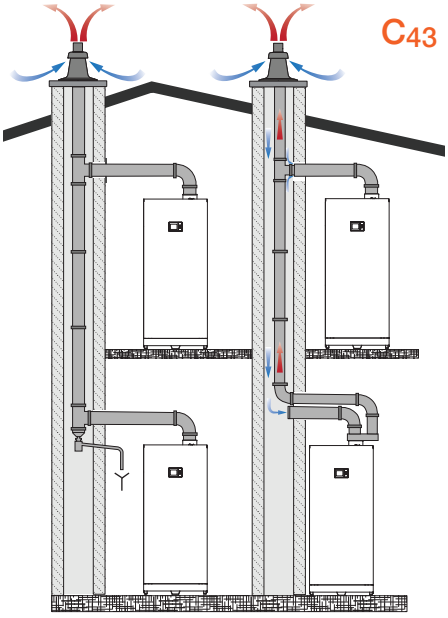
Equivalent Length of Chimney Components

	90°	45°	1 m
Parallel connection	3,7 m	2,3 m	1 m
Concentric connection	2,0 m	1,3 m	1 m

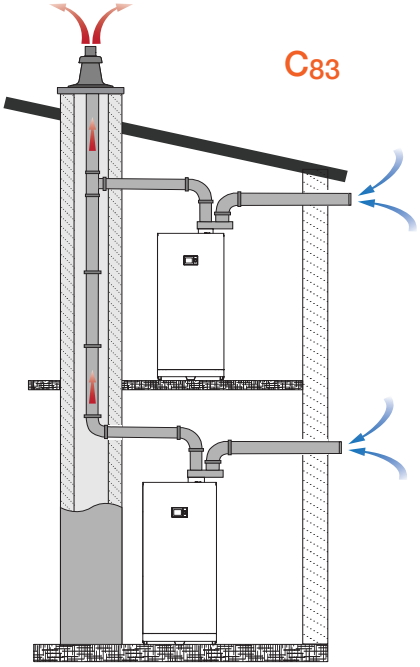
Maximum Chimney Length (terminals incl.)

	Parallel (100/100)	Concentric (100/150)
CM 60 - 70 - 80	25	25
CM 100	18 m	18 m
CM 120	16 m	16 m

The resulting value must be lower than the maximum value indicated in the table above for the considered appliance. Failure to comply can result in severe injuries or death.



Combustion circuit	Sealed
Connection	**Via two ducts to a common duct system** (part of the building, designed for more than one appliance)
Air inlet/flue outlet orifices	**through a roof terminal that** admits combustion air from the outside AND discharges flue to the outside › Concentric ducts OR › Both orifices are **close enough to come under similar wind conditions**
Additional requirements	› Chimney with natural draught only › Condensate flow is not allowed into the appliance



Combustion circuit	Sealed
Connection	Through: › a single duct system OR › **a common duct system** (part of the building, designed for more than one appliance)
Air inlet/flue outlet orifices	› Flue is discharged to the roof › Combustion air is taken from the outside
Additional requirement	› Condensate flow is not allowed into the appliance

- **When connecting several boilers to the same duct (i.e. types C43, C83), make sure to install an AIC-approved flue gas back-flow preventer on each boiler in the system.**
- **For B23p chimney cascade, please contact your AIC representative.**

*Please also refer to the additional information in **"Engineering the Chimney System" on page I-45** for the construction of your chimney system.*

Safety Instructions for the Gas Connection

- When connecting the gas circuit, make sure to comply with all applicable local regulations and standards. The circuit will be equipped with a meter and a gas pressure regulator if required.
- Do not exceed the maximum gas pressure.
- The conversion of the appliance from natural gas to G31 liquefied petroleum gas (propane) or the reverse can only be performed by a qualified professional.
- Gas conversion shall be performed according to applicable local regulations. It is prohibited in some countries. Perform conversion according to the gas category specified for your country on the appliance data plate.
- Bleed the gas duct and check thoroughly if all the internal and external gas pipes and connections are tight.
- After gas circuit connection, check that there is no leak.
- Use a gas detection device or perform a bubble test to check for gas leaks. Never use an open flame, as it could result in an explosion.

- Make sure that the gas type and pressure of the distribution network are compatible with the appliance, as per the information on the appliance data plate.
- The OFFSET (A) setting of the gas valve is factory-preset and sealed. In some countries, it is prohibited to change its setting. Please refer to applicable local regulations.
- The CO_2, gas flow rate, air flow rate and air/gas supply parameters are factory-preset and may not be modified in certain countries. Please refer to applicable local regulations.

Control the gas pressure and consumption at appliance start up, and perform the adjustment procedure provided in this manual.

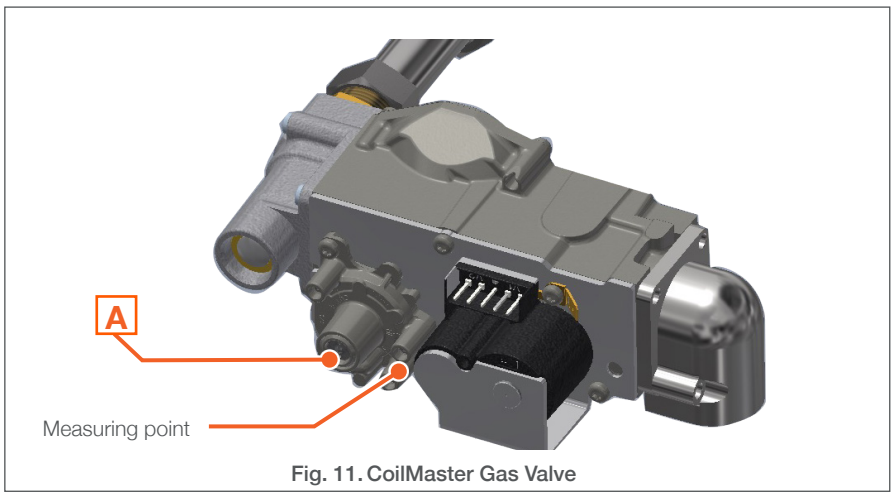


Fig. 11. CoilMaster Gas Valve

Safety Instructions for the Electrical Connections

Electrical connections must be carried out by a qualified professional in accordance with current standards and regulations in force.

- **When the appliance is connected to the electrical network, it must be earthed.**
- **Make sure that a fuse or circuit breaker of the recommended rating is installed outside the appliance, to allow electrical isolation.**
- **Do not touch the appliance with any wet body parts when it is supplied with electrical power.**
- **Before performing any operation on the electrical circuit, isolate the electrical supply of the appliance through the external power-cutting device (fuse, circuit-breaker, etc.)**
- **When routing the cables through sharp-edged holes in the panels, make sure to install glands or grommets, and to secure the cables in order to prevent any damage.**

- **Make sure to make the connections to the correct terminals, as indicated on the wiring diagram. If high voltage cables are installed on a low-voltage terminal, the electronic board will be damaged.**
- **When connecting wires to the terminals, check that the connection is secure and that all the wire strands are tightly held**

Cables

- *Any damaged power supply cable must be replaced using cables as described below and installed by a qualified professional.*
- *The cross-section of the wires should be >1,5 mm², equipped with sleeves at L and N ends.*

High voltage wiring is connected to a terminal strip located at the front of the boiler.

The main board and the low-voltage terminal strip are also located at the front of the boiler

Routing the Cables

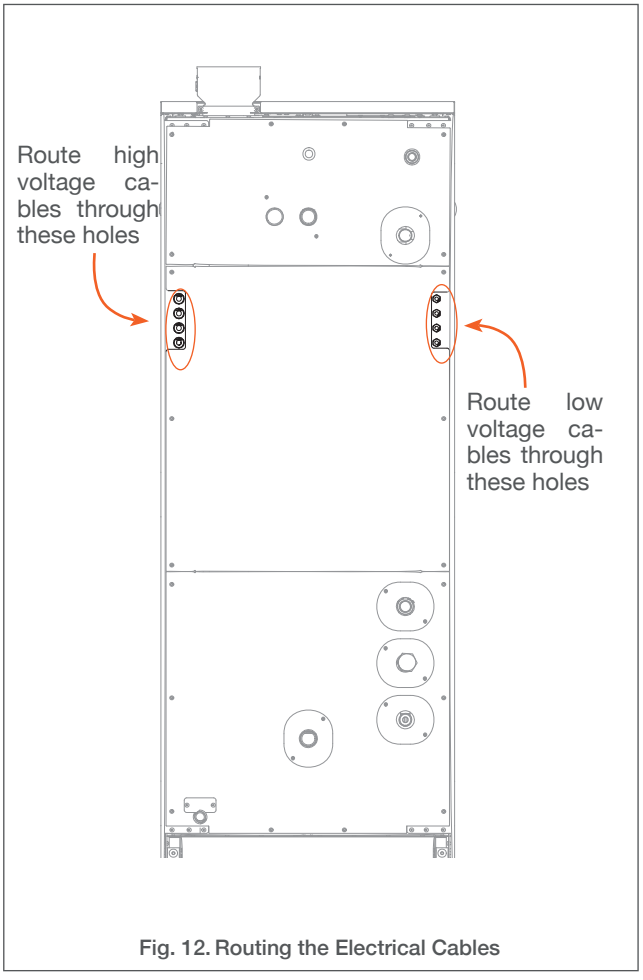


Fig. 12. Routing the Electrical Cables

Accessing the High and Low Voltage Terminal Strips and Boiler Management Unit

Make sure that the power supply to the appliance is deactivated (power supply cable disconnected from the boiler) before accessing the high voltage terminal strip.

Conditions: OFF

Tools and material:

- Wrench, hex head, size 3

Procedure:

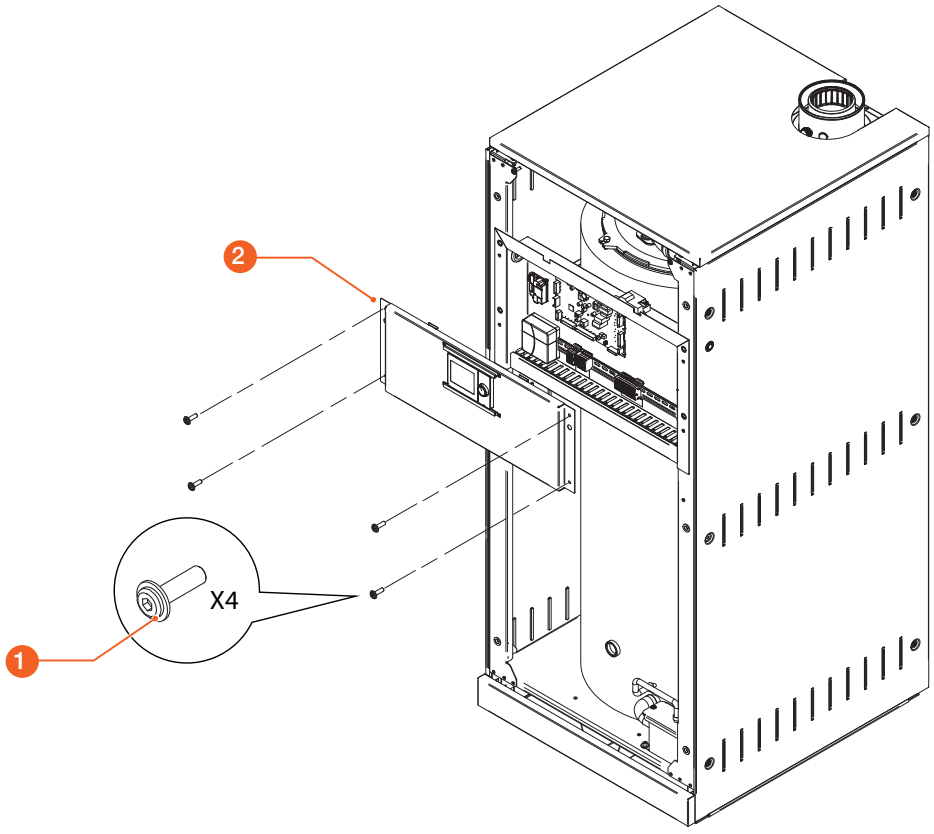
1. Remove boiler front panel, see *"Removing and Installing the Access Panels" on page I-31.*

The electronic bay cover panel is only secured to the boiler frame by four screws. Make sure to support the cover panel at removal, as the controller cable needs to be disconnected from the boiler management unit (electronic board).

2. Holding the electronic bay cover panel, remove four screws (1). Retain for installation.
3. Carefully remove the electronic bay cover panel (2) and disconnect the cable from the back of the control panel.
4. Proceed in the reverse order to reinstall the electronic bay cover panel back in position.

Follow-on tasks:

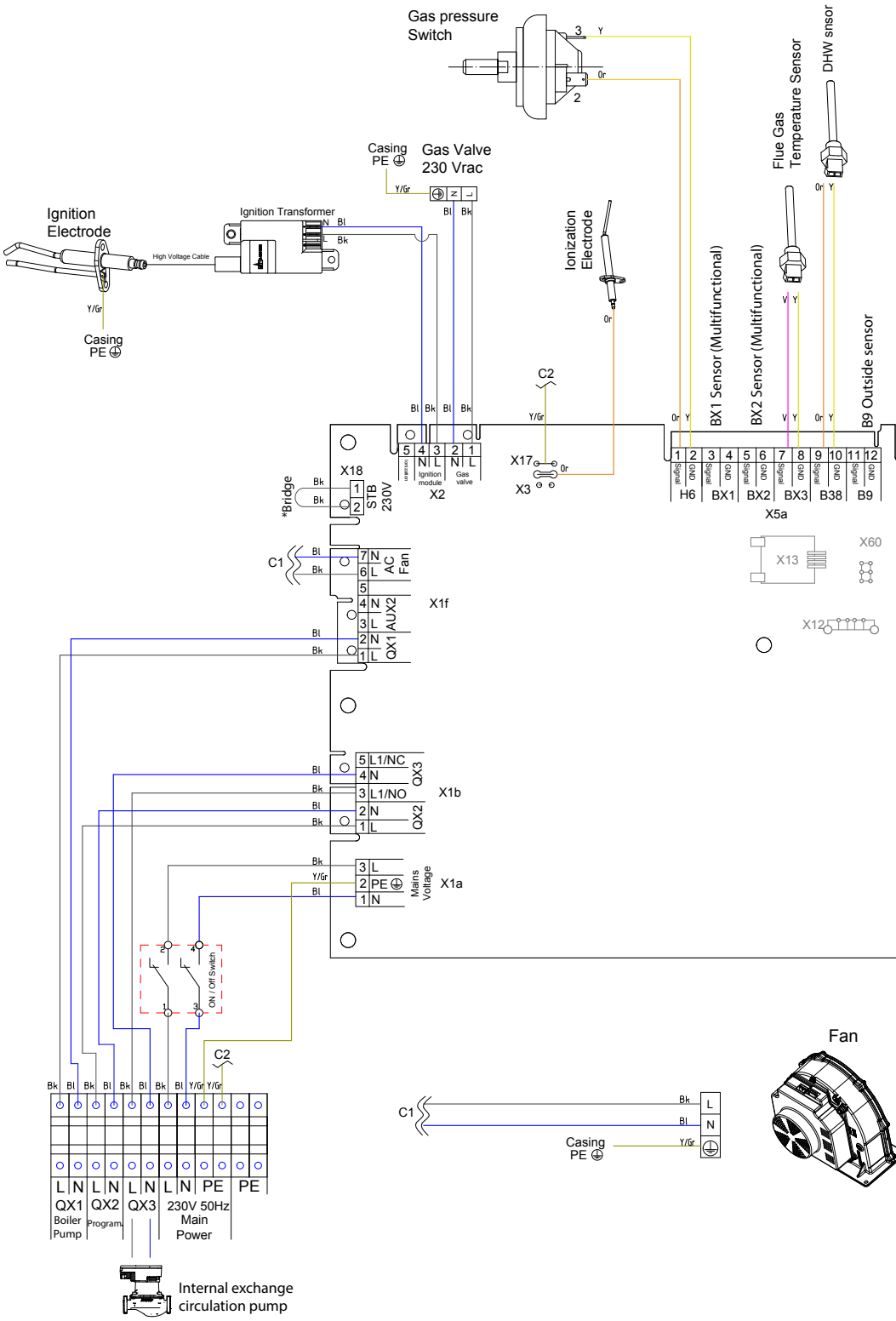
None



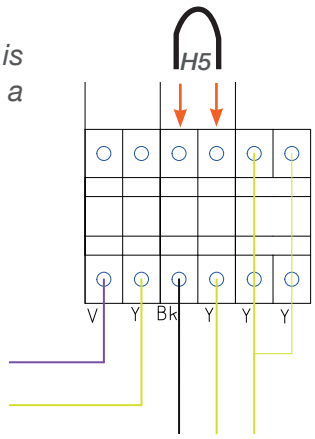
*Also see **"Optional Modules" on page I-72** for more information on available optional electronic components.*

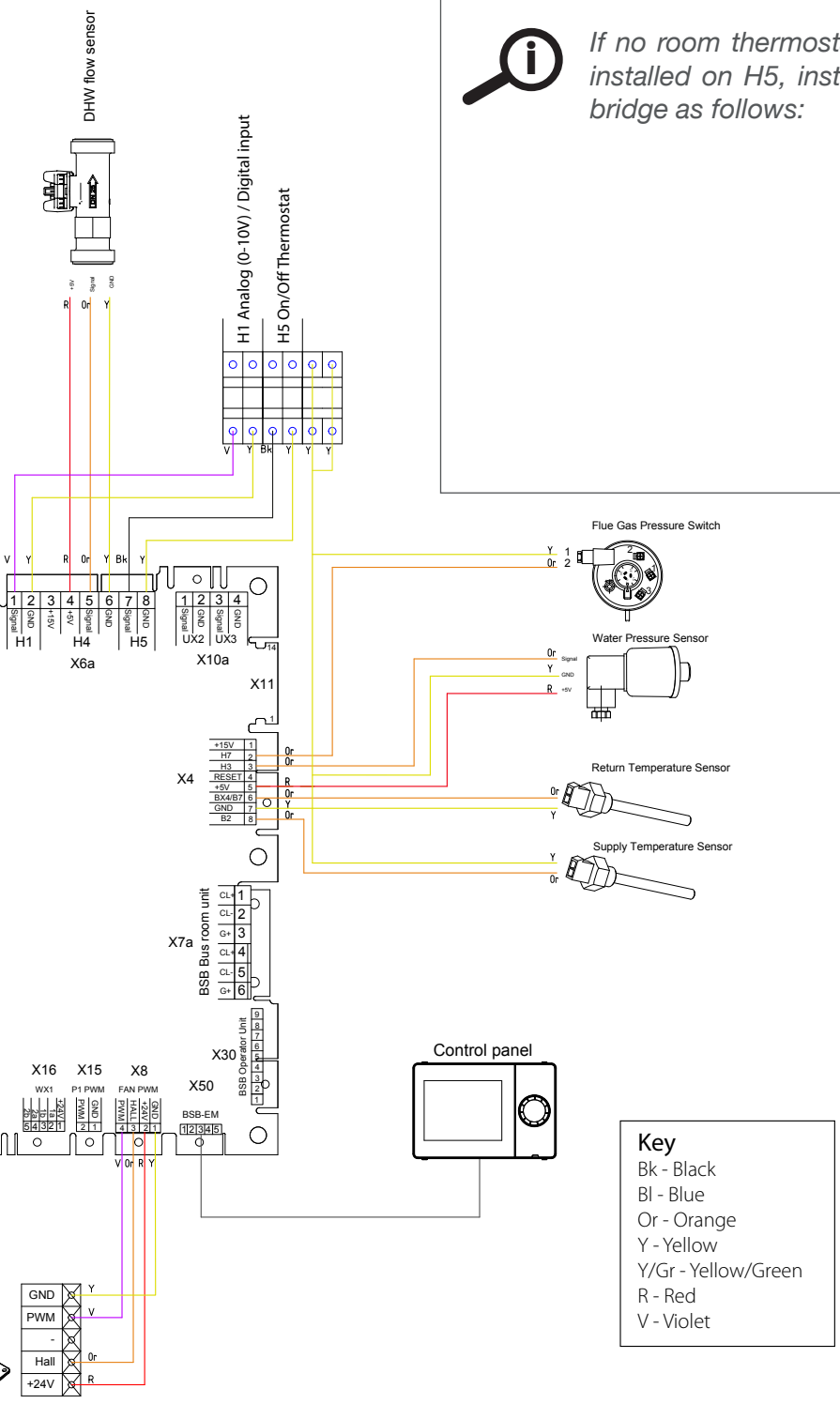
Fig. 13. Accessing the High and Low Voltage Terminal Strips and Boiler Management Unit

Wiring Diagram



If no room thermostat is installed on H5, install a bridge as follows:





Key

Bk - Black
Bl - Blue
Or - Orange
Y - Yellow
Y/Gr - Yellow/Green
R - Red
V - Violet

Safety Instructions Before Start-up

- Check that all connections (electrical, flue pipe, hydraulic, gas) have been carried out and that they are tight and secure.
- Ensure that the condensate trap is full of water before starting up the appliance.

- Before starting the appliance, check that the heating circuit is full of water and the appliance is supplied with gas and electrical power.
- Check that the gas pressure is within the allowed range.

- Check that the water pressure is sufficient (at least 1,2 bar when cold). Low water pressure is detected by the appliance sensor and will be indicated on the control panel display. Top up the circuit as required.
- In case of repeated indication of low pressure in the water circuit, check for leaks and repair as required.
- Once the filling of the heating circuit is complete, close the filling valve.

Once the initial start-up process is complete, fill in the installation checklist with all the relevant information on the system for future reference. Refer to ***"Installation Checklist" on page I-87.***

Filling the System

Conditions: OFF

Procedure:

1. Connect the filling hose ( ) to the system filling valve ( ) and to the water network tap.
2. Make sure that the optional draining valve ( ) installed at the drain connection is closed.
3. Open the isolating valves ( ).
4. Open the filling valve ( ) and the water network tap.
5. Bleed the air from the system, using the manual air vent of the boiler, and bring the system pressure at minimum 1,2 bar.

Pressure should be suitable for the size/height of the heating system and take into account the pressure rating of the safety valve.

6. Close the filling valve ( ).
7. Remove the filling hose ( ) from the filling valve ( ) as required.

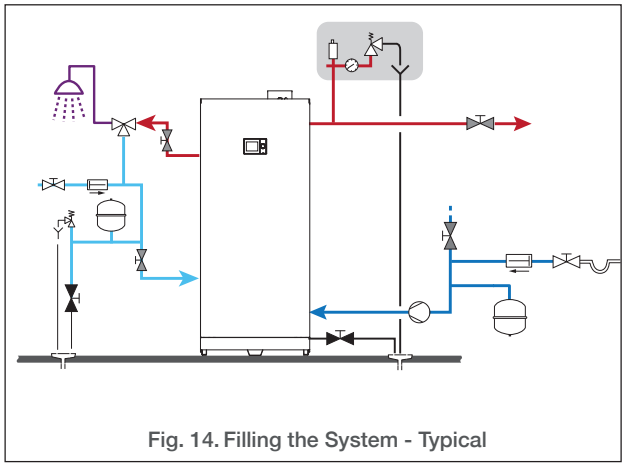


Fig. 14. Filling the System - Typical

8. Connect the water network to the DHW inlet circuit.
9. Make sure that the draining valve ( ), if installed, is closed.
10. Make sure that the isolating valves ( ) are open on the DHW inlet and outlet circuits.
11. Open the filling valve ( ) of the Domestic Hot Water circuit.

Follow-on Task(s): None

Start-up and Commissioning

Conditions:

Tools and material:

None

Procedure:

1. Make sure that all connections are tight and there is no leak.
2. Push the On/Off switch located on the right side of the boiler.

   - *When in the ON position, the switch remains pushed in and is illuminated.*
   - *When starting the boiler for the first time after installation, the controller will open the Commissioning Wizard automatically. This wizard process only appears once, provided that the function is disabled (set to "off') at completion of the process. To bypass it, activate "Continue" or "Skip" displayed at the bottom of the screen, until you reach the end of the process.*
3. If required, perform the commissioning setting of the boiler, following the instructions displayed on the screen. Refer to ***"Commissioning Wizard" on page I-54*** for more information and a list of the settings.

Follow-on task(s):

Perform the combustion adjustments. Refer to the procedure on the right.

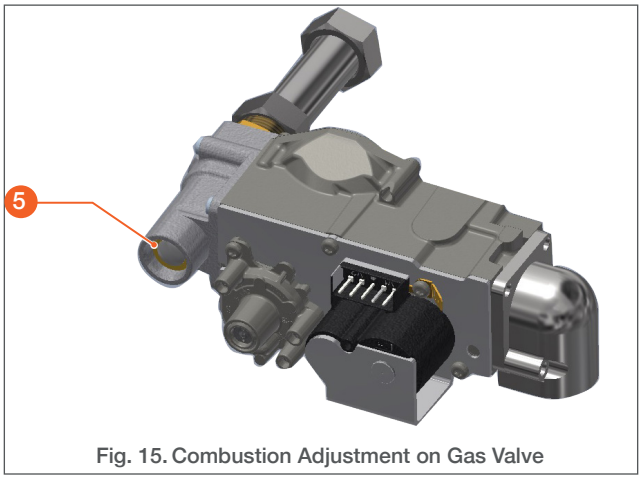


Fig. 15. Combustion Adjustment on Gas Valve

Combustion Adjustment

Conditions: ON

Tools and material:

- Flue gas analyser
- Screwdriver, flat head, size 3
- Wrench, hex head, sizes 2 and 2,5

Procedure:

1. Allow the boiler to operate for a few minutes.
2. Connect the flue gas analyser probe to the measuring port of the flue gas pipe.
3. Check CO_2 contents in the flue gas at max output as follows:
   - Select and activate the icon
   - Select "***Special operations (1/3)***"
   - Set "***Chimney sweep function***" to "***on***".
   - Set "***Burner output***" to "***Full load***".
   - Check the CO_2 contents, and compare the values with those in the technical specifications (See ***"Combustion and Gas Data" on page G-18).***
   - If the value is outside the range, adjust the combustion value by turning the gas valve throttle (**5**) in small steps, to allow the value to stabilise before performing additional adjustments.
     - Rotate throttle screw clockwise (to the right) to decrease the CO_2 rate.
     - Rotate throttle screw counter-clockwise (to the left) to increase the CO_2 rate.
4. In "***Special operations (1/3)***", set "***Chimney sweep function***" to "***off***".

Follow-on task(s):

Record the value in the log sheet. Refer to ***"Combustion Parameters - Log Sheet" on page I-90.***

Commissioning Wizard

When starting up the boiler for the first time, a commissioning wizard will be displayed, unless it has been disabled before (e.g. from factory or through a previous manual deactivation). In that case, and if needed, it can be accessed through the “Commissioning” or “Engineer” user level.

To exit the commissioning wizard without adjustments, activate “Continue” or “Skip” displayed at the bottom of the screen, until you reach the end of the process.

The following pages give a view of the structure of the commissioning wizard contents. Program numbers are provided, as well as the detail of the menu when required. In orange is the default or recommended value. Please also refer to ***“Structure of Menus for the Installer” on page I-75.***

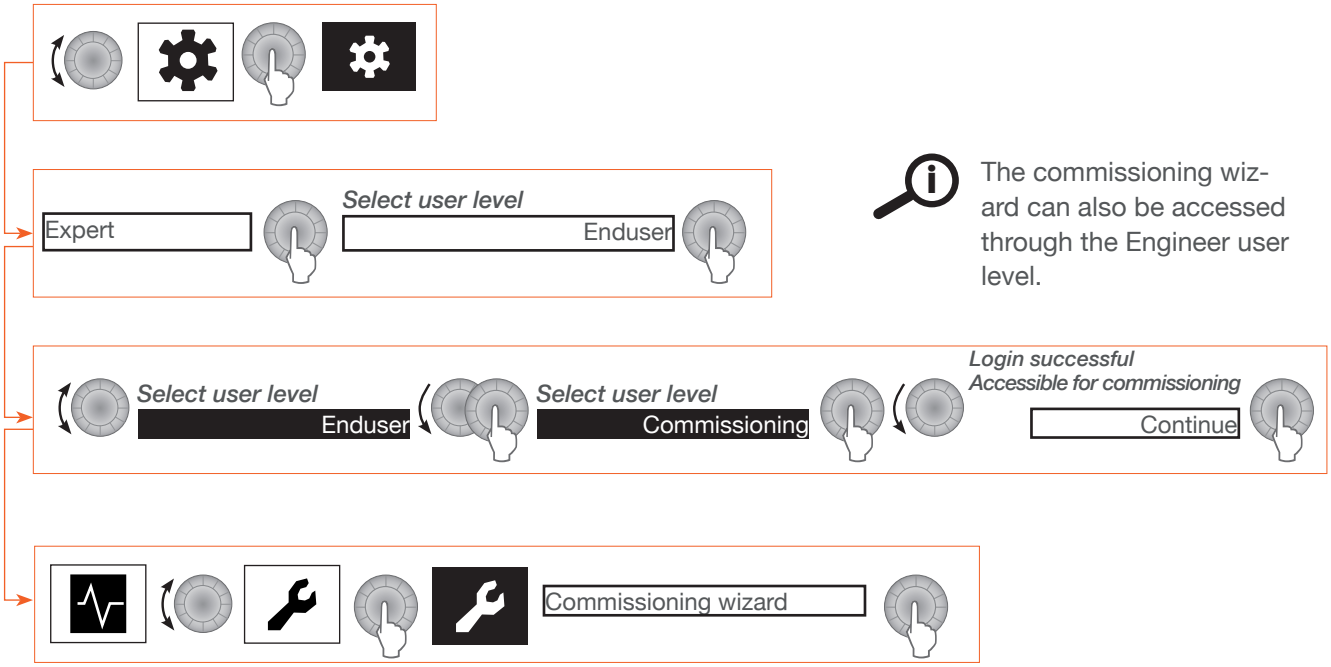
Symbols used for the **operation of the selector**:

turn the selector to the left or to the right.

depress shortly the rotary selector.

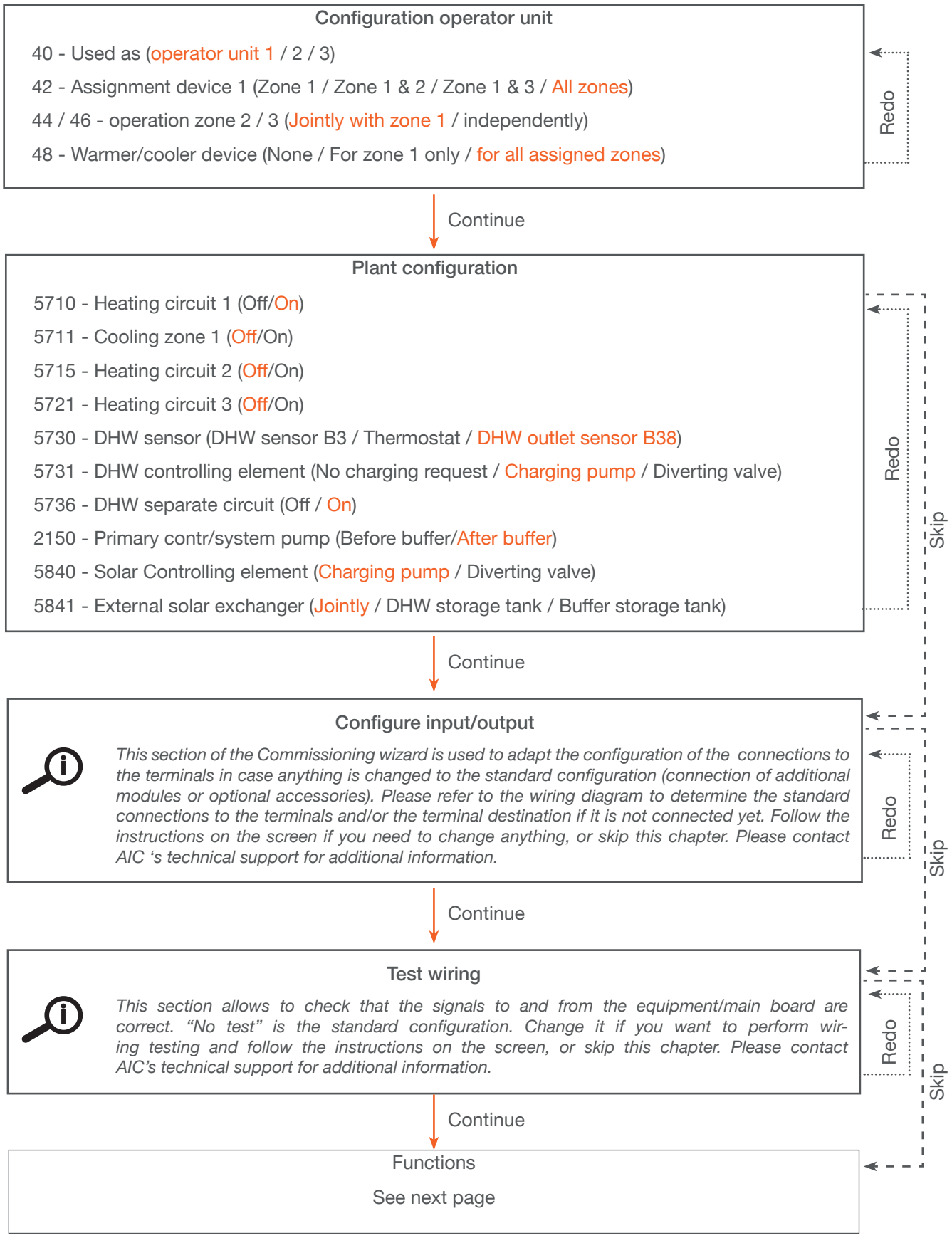
turn the selector to adjust the value, then depress the selector to validate.

Accessing the Commissioning Wizard



The commissioning wizard can also be accessed through the Engineer user level.

General Structure of the Commissioning Wizard



Functions

Heating zone 1

720 - Heating curve slope (1.50)

721 - Heating curve displacement (0°C)

730 - Summer-winter heating limit (18°C)

732 - 24-hour heating limit (-3°C)

740 - Flow temp setpoint min (8°C)

741 - Flow temp setpoint max (80°C)

750 - Room influence (unused (0%) to 100%)

760 - Room temp limitation (1.0°C)

Domestic Hot Water

1612 - Reduced setpoint (35°C)

1620 - Release (24h/day / Time programs HCs / Time program 4/DHW)

1630 - Charging priority (Absolute / Shifting / None / MC shifting, PC absolute)

1640 - Legionella function (Off / Periodically / Fixed weekday)

1645 - Legionella function setpoint (65°C)

1641 - Legionella function periodically (3)

1642 - Legionella function weekday (Monday / Tuesday / Wednesday.../ Sunday)

Consumer circuit 1

Consumer circuit 2

Swimming pool circuit

Solar

These sections allow to define the flow temp for different configurations. *Follow the instructions on the screen if you need to change anything or skip this chapter. Please contact AIC's technical support for additional information.*

Redo

Skip

Continue

System setup

LPB system

6600 - Device address (1....16)

6601 - Segment address (0...14)

6640 - Clock mode (Autonomously / Slave without remote setting / Slave with remote setting / Master)

Modbus

6651 - Slave address (unused (0) ... 247)

6652 - Baud rate (1 200 / 2 400 / 4 800 / 9 600 / 19 200)

6653 - Parity (Even / Odd / None)

6654 - Stop bit (1 / 2)

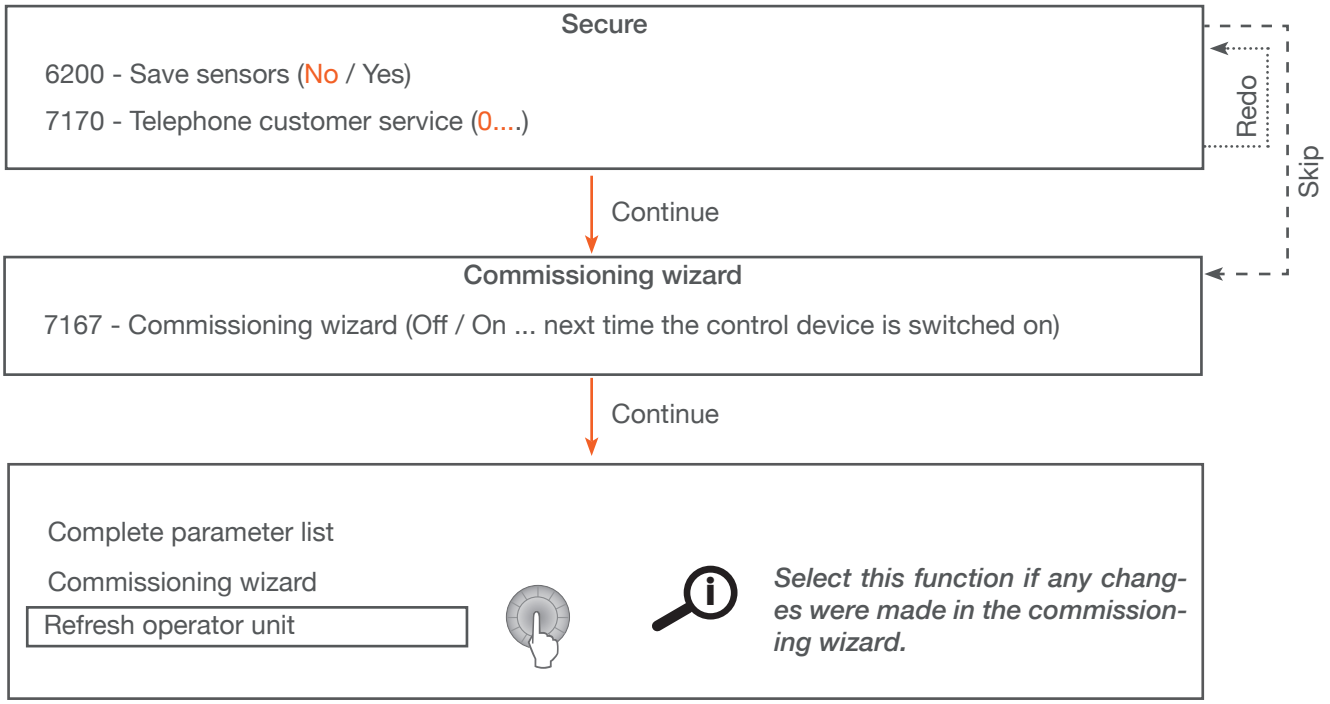
Redo

Skip

Continue

Secure

See next page


Secure
6200 - Save sensors (No / Yes)
7170 - Telephone customer service (0....)
Redo
Skip
Continue
Commissioning wizard
7167 - Commissioning wizard (Off / On ... next time the control device is switched on)
Continue
Complete parameter list
Commissioning wizard
Refresh operator unit
Select this function if any changes were made in the commissioning wizard.

Safety Instructions for Maintenance

- Inspection and maintenance tasks must be carried out by a qualified and certified professional, at least once a year.
- Water flowing out of the drain valve can be extremely hot. Use extreme caution when draining a hot appliance.
- Once the inspection and maintenance tasks are complete, ensure that all removed components are reinstalled and all connections are tight and secured.

- Before performing any maintenance operation, shut down the appliance using the appliance on/off switch and isolate the electrical supply of the appliance through the external power-cutting device (fuse, circuit-breaker, etc.), unless power is required for the procedure (it will then be indicated in the procedure).
- Do not touch the appliance with any wet body parts when it is supplied with electrical power.
- Be careful ! Even when the appliance on/off switch is set to OFF, the high voltage terminals are still supplied with electrical power.

- The maintenance of the appliance and its components must be carried out by a qualified professional.
- Defective parts and components may only be replaced by genuine factory parts or parts approved by the manufacturer.
- Replace any gaskets or seals present on the removed components before reinstallation, unless otherwise specified in the procedures.
- To ensure the performance, durability and reliability of the appliance, it is recommended that the end-user perform the periodic checks mentioned in the Safety section for the user, at the beginning of this manual.
- The minimum pressure of the primary circuit is 1,2 bar when cold, the normal pressure is 1,2 to the maximum pressure, as defined in the hydraulic characteristics in this manual.
- If the water circuit needs to be topped up, allow the appliance to cool down and only add small quantities of water at a time. Adding a large quantity of cold water in a hot appliance can damage the appliance permanently.

The inspection and maintenance tasks are detailed in a table in this section. Make sure to perform all the recommended tasks and to fill in the log sheets available at the end of the manual with all the required information.

Maintenance Requirements

Tasks	@ inspection (1 year)	@ maintenance (2 years max)
Check that the boiler room ventilation / boiler air and flue ducts are unobstructed.	X	X
Verify flue gas and combustion air ducts are in good condition, sealed tight and properly supported.	X	X
Open the front panel and check the general condition inside the cabinet. Clean and vacuum as required.	X	X
Check the correct operation of the flue pressure switch, refer to ***"Checking the Flue Pressure Switch operation" on page I-62***	X	X
Clean the condensate trap. Remove condensate trap and flush with clear water, see ***"Cleaning the Condensate Pipe and Trap" on page I-61***	X	X
Clean/service the condensate neutralisation system (if any). Refer to manufacturer's documentation.	X	X
Clean any filter/dirt separator, plate heat exchanger or balance header present in the hydraulic system, as required. Refer to manufacturer's documentation.	X	X
Check for leaks, both inside and outside the appliance: water, gas, flue and condensate.	X	X
Check boiler water pressure (at least 1,2 bar when cold). Top up the system with water if required.	X	X
Check the operation of the burner (flame) through the sight glass and that the combustion parameters (CO & CO_2) are according to requirements. See ***"Combustion and Gas Data" on page G-18.***	X	X
Check the gas pressure and that the gas supply shut-off devices are operating properly.	X	
Check that the pump(s) is/are operating properly.	X	
Check that the fan is operating properly.	X	
Remove the burner and check its general condition. Clean as required. See ***"Removing and Installing the Burner - CM 60 - 70 - 80" on page I-66*** or ***"Removing and Installing the Burner - CM 100 - 120" on page I-68.***		X
Replace the ignition and ionisation electrodes. Refer to ***"Removing and Installing the Ignition and Ionisation Electrodes" on page I-63.***		X
Check all control wiring and connections.	X	X
Check the condition of the combustion chamber and clean it if required. See ***"Checking and Cleaning the Combustion Chamber" on page I-70.***		X
Check water quality and record in log sheet, See ***"Water Parameters - Log Sheet" on page I-91***	X	X
Record the operations and results in the Log Sheets provided at the end of the manual	X	X

Shutting Down for Maintenance

Conditions: None

Procedure:

1. Press the On/Off switch located on the right side of the boiler.

When in the OFF position, the switch internal light comes out.

2. To completely cut the power supply to the boiler, either disconnect the power supply cable from the boiler, or use the external circuit breaker.

Follow-on tasks:

Draining the Boiler

Conditions: OFF

Procedure:

1. Close the isolating valves of the heating circuit.
2. Connect the optional draining valve to the sewer with a hose.
3. Open the draining valve to empty the heating circuit of the boiler.
4. Provide relief at the manual air vent of the boiler.
5. Close the draining valve once the heating circuit of the boiler is empty.

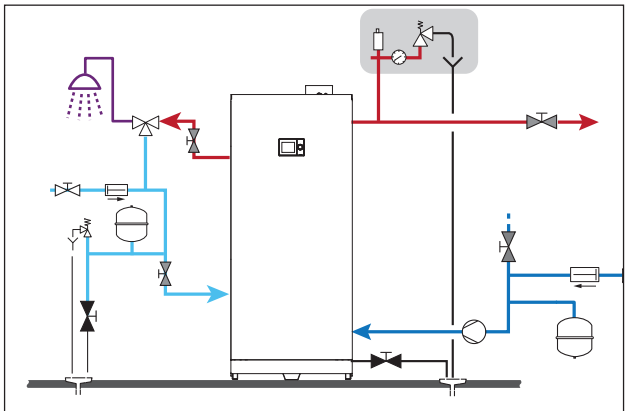


Fig. 16. Draining the Boiler - Typical

6. Close the filling valve of the DHW circuit.
7. Open the draining valve (if installed) and a draw-off tap in the circuit to accelerate the draining process.
8. Close the draining valve .

Follow-on tasks: None

Restarting after Maintenance

Conditions:

Procedure:

1. Press the On/Off switch located on the right side of the boiler.

When in the On position, the switch remains pushed in and is illuminated.

2. Select the required heating mode as required.
3. Activate the DHW mode as required.
4. Allow the appliance to operate for a few minutes, then bleed the air from the system.

Follow-on tasks:

1. Check there is no leak in the water and gas circuits.
2. Check the combustion values according to ***"Combustion and Gas Data" on page G-18***.
3. Record values in ***"Combustion Parameters - Log Sheet" on page I-90***.
4. Check the heating circuit pressure (between 1,2 and 3 bar).

Cleaning the Condensate Pipe and Trap

Conditions:

Tools and material:

- Wrench, hex head, size 5
- Torque wrench

Procedure:

1. Disconnect the condensate pipe (**1**) between heat exchanger and condensate trap (**7**).
2. Clean the pipe. Retain for reinstallation or replace as required.
3. Disconnect the vent hose (**2**) between the heat exchanger and the condensate trap. Retain for reinstallation.
4. Check that the heat exchanger condensate outlet and the condensate trap inlet are not clogged. Clean as required.
5. Release two screws (**3**) and open the condensate trap cover (**4**). Retain cover and hardware for reinstallation.
6. Remove the cover gasket (**5**). Discard.
7. Clean the deposits in the condensate trap (**7**) using clear water and a cloth.
8. Wipe the ball (**6**) located above the exit pipe.

*Make sure to put the ball (**6**) back in place in the trap before reinstalling the cover.*

9. Install a new gasket (**5**) on the condensate trap (**6**).
10. Reinstall the cover with two retained screws (**3**). Torque the screws at 6 Nm.
11. Reconnect the vent hose between the heat exchanger and the condensate trap (**7**).
12. Reconnect the condensate pipe to the condensate trap inlet and heat exchanger condensate outlet.

Follow-on tasks:

None

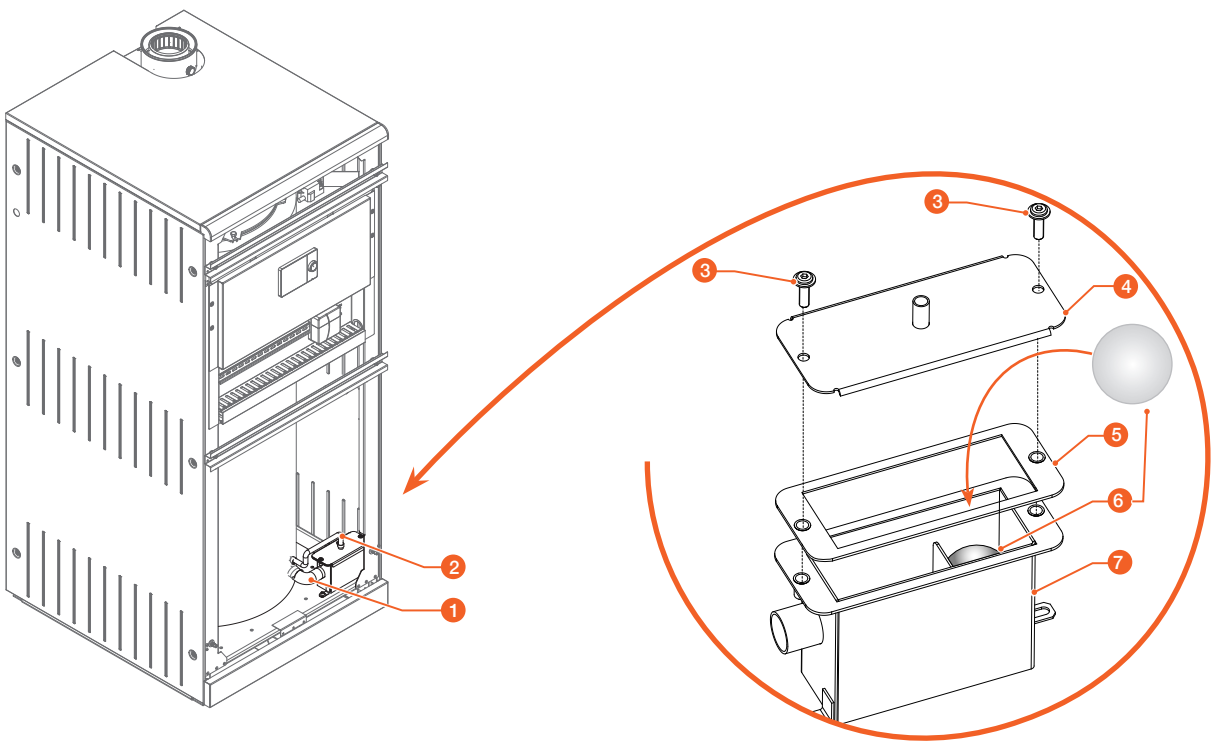


Fig. 17. Cleaning the Condensate Pipe and Trap

Checking the Flue Pressure Switch operation

Conditions:

Tools and material:

- Manometer (measuring range up to min 500 Pa)
- T piece

Check Procedure:

This procedure needs to be performed with boiler (and controller) running, and the front panel open.

When performing the following procedure, do not touch the high voltage connections and do no touch any inner component of the boiler with any wet body part.

1. At the condens dish (**3**), disconnect the hose (**2**) running from the condens dish to the flue pressure switch (**1**).
2. Connect a T-piece to the hose.
3. Connect pressure meter to one of the T-piece connections.
4. Blow air in the hose while it is connected to the flue pressure switch and to the measuring device
5. Verify that the pressure switch switches at the set pressure (500 Pa) and that the controller displays error 193.
6. In case of malfunction, replace the flue pressure switch.

Follow-on tasks:

1. Reconnect the hose (**2**) to the condens dish (**3**).
2. Check that the connection is not leaking.

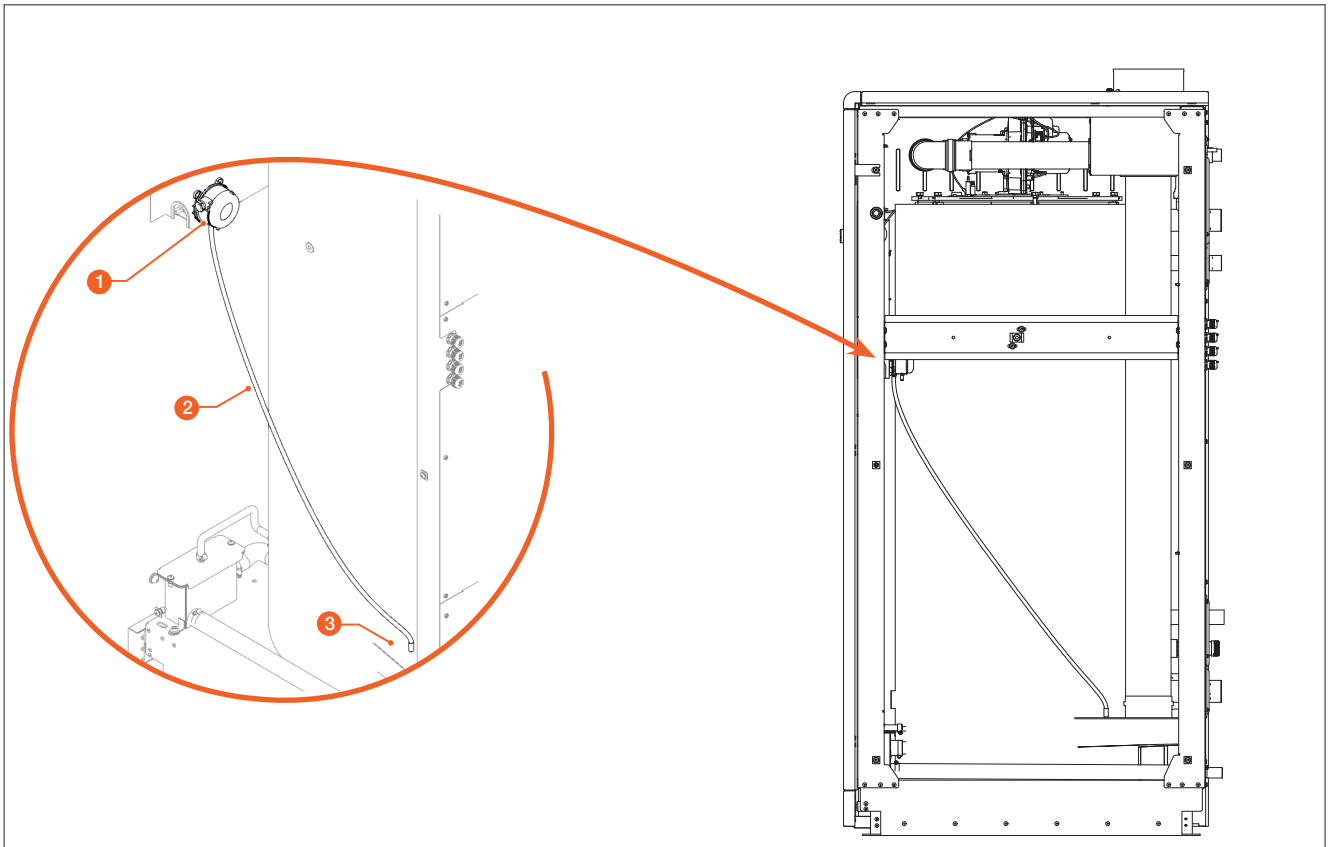


Fig. 18. Testing the Flue Pressure Switch

Removing and Installing the Ignition and Ionisation Electrodes

Conditions:

Tools and material:

- Wrench, hex head, size 3
- Torque wrench
- Protective gloves

Removal Procedure:

1. Disconnect all connectors and grounding cables from the electrodes.
2. Wearing protective gloves, remove rock wool insulation from the upper plate. Retain for re-installation.

- *The procedure is identical for both electrodes.*
- *The picture below illustrates the CM 80 appliance, but the removal principle is identical for models CM 60, 70, 100 and 120.*

- *When removing the electrodes in the scope of the periodic maintenance, the electrodes and their gasket must be discarded and replaced by new ones.*

3. Release two screws (**1**) from the electrode flange.
4. Remove the electrode and screws (**1**) from the burner plate (**3**). Discard, as required.
5. Remove electrode gasket (**2**) and discard, as required.

Installation procedure:

1. Install new gasket (**2**) on the burner plate (**3**).
2. Insert the electrode and fasten with 2 screws (**1**).
3. Torque screws at 2,5 Nm.
4. Wearing protective gloves, install insulation on the upper plate.
5. Reconnect all connectors and grounding cables to the electrodes.

Follow-on tasks:

1. Reinstall all removed access panels, refer to ***"Removing and Installing the Access Panels" on page I-31***
2. Restart the appliance, see ***"Restarting after Maintenance" on page I-60.***

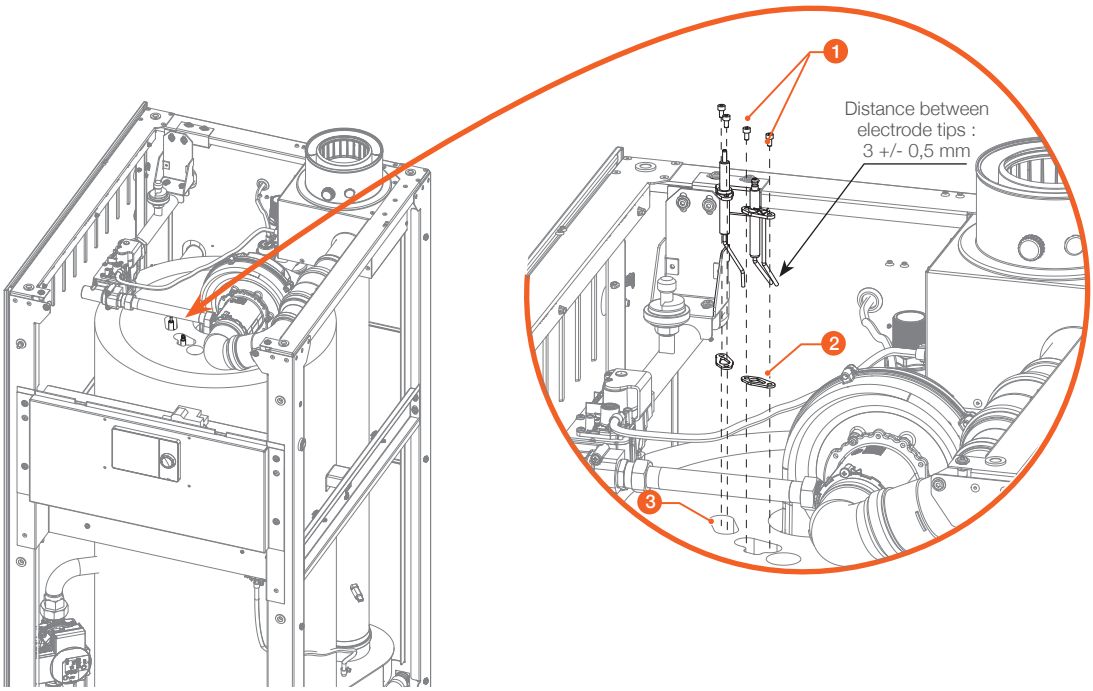


Fig. 19. Removing and Installing the Electrodes

Removing and Installing the Fan and Air-Gas Mixer Assembly

Conditions:

Tools and material:

- Wrench, hex head, size 5
- Wrench, flat
- Torque wrench
- Protective gloves

Removal Procedure:

The picture illustrates the CM 100-120 appliance, but the removal principle is identical for models CM 60, 70 and 80.

1. Disconnect all connectors and ground wires from the electrodes, as required, the fan and the gas valve (**3**).
2. Wearing protective gloves, remove rock wool insulation from the upper plate (unless done previously). Retain for reinstallation
3. Release the hose clamps and disconnect the compensation hose (**7**) from the gas valve (**3**) and the flue box (**8**). Retain hardware for reinstallation.
4. Check the hose (**7**) condition and that it is not obstructed. Clean as required, or replace with a new one.
5. Disconnect the air inlet duct (**1**) from the air-gas mixer.
6. Release gas pipe connection (**2**) from the gas valve (**3**).
7. Release the screws and washers (**4**) securing the fan assembly (**5**) to the burner door.
8. Remove the assembly (**5**) formed by the fan, the air-gas mixer and gas valve. Retain for reinstallation.
9. Remove the fan gasket (**6**) and retain, as required, for reinstallation.

When removing the gasket, check its general condition. Discard and replace the gasket if it is cracked or torn.

10. Remove the electrodes, as required, refer to ***"Removing and Installing the Ignition and Ionisation Electrodes" on page I-63.***
11. Remove the burner, as required, refer to ***"Removing and Installing the Burner - CM 100 - 120" on page I-68.***
12. Clean the combustion chamber, as required, refer to ***"Checking and Cleaning the Combustion Chamber" on page I-70.***

Installation Procedure

1. Install the fan assembly (**5**) with a new gasket (**6**) (if required) on the burner door, using three retained screws and washers (**4**).
2. Torque the screws (**4**) at 4 Nm.
3. Connect the gas pipe (**2**) to the gas valve (**3**)
4. Connect the air inlet duct (**1**) to the air-gas mixer.
5. Connect the compensation hose (**7**) to the gas valve (**3**) and the flue box (**8**). Tighten both extremities using retained clamps.

After installing the compensation hose, make sure that the clamps are correctly tightened at both ends. An accidental disconnection during boiler operation can cause injuries.

6. Wearing protective gloves, install insulation on the upper plate, unless the electrodes still require installation.
7. Reconnect all connectors to the electrodes, gas valve (**3**) and fan.

Follow-on task(s):

1. Close all panels, refer to ***"Removing and Installing the Access Panels" on page I-31.***
2. Restart the boiler, as required, refer to ***"Restarting after Maintenance" on page I-60.***

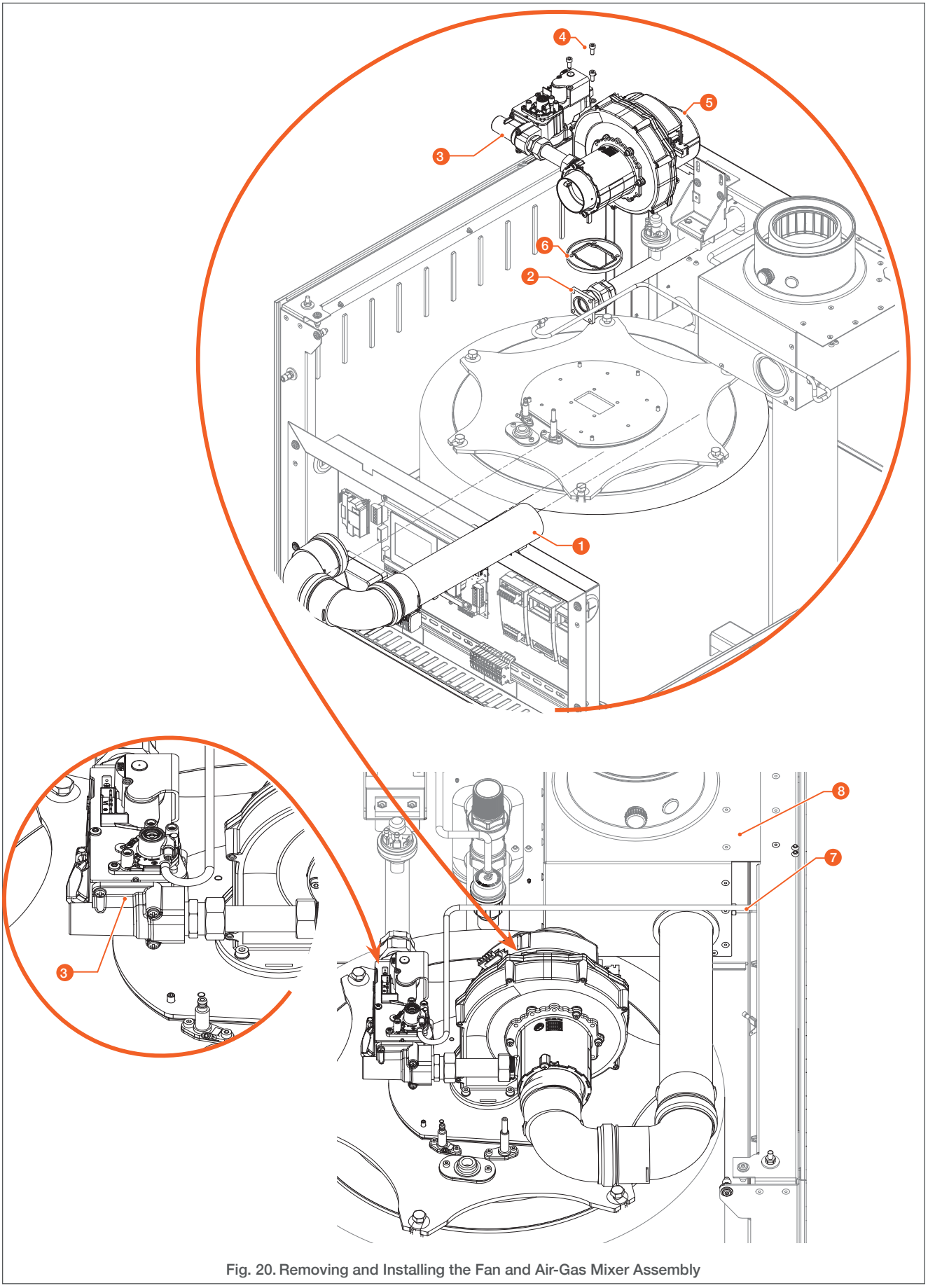


Fig. 20. Removing and Installing the Fan and Air-Gas Mixer Assembly

Removing and Installing the Burner - CM 60 - 70 - 80

Conditions:

- Fan and air-gas mixer assembly removed, refer to ***"Removing and Installing the Fan and Air-Gas Mixer Assembly" on page I-64.***
- Electrodes removed, refer to ***"Removing and Installing the Ignition and Ionisation Electrodes" on page I-63***

Tools and material:

- Wrench, hex head, size 4
- Torque wrench
- Air compressor

Removal Procedure:

Make sure that the ionisation electrode is removed before removing the burner door to prevent damaging the burner door insulation (6).

1. Release six hex head screws (4) securing the burner door (1) to the combustion chamber.
2. Remove the burner door (1) assembly (burner door with gasket and burner tube).
3. Turn assembly over and place carefully on a flat and clean surface.
4. Remove three screws and washers (5) to remove the burner tube (3) and gasket (2) from the burner door. Discard the gasket (2).

Cleaning and Checks:

1. Visually check the condition of the burner tube (3).
2. Clean with compressed air to remove residues. If it is in bad condition after cleaning, replace it.
3. If the combustion chamber requires cleaning, carefully remove burner door insulation plate (6) from combustion chamber.
4. Visually check the condition of the burner door insulation plate (6). If the fabric cover is damaged, replace the insulation plate.
5. Clean the combustion chamber, see ***"Checking and Cleaning the Combustion Chamber" on page I-70***.

Installation procedure:

1. Install burner tube (3) and new gasket (2) on burner door (1) using three retained screws and washers (5).
2. If removed previously, install burner door insulation (6) on burner door.
3. Holding both the burner door (1) and the insulation plate (6), position the burner door (1) on heat exchanger.
4. Tighten six hex head screws (4), then torque in a crosswise pattern at 5 to 6 Nm.

Follow-on tasks:

1. Reinstall the fan and air-gas mixer assembly, refer to ***"Removing and Installing the Fan and Air-Gas Mixer Assembly" on page I-64.***
2. Reinstall the electrodes, as required. Refer to ***"Removing and Installing the Ignition and Ionisation Electrodes" on page I-63.***
3. Reinstall all removed access panels, refer to ***"Removing and Installing the Access Panels" on page I-31.***
4. Restart the appliance, see ***"Restarting after Maintenance" on page I-60.***

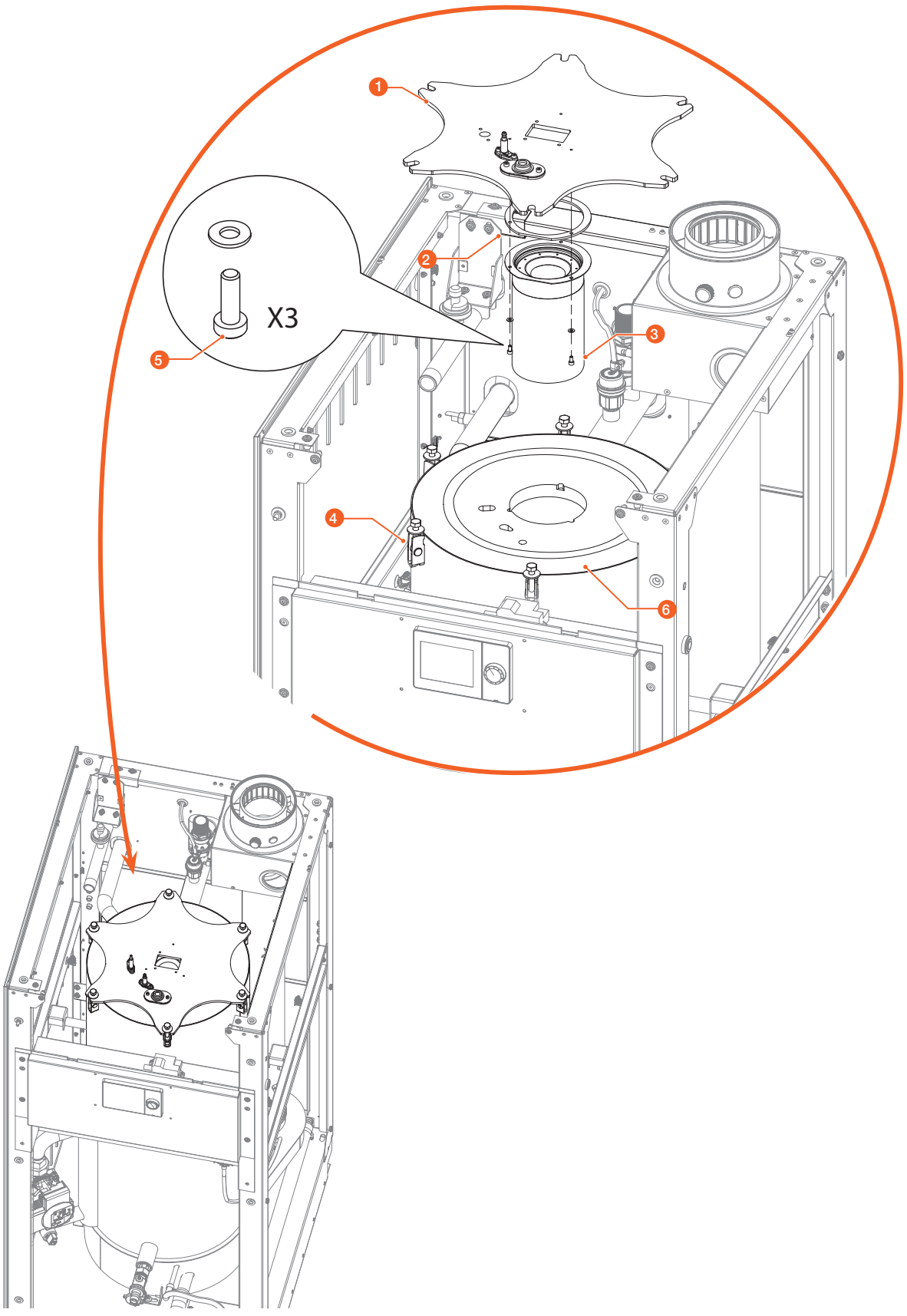


Fig. 21. CM 60 - 70 - 80 - Removing and Installing the Burner

Removing and Installing the Burner - CM 100 - 120

Conditions:

- Fan and air-gas mixer assembly removed, refer to ***"Removing and Installing the Fan and Air-Gas Mixer Assembly" on page I-64.***
- Electrodes removed, refer to ***"Removing and Installing the Ignition and Ionisation Electrodes" on page I-63***

Tools and material:

- Wrench, hex head, size 4
- Torque wrench
- Air compressor

Removal Procedure:

1. Release five nuts securing the fan plate (**1**). Remove the fan plate (**1**) and its hardware. Retain for reinstallation.
2. Remove six screws and washers (**5**) to remove the burner tube (**3**) and gasket (**2**) from the fan plate. Discard the gasket (**2**).

Cleaning and Checks:

1. Visually check the condition of the burner tube (**3**).
2. Clean with compressed air to remove residues. If it is in bad condition after cleaning, replace it.
3. Clean the combustion chamber, see ***"Checking and Cleaning the Combustion Chamber" on page I-70***.

Installation procedure:

1. Install burner tube (**3**) and new gasket (**2**) on fan plate (**1**) using six retained screws and washers (**5**).
2. Position fan plate (**1**) on heat exchanger.
3. Install five nuts on burner plate studs (**4**) and torque in a crosswise pattern at 5 to 6 Nm.

Follow-on tasks:

1. Reinstall the fan and air-gas mixer assembly, refer to ***"Removing and Installing the Fan and Air-Gas Mixer Assembly" on page I-64.***
2. Reinstall the electrodes, as required. Refer to ***"Removing and Installing the Ignition and Ionisation Electrodes" on page I-63.***
3. Reinstall all removed access panels, refer to ***"Removing and Installing the Access Panels" on page I-31.***
4. Restart the appliance, see ***"Restarting after Maintenance" on page I-60.***

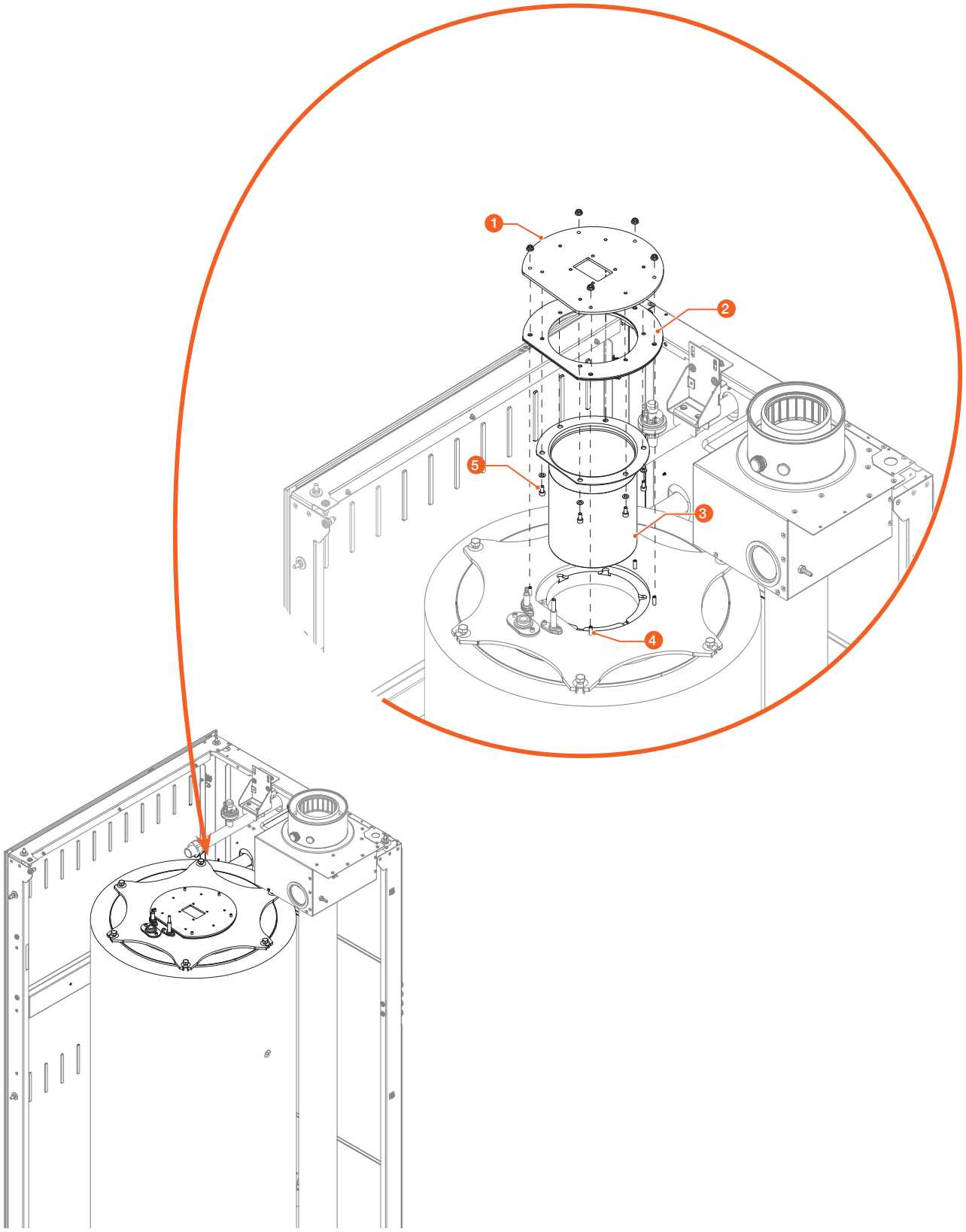


Fig. 22. CM 100 - 120 - Removing and Installing the Burner

Checking and Cleaning the Combustion Chamber

Conditions:

- Burner removed, see ***"Removing and Installing the Burner - CM 60 - 70 - 80" on page I-66,*** or ***"Removing and Installing the Burner - CM 100 - 120" on page I-68.***

Tools and material:

- Industrial vacuum cleaner
- Nylon bristle brush
- Torch

Check Procedure:

1. Using a torch, visually check the condition of the combustion chamber. If it is dirty, clean it.

Cleaning Procedure:

1. Using a nylon bristle brush, sweep the walls of the combustion chamber.
2. Using an industrial vacuum cleaner, remove all deposits from the combustion chamber heating surfaces.

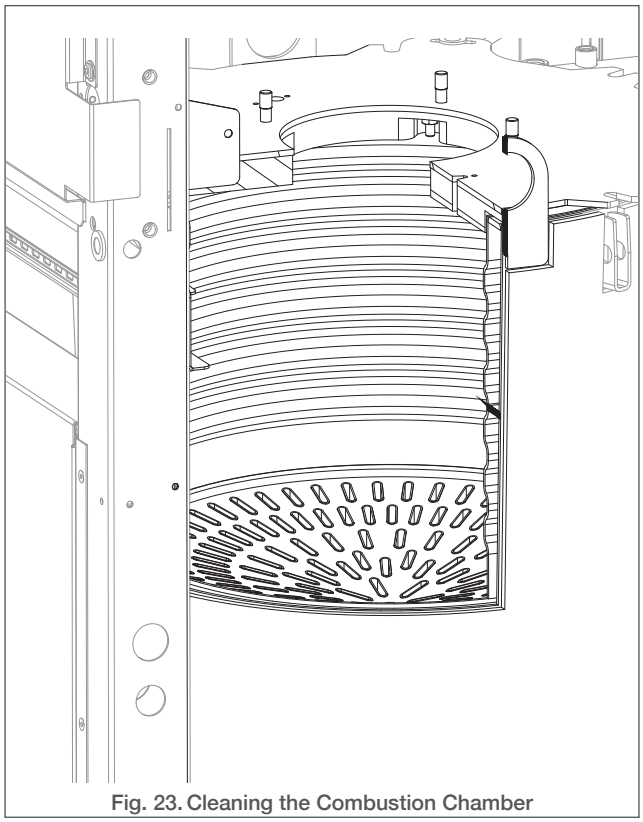


Fig. 23. Cleaning the Combustion Chamber

If the burner door insulation plate is present, do not perform step 3, as it could damage the insulation plate.

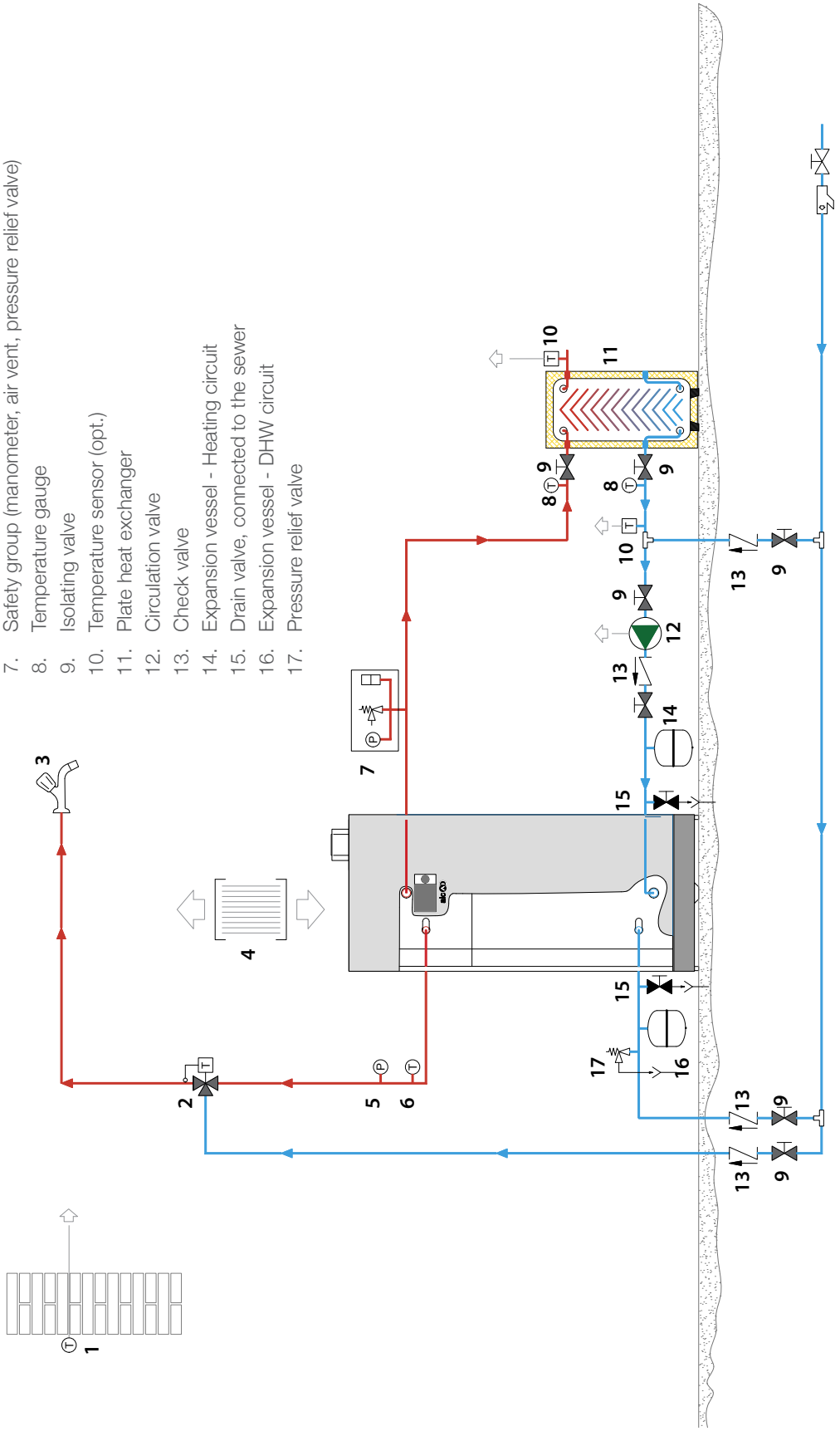
3. Pour some clean water to remove any residues.

Follow-on tasks:

1. Remove and clean condensate trap, refer to ***"Cleaning the Condensate Pipe and Trap" on page I-61***
2. Install the burner, see ***"Removing and Installing the Burner - CM 60 - 70 - 80" on page I-66,*** or ***"Removing and Installing the Burner - CM 100 - 120" on page I-68.***

Example of System with Plate Heat Exchanger

1. Outdoor sensor
2. 3-way thermostatic mixing valve with temperature gauge
3. Draw-off tap
4. Controller
5. Manometer
6. Temperature gauge
7. Safety group (manometer, air vent, pressure relief valve)
8. Temperature gauge
9. Isolating valve
10. Temperature sensor (opt.)
11. Plate heat exchanger
12. Circulation valve
13. Check valve
14. Expansion vessel - Heating circuit
15. Drain valve, connected to the sewer
16. Expansion vessel - DHW circuit
17. Pressure relief valve



Optional Modules

Extension Modules

CoilMaster boilers can control 3 heating circuits with mixing functions, using 3 extension modules. Each extension supply needs to be provided with power supply and a bus connection.

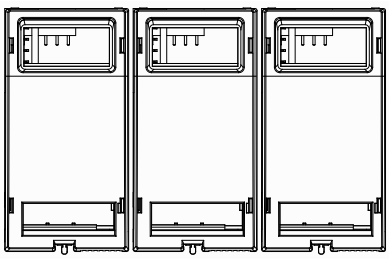


Fig. 24. Extension Modules

Cascading module

This module allows the installation of several boilers in a cascade to increase the heating power in specific applications. This cascade module enables communication from one boiler to another, and must be installed in each boiler. See ***"Boilers in a Cascade System" on page I-73.***

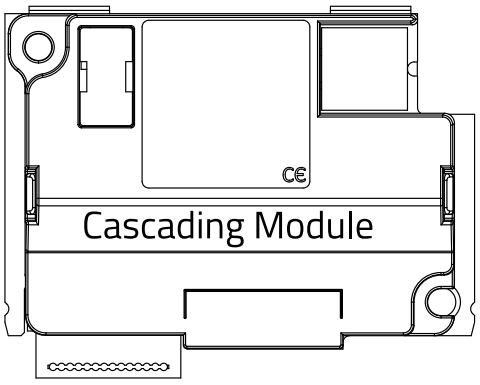


Fig. 25. Cascading Module

Web Server Module

Through the use of this module, you can connect to an Ethernet and get remote access to the boiler and all the heating system via the Internet. Using a computer or mobile devices, you can monitor and control the installation remotely. Management takes place via a web browser.

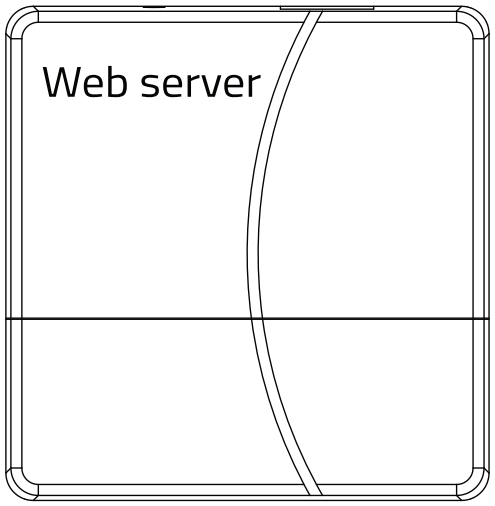


Fig. 26. Web Server Module

Boilers in a Cascade System

In a heating system comprised of several boilers, it is important that the power generated by the boilers adapts at any moment to the demand of the installation, always optimising the generators' efficiency.

Up to 4 boilers can be connected in a cascade to one chimney, and 4 such groups of boilers with their chimneys can be controlled using the control unit of one boiler.

The boiler with device address 1 assumes the role of the cascade Principal, and the others are Subsequent.

In the controller menus, please note that the Principal boiler is called "Master" and a Subsequent boiler is called "Slave".

The principal boiler activates the required functions and shows the additional menus with the parameters for use with the cascaded system.

This boiler has all the logic control of the cascaded system and also regulates the stop/start sequence of each boiler according to the demand of the installation.

The boilers are connected with each other using the cascade module (see Fig. 28). Each boiler has its own module, which is connected directly to the board.

When several boilers are cascaded through their chimney system, make sure to install a non-return valve (back-flow preventer) between the boiler flue outlet and the chimney connection. This will prevent any back flow of the flue gases into a boiler that is not in operation. Please refer to the manual provided with the accessory for installation and maintenance recommendations.

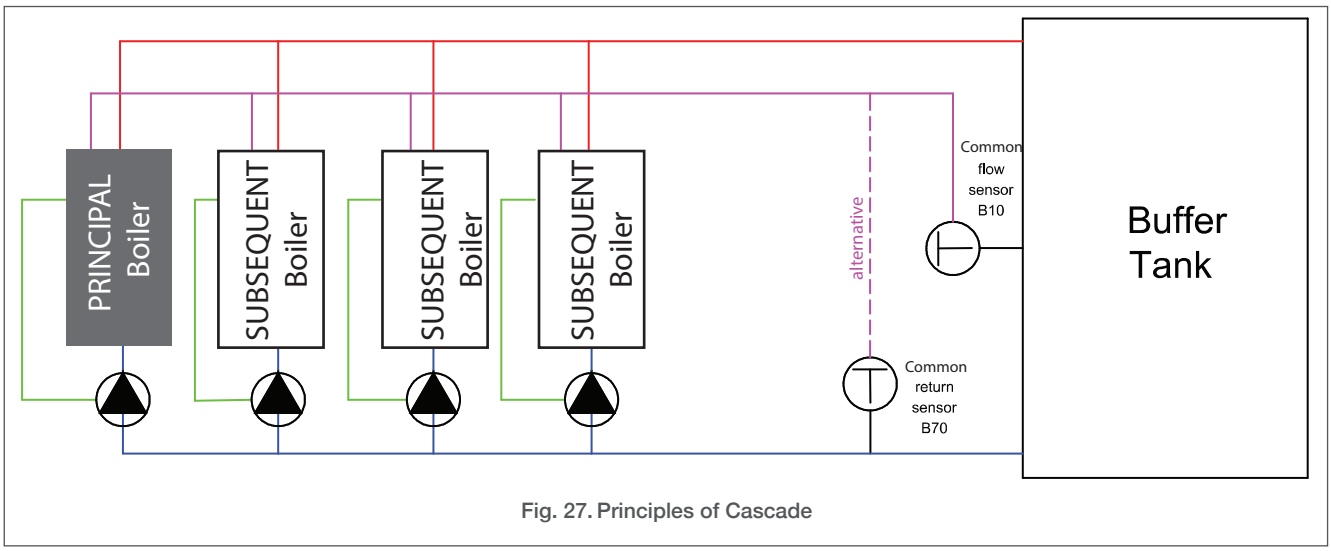


Fig. 27. Principles of Cascade

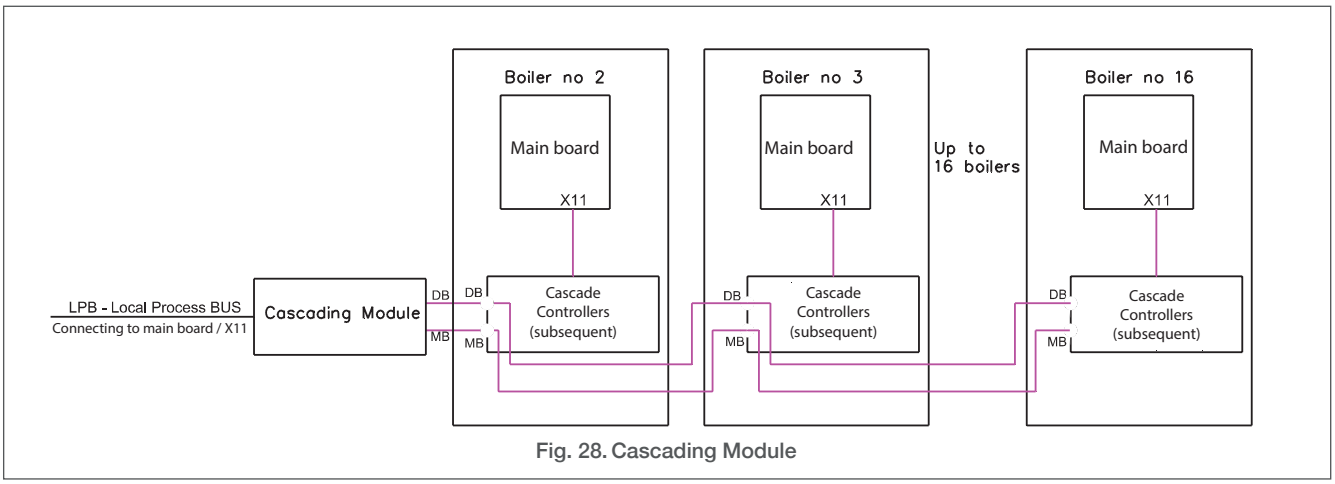


Fig. 28. Cascading Module

Boiler Settings for the Installer

Access Levels

Three different levels of settings are available for the Installer : End user level, Commissioning level and Engineer level. A fourth level, OEM, is only accessible at factory level, through the use of a code.

Each level allows to set certain specific parameters or program the boiler, according to the installed circuits.

The menus of the End user level are described in ***"Operating the Controller - End User Level" on page U-24.*** The menus for the qualified professional (Commissioning and Engineer) are described in the following pages.

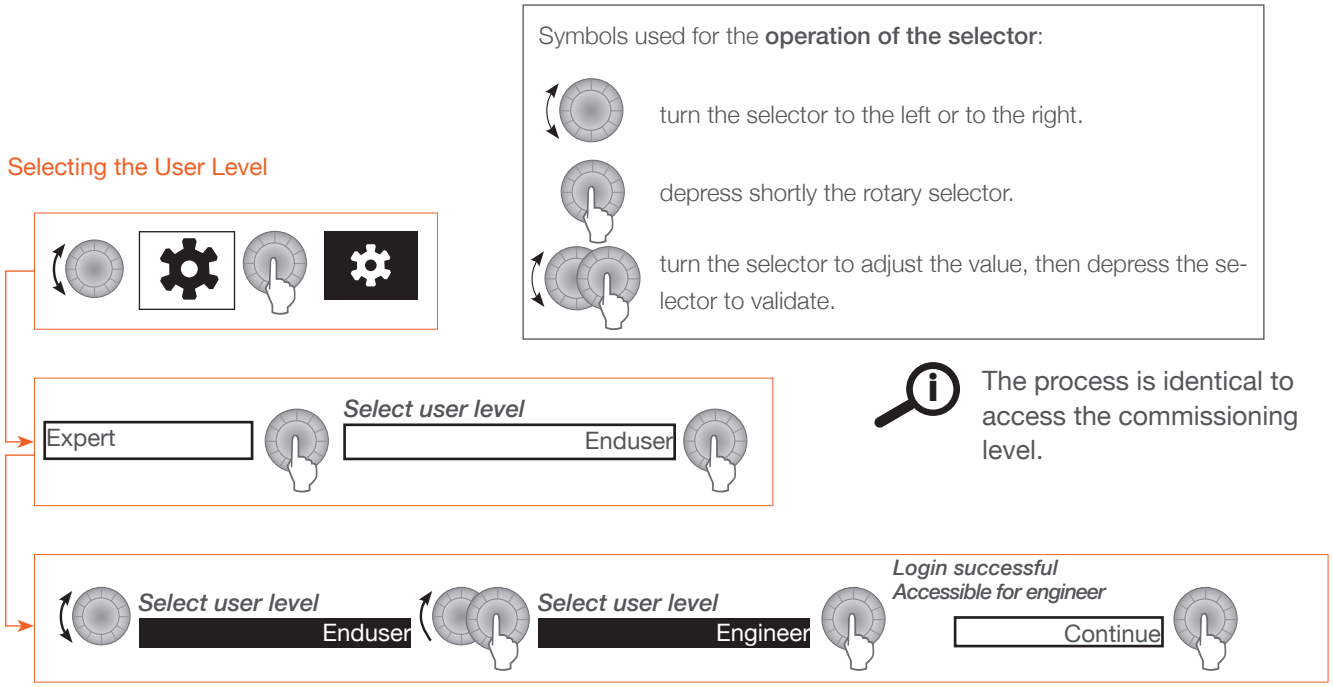
To access the Commissioning and the Engineer levels, proceed as follows:

Menus and Settings

The table on the following page contains some of the menus and submenus for the installer. The last column allows the installer to write down the setting defined for each parameter at installation, if it is different from the default.

For any question related to the menus, please contact AIC's technical support.

Selecting the User Level



Structure of Menus for the Installer

Top menu	page	Pgm No.	Submenu 1	Submenu 2	Default	Setting
Time of day and date (2 pages)	P. 1/2	1	► Time		01:00 (hh:min)	
		1	► Date		01.01.2030 (dd.mm.yyyy)	
	p. 2/2	5	► Start of summertime		25.03 (dd.mm)	
		6	► End of summertime		25.10 (dd.mm)	
Operator section (3 pages)	p. 1/3	20	► Language	English - Deutsch - Français - Italiano - Nederlands - Español - Portuguese - Dansk - Suomi - Svenska - Polski - Slovensky - Česky - Slovenščina - Русский - Magyar - Ελληνικά - Türkce - Serbian - Lietuvių	English	
		40	► Used as	• Operator unit 1 • Operator unit 2 • Operator unit 3	Operator unit 1	
		42	► Assignment device 1	• Zone 1 • Zone 1 and 2 • Zone 1 and 3 • All zones	All zones	
	p. 2/3	44	► Operation zone 2	• Jointly with zone 1 • Independently	Jointly with zone 1	
		46	► Operation zone 3	• Jointly with zone 1 • Independently	Jointly with zone 1	
		48	► Warmer/cooler device 1	• None • For zone 1 only • For all assigned zones		
	p. 3/3	70	► Software version			
Time Prog heating circuit 1		—	► Set time program	▷ *Refer to "Basic Settings" on page U-27* ▷ *All "Time Program" menus (HC and DHW) are identical in their structure and use*		
		516	► Default values	• No • Yes	No	
Heating circuit 1 (16 pages)	p. 1/16	710	► Comfort setpoint		20.0°C	
		712	► Reduced setpoint		16.0°C	
		714	► Frost protection setpoint		10.0°C	
	p. 2/16	716	► Comfort setpoint max		35.0°C	
		720	► Heating curve slope		1.50	
		721	► Heating curve displacement		0°C	
	p. 3/16	726	► Heating curve adaptation	• Off • On	Off	
		730	► Summer/winter heating limit		18.0°C	
		732	► 24-hour heating limit		-3°C	

Top menu	page	Pgm No.	Submenu 1	Submenu 2	Default	Setting
Heating circuit 1 (Ctn'd)	p. 4/16	733	► Ext'n 24-hour heating limit	• No • Yes	Yes	
		740	► Flow temp setpoint min		8°C	
		741	► Flow temp setpoint max		90°C	
	p. 5/16	742	► Flow temp setpoint room stat		65°C	
		744	► Swi-on ratio room stat		---	
		746	► Delay heat request		0 s	
	p. 6/16	750	► Room influence		unused	
		760	► Room temp limitation		1°C	
		761	► Heating limit room controller		---	
	p. 7/16	770	► Boost heating		5°C	
		780	► Quick setback	• Off • To reduced setpoint • To frost prot setpoint	To reduced setpoint	
		790	► Optimum start control max		0 min	
	p. 8/16	791	► Optimum stop control max		0 min	
		800	► Reduced setp increase start		unused	
		801	► Reduced setp increase end		-15°C	
	p. 9/16	809	► Continuous pump operation	• No • Yes	No	
		820	► Overtemp prot pump circuit	• Off • On	On	
		830	► Mixing valve boost		5°C	
	p. 10/16	832	► Actuator type	• 2 position • 3 position	3 position	
		833	► Switching differential 2-pos		2.0°C	
		834	► Actuator running time		120 s	
	p. 11/16	835	► Mixing valve Xp		32°C	
		836	► Mixing valve Tn		120s	
		850	► Floor curing function	• Off • Functional heating • Curing heating • Curing/Functional heating • Functional/Curing heating • Manually	Off	
	p. 12/16	851	► Floor curing setp manually		25°C	
		855	► Floor curing setp current		unused	
		856	► Floor curing day current		unused	
	p. 13/16	861	► Excess heat draw	• Off • Heating mode • Always	Always	
		870	► With buffer	• No • Yes	Yes	
		872	► With prim contr/system pump	• No • Yes	Yes	
	p. 14/16	880	► Pump speed reduction	• Operating level • Characteristic • Temp differential nominal	Characteristics	
		881	► Starting speed		100%	
		882	► Pump speed min		50%	
	p. 15/16	883	► Pump speed max		100%	
		888	► Curve readj. at 50% speed		33%	
		889	► Filter time const speed ctrl		5 min	

Top menu	page	Pgm No.	Submenu 1	Submenu 2	Default	Setting
Heating circuit 1 (Ctn'd)	p. 16/16	890	► Flow setp readj speed ctrl	• No • Yes	Yes	
		898	► Operating level changeover	• Frost protection • Reduced • Comfort	Reduced	
		900	► Optg mode changeover	• None • Protection • Reduced • Comfort • Automatic	Protection	
Domestic Hot Water (5 pages)	p 1/5	1610	► Nominal setpoint		65°C	
		1612	► Reduced setpoint		35°C	
		1620	► Release	• 24h/day • Time programs HCs • Time program 4/DHW	Time program 4/DHW	
	p. 2/5	1630	► Charging priority	• Absolute • Shifting • None • MC shifting, PC absolute	None	
		1640	► Legionella function	• Off • Periodically • Fixed weekday	Off	
		1641	► Legionella funct periodically	• 1 to 7	3	
	p. 3/5	1642	► Legionella funct weekday	• Monday to Sunday	Monday	
		1644	► Legionella funct time		--:--	
		1645	► Legionella funct setpoint		65°C	
	p. 4/5	1646	► Legionella funct duration		30 min	
		1647	► Legionella funct circ pump	• Off • On	On	
		1660	► Circulating pump release	• Time program 3/HCP • DHW release • Time program 4/DHW • Time program 5	DHW release	
	p. 5/5	1661	► Circulating pump cycling	• Off • On	Off	
		1663	► Circulation setpoint		45°C	
		1680	► Optg mode changeover	• Off • On	Off	
Boiler		2214	► Setpoint manual control		60°C	
Instantaneous water heater (8 pages)	p. 1/8	5420	► Flow setpoint boost		0°C	
		5429	► Switching diff		5°C	
		5444	► Threshold flow detection		CM 60 - 70 - 80: 6.0l/min CM 100 - 120: 10.0l/min	
	p. 2/8	5445	► Switching diff flow detection		2.0l/min	
		5450	► Gradient end cons		0.25K/s	
		5451	► Grad start cons keep hot		-1.00K/s	
	p. 3/8	5452	► Gradient start cons		-1.00K/s	
		5455	► Setp radj cons 40°C		0°C	
		5456	► Setp readj cons 60°C		0°C	
	p. 4/8	5460	► Setp keep hot		unused	
		5461	► Readj setp keep hot 40°C		0°C	
		5462	► Readj setp keep hot 60°C		0°C	

Program lines shown in light grey in the table above should not be modified, to prevent instability in the system. Please contact your AIC customer support for more information.

Top menu	page	Pgm No.	Submenu 1	Submenu 2	Default	Setting
Instantaneous water heater (Cont'd)	p. 5/8	5464	► Keep hot release	• 24h/day • DHW release • Time program 3/HC3 • Time program 4/ DHW • Time program 5	24h/day	
		5468	► Min cons time for keep hot		0s	
		5470	► Keep hot time wo heating		1440min	
	p. 6/8	5471	► Keep hot time with heating		0min	
		5472	► Pump overrun time keep hot		0min	
		5473	► Pump overrun time keep hot		30s	
	p. 7/8	5475	► Control sensor keep hot	• Boiler sensor B2 • Return sensor B7 • DHW outlet sensor B38	Return sensor B7	
		5482	► Flow switch time cons		3.0s	
		5530	► Pump speed min		40%	
	p. 8/8	5531	► Pump speed max		100%	
		5537	► Starting speed		100%	
		5550	► Aqua booster		No	
Fault		6705	► SW Diagnostic code			
		6706	► Burn ctrl phase lockout pos			
Service/ special operation (8 pages)	p. 3/8	7130	► Chimney sweep function	• Off • On	Off	
	p. 4/8	7131	► Burner output	• Partial load • Full load • Max heating load	Max heating load	
		7140	► Manual control	• Off • On	Off	
Diagnostics heat generation (20 pages)	p. 9/20	8338	► Hours run heating mode			
	p. 10/20	8339	► Hours run DHW			
		8378	► Total gas energy heating			
	p. 11/20	8379	► Total gas energy DHW			
		8380	► Total gas energy			
		8381	► Gas energy heating Reset?	• Yes • No		
	p. 12/20	8382	► Gas energy DHW Reset?	• Yes • No		
		8383	► Gas energy			
	p. 18/20	8526	► 24-Hour yield solar energy			
		8527	► Total yield solar energy			
		8530	► Hours run solar yield			
		8532	► Hours run collector pump			
Diagnostics consumers	p. 1/27	8700	► Outside temp			
		8701	► Outside temp min Reset?			
		8702	► Outside temp max Reset?			

Error Codes and Solutions

Error code	Fault description	Explanation	Action(s)
10	Outside temperature sensor error		Check connection and/or sensor. Replace as required. Emergency operation Contact AIC technical support.
20	Boiler temperature 1, sensor error	Short circuit or Open circuit boiler flow sensor.	Check connection and sensor. Replace as required.
26	Common flow temperature, sensor error	Short circuit or Open circuit common flow temperature sensor.	Check connection and sensor. Replace as required.
28	Flue gas temperature sensor error	Short circuit or Open circuit flue gas sensor.	Check connection and sensor. Replace as required.
30	Flow temperature 1, sensor error	Short circuit or Open circuit flow sensor.	Check connection and sensor. Replace as required.
32	Flow temperature 2, sensor error	Short circuit or Open circuit boiler flow sensor.	Check connection and sensor. Replace as required.
38	Flow temperature, primary controller, sensor error		Check connection and sensor. Replace as required.
40	Return temperature 1, sensor error	Short circuit or Open circuit boiler return sensor.	Check connection and sensor. Replace as required.
46	Cascade return temperature, sensor error		Check connection and sensor. Replace as required.
47	Common return temperature, sensor error		Check connection and sensor. Replace as required.
50	DHW temperature 1 sensor error		Check connection and sensor. Replace as required.
52	DHW temperature 2, sensor error		Check connection and sensor. Replace as required.
54	Flow temperature DHW, sensor error	Short circuit or Open circuit DHW flow sensor.	Check connection and sensor. Replace as required.
57	DHW circulation, sensor error		Check connection and sensor. Replace as required.
60	Room temperature 1, sensor error		Check connection and sensor. Replace as required.
65	Room temperature 2, sensor error		Check connection and sensor. Replace as required.
68	Room temperature 3, sensor error		Check connection and sensor. Replace as required.
70	Storage tank temperature 1 (top), sensor error		Check connection and sensor. Replace as required.
71	Storage tank temperature 2 (bottom), sensor error		Check connection and sensor. Replace as required.
72	Storage tank temperature 3 (center), sensor error		Check connection and sensor. Replace as required.
78	Water pressure, sensor error		Check connection and sensor. Replace as required.

Error code	Fault description	Explanation	Action(s)
81	LPB short circuit or no bus power supply		Check LPB connections and bus power supply.
82	LPB address collision		Check addresses of connected control modules
83	BSB wire cross-sectional/ no communication		Check connection of the room units
84	BSB wire address collision	2 room devices have the same assignment (prog.no. 42)	Correct device address.
85	BSB RF communication error		Check bus connection and components.
91	Data overrun in EEPROM	Internal fault in controller, process sensor	Contact AIC technical support.
98	Extension module 1, error		Chceck extension module connections.
99	Extension module 2, error		Chceck extension module connections.
100	2 clock time masters		Check time master
102	Clock time master without backup		Check clock
103	Communication error		Check connection and components
105	Maintenance message		See maintenance code (press information button once) for detailed information
109	Supervision boiler temperature		Contact AIC technical support.
110	STB (SLT) lockout	No heat removal, STB interruption, possible short-circuit in the gas valve, internal fuse faulty;	Allow device to cool down and carry out reset; if the fault occurs several times inform AIC technical support
111	Temperature limiter safety shutdown		Contact AIC technical support.
117	Water pressure too high		Release the water to a suitable pressure
118	Water pressure too low		Top up the system with water to reach a suitable pressure
121	Flow temperature heating circuit 1 not reached	Heat losses in circuit	Check the circuit for fault insulation and heat losses.
122	Flow temperature heating circuit 2 not reached	Heat losses in circuit	Check the circuit for fault insulation and heat losses.
125	Maximum boiler temperature exceeded		Contact AIC technical support.
126	DHW charging temperature not reached		Check operation and heat up times for DHW
127	DHW legionella temperature not reached		Check operation of appliance
128	Loss of flame during operation	Ionization current lost after successful ignition	Check electric supply, polarity and ionization electrode.
129	Wrong air supply		Check air supply

Error code	Fault description	Explanation	Action(s)
130	Flue gas temperature limit exceeded	Heat engine is overheating	Check causes of high temps Check connection and sensor. Replace as required Check connection and chimney.
132	Gas pressure switch safety shut down	Lack of gas	Check gas supply and pressure Check connection and component
133	Safety time for establishment of flame exceeded	Lack of gas, Polarity of mains connection, safety period,	Reset, if the fault re-occurs more than 3 times, contact AIC technical support. Check ignition electrode and ionization current
146	Configuration error sensor/ controlling elements		Check sensor configuration or replace component
151	LMS14… error, internally		Check parameters (see adjustment table installer and/or call-up values) Reset controller and/or replace as required, Contact AIC technical support.
152	Parameterization error	Incorrect / Conflicting parameters input.	Verify parameters or reset to default parameters
153	Unit manually locked	Reset button stuck in	Check reset button
160	Fan speed threshold not reached	Fan possibly defective, speed threshold set wrongly.	Check parameters, connections and component. Replace as required
162	Air pressure switch error	Air pressure switch does not close	Check connection and adjustments on air pressure switch. Replace as required.
164	Flow/pressure switch, heating circuit error		Check connection and switches in HC. Replase as required
166	Air pressure switch error	Air pressure switch does not open	Check connection and adjustments on air pressure switch. Replace as required.
170	Error water pressure sensor, primary side		Check connection and sensor. Replace as required.
171	Alarm contact 1 active		Correct the active fault
172	Alarm contact 2 active		
173	Alarm contact 3 active		
174	Alarm contact 4 active		
176	Water pressure 2 too high		Release the water to a suitable pressure.
177	Water pressure 2 too low		Top up the system with water to reach a suitable pressure.
178	Temperature limiter heating circuit 1		Allow the circuit to cool down and carry out reset; if the fault occurs several times inform AIC technical suport.
179	Temperature limiter heating circuit 2		Allow the circuit to cool down and carry out reset; if the fault occurs several times inform AIC technical suport.

Error code	Fault description	Explanation	Action(s)
183	Unit in parametrization mode		Wait until parametrization process is complete
193	Start prevention signal input	Short circuit or Open circuit flue pressure switch.	Check connection and sensor. Replace as required.
195	Maximum duration of the refill per charging exceeded		Check automatic refill system.
		The use of an automatic refill system is not recommended	
196	Maximum duration of the refill per week exceeded		Check automatic refill system.
		The use of an automatic refill system is not recommended	
209	Fault heating circuit		Check the heating circuit configuration. Reset to default parameters
216	Fault boiler		Check the heating circuit configuration. Reset to default parameters
217	Sensor error		Check connection and sensor. Replace as required.
218	Pressure supervision		Check system pressure.
243	Swimming pool sensor, error		Check connection and sensor. Replace as required.
260	Flow temperature 3, sensor error		Check connection and sensor. Replace as required.
270	Temperature difference, heat exchanger too large		Check the heating system external hydraulic components.
317	Mains frequency outside permissible range		Check correct electric supply in boiler terminals.
320	DHW charging temperature, sensor error		Check connection and sensor. Replace as required.
321	DHW outlet temperature, sensor error		Check connection and sensor. Replace as required.
322	Water pressure 3 too high		Release the water to a suitable pressure.
323	Water pressure 3 too low		Top up the system with water to reach a suitable pressure.
324	Input BX, same sensors		Check configuration in parameters list
325	Input BX/extension module, same sensors		Check configuration in parameters list.
326	Input BX/mixing group, same sensors		Check configuration in parameters list.
327	Extension module, same function		Check configuration in parameters list.
328	Mixing group, same function		Check configuration in parameters list.

Error code	Fault description	Explanation	Action(s)
329	Extension module/mixing group same function		Check configuration in parameters list.
330	Sensor input BX1 without function		Connect temperature sensor in BX terminal
331	Sensor input BX2 without function		Connect temperature sensor in BX terminal
332	Sensor input BX3 without function		Connect temperature sensor in BX terminal
333	Sensor input BX4 without function		Connect temperature sensor in BX terminal
335	Sensor input BX21 without function		Connect temperature sensor in BX terminal
336	Sensor input BX22 without function		Connect temperature sensor in BX terminal
341	Sensor B6 missing	Solar sensor missing	Check parameters, connection and component.
349	Buffer storage tank return valve Y15 missing		Check connection of return valve Y15. Replace as required.
350	Buffer storage tank address error		Correct device address.
351	Primary controller/ system pump, address error		Correct device address.
352	Pressureless header, address error		Correct device address.
353	Sensor B10 missing	Common flow sensor missing	Check parameters, connection and component
371	Flow temperature heating circuit 3		Check the circuit for fault insulation and heat losses.
372	Temperature limiter heating circuit 3		Allow the circuit to cool down and carry out reset; if the fault occurs several times inform AIC technical suport.
378	Internal repetition		Contact AIC technical support
382	Repetition speed		Contact AIC technical support
384	Extraneous light		Shut off gas supply and contact AIC technical support
385	Mains undervoltage		Check electric supply in boiler terminals
386	Fan speed tolerance		Check air supply
388	DHW sensor no function		Check connection and sensor. Replace as required.
391	Room controller 1		Check addresses and parameters
392	Room controller 2		
393	Room controller 3		
426	Feedback flue gas damper		Check the connection and component
427	Configuration flue gas damper		Check configuration parameters

Error code	Fault description	Explanation	Action(s)
429	Dynamic water pressure too high	Expansion tank is defective	Verify pump Replace expansion tank
430	Dynamic water pressure too low		Verify pump
431	Sensor primary heat exchanger		Check connection and sensor. Replace as required.
432	Function ground not connected		Check ground connection and install as required
433	Temperature primary heat exchanger too high		Check the heating system external hydraulic components.

Maintenance Messages

Code	Meaning	Action
1	Number of burner hours run exceeded	***Contact Maintenance service***
2	Number of burner starts exceeded	
3	Maintenance interval exceeded	
5	Water pressure 1 heating circuit too low	***Fill the circuit to reach acceptable pressure.***
18	Water pressure 2 heating circuit too low (dropped below lower pressure limit 2)	

Troubleshooting

Problem	Cause(s)	Solution(s)
Boiler does not start	No power supply	1. Check that the power button is in ON position (pushed in and illuminated) 2. Make sure the power supply cable is connected to the mains 3. Check the external power supply box (circuit breaker) and reset it as required.
Boiler display remains blank	No power supply	1. Check wiring connection. 2. Check wiring continuity. 3. Replace wiring.
	Main board fuse(s) blown	Replace blown fuse(s) on electronic board (T6 3AH 250V).
Circulating pump does not start	Pump power supply	1. Check wiring connection. 2. Check wiring continuity. 3. Replace wiring.
	Relay malfunction	1. Check the relay. 2. Replace the electronic board.
	Pump malfunction	1. Reset the pump. 2. Check if there is voltage at the pump. If there is, replace the pump.
Gas smell	Leak in gas circuit	1. Check tightness of connections and circuit. 2. Check that pressure measuring points are closed.
Unburned gas smell	Leak in flue gas circuit	1. Check tightness of connections. 2. Check there are no obstructions in the flue system. 3. Check the quality of combustion.
Irregular combustion	Wrong combustion settings	Check the values with a gas analyser and readjust as required.
	Combustion air circulation	Check that the air openings are not blocked.
	Burner and combustion chamber condition	Check if they are clean.
	Heat exchanger fire tubes are blocked	Check if condensate outlets are not obstructed. Clean as required.
	Fan malfunction	1. Check if fan is working. 2. Check wiring connections 3. Check wiring continuity 4. Check if there is voltage at the fan. If there is, replace the fan. 5. Verify signal cable connection
Hard ignition	Wrong size of flue and/or combustion air ducts.	Check duct sizes and correct as required
	Wrong combustion settings	Check the values with a gas analyser and readjust as required.
	Ignition electrode malfunction	Check the condition and distance at stem tips (refer to Electrode Removal procedure)

Problem	Cause(s)	Solution(s)
Burner does not start after receiving signal from boiler controller	Gas valve malfunction Fan malfunction Ignition/ionization electrode malfunction	1. Check wiring connections 2. Check components
Combustion chamber gets dirty	Wrong combustion settings	Check the values with a gas analyser and readjust as required.
Boiler does not reach working temperature	Boiler controller	1. Adjust temperature setpoint. 2. Check controller operation. 3. Replace controller.
	Poor heat transfer	Clean combustion chamber
	Insufficient burner power	Check combustion settings
	Dirty burner	Clean burner
	Wrong chimney pressure drop	Check chimney pressure drop
Temperature too high compared to setpoint	Boiler controller malfunction	1. Check temperature setpoint. 2. Check controller operation. 3. Check position of temperature sensors.
Heat exchanger reaches temperature setpoint but radiators are cold	Radiator valves closed	Open radiator valves
	Air in the system	Bleed the air present in the heating system
	Circulating pump malfunction	1. Check if circulating pump is running 2. Check pump wiring connection and continuity. 3. Reset pump 4. Check if there is voltage at the pump. If there is, replace the pump.
Safety valve opens frequently	System safety valve	Check pressure rating of the safety valve (suitable to the system pressure).
	Pressure in the heating system	Check the pressure in the system (max. 6 bar).
	Expansion tank	Check the expansion tank size and operation.

Installation Checklist

	Unit	Values/Comments
General/heating system		
Type of building/system		
Commercial purpose (Y/N) ?		
Year of manufacture		
Output of system	kW	
Heated surface	m^2	
Number of heating circuits:		
• Floor heating		
• Radiators		
• Other		
Cascade (Y/N)? Number of boilers?		
Water		
Water hardness at start up	mol/m^3 or mg/l	
System volume	L	
Additive(s)/Antifreeze (Y/N)?		
• Type		
• Quantity	%	
Gas		
Type?		
Heating value	kWh/m^3	
Gas pressure regulator installed (Y/N)? Type ?		
Hydraulics		
Heating circuit normal pressure	bar	
Air purged from the system (Y/N)?		
Safety valve installed (Y/N)? rating?	bar or kW	
Expansion tank(s) installed (Y/N)? Type(s) ?		
• Size?	L	
• Precharged pressure ?	bar	
• Number		

	Unit	Values/Comments
Plate heat exchanger in the system (Y/N)? Type?		
Low loss header in system (Y/N)? Type ?		
Number of mixers ?		
Buffer tank (Y/N)? Size?	L	
DHW tank (Y/N)? Type?	L	
Pump(s) (Y/N)? Type?		
• In which circuit(s)		
• Chosen according to requirements for the appliance?		
Flue gas		
Open or closed system?		
Dimensions of combustion air openings if closed system	cm^2	
Material of flue piping		
Diameter and length of piping system	mm / m	
Chimney system engineered by?		
Calculated pressure drop, including maximum wind condition (<200 Pa)?	Pa	
Cascade (Y/N)?		
Back-flow preventer or non-return valve installed (Y/N)? Type?		
Condensates		
Condensate discharge slope	° or cm/m	
Condensate trap filled (Y/N)?		
Neutralisation system installed (Y/N)? Type ?		
Condensate pump installed (Y/N)?		
Condensate pump control line connected (Y/N)?		

	Unit	Values/Comments
Controller		
Appliance controller?		
Other controller (Y/N)? Type?		
Optional modules installed (Y/N)		
• Type?		
Optional items installed (Y/N)?		
• Outdoor sensor (Y/N)? Type?		
• Room unit(s) (Y/N)? Type?		
• Others?		
Miscellaneous		
The end user has received all relevant information (Y/N)?		
The end user has received all relevant documents (Y/N)?		

Name

Date

Signature

NOTES

Combustion Parameters - Log Sheet

CO_2 %	Flue gas T°	Remarks	Name	Date & Signature

Water Parameters - Log Sheet

Water Filling Date	Water Top-up Date	Water Quality	Water Treatment	Remarks	Name & signature

aic heating systems

CE 1015

EU Declaration of Conformity No. 2020/04EU/02

Product identification: **Floor-standing gas-fired condensing combination boiler CoilMaster CM 35, CoilMaster CM 45, CoilMaster CM 60, CoilMaster CM 70, CoilMaster CM 80, CoilMaster CM 100, CoilMaster CM 120**

Manufacturer: AIC EUROPE BV
Graafschap Hornelaan 163A
NL-6001 AC Weert
Netherlands

This declaration of conformity is issued under the sole responsibility of the manufacturer. The object of the declaration described above is in conformity with the relevant Union harmonization legislation:

GAR **Gas Appliance Regulation (EU) 2016/426**
BED **Boiler Efficiency Directive 92/42/EEC**
ErP **Energy Related Products Directive 2009/125/EC**
ELD **Energy Labelling Directive 2010/30/EU**
LVD **Low Voltage Directive 2014/35/EU**
EMC **Electromagnetic Compatibility Directive 2014/30/EU**
RoHS **Restriction of Hazardous Substances Directive 2011/65/EU**

Conformity assessment procedure:	**Module B + D**
Name, address, identification number of the notified body:	**Module B: Kiwa Nederland B.V. Wilmersdorf, 50, 7323 AC APELDOORN, Netherlands, ID no. 0063**
Number EU Type Test Examination Certificate:	**20GR0020/01**
Validity date:	**15.07.2030**
Product-ID-Number:	**0063CU3007**
Name, address, identification number of the notified body:	**Module D: SZUTEST Engineering Test Institute, Public Enterprise, Hudcova 424/56b, 621 00 Brno, Czech Republic, ID no. 1015**

The conformity of the product described above with the provisions of the applied Directives is demonstrated by compliance with the following standards / regulations:

EN 15502-1:2012+A1:2015
EN 15502-2-1:2012+A1:2016
EN 60335-1:2012
EN 60335-2-102:2016
EN 55014-1:2017
EN 55014-2:2015
EN 61000-3-2:2014-10
EN 61000-3-3:2013

Signed for and on behalf of AIC EUROPE BV
Weert, 01.07.2020

Cyril Bongaerts,
Research & Development Director

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