



Product information
High-efficiency wall-hung gas boiler

AMC PRO EVO

35

45

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90

115

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1 About this manual

1.1 Additional documentation

The following documentation is available in addition to this manual:

- Installation and user manual
- Service manual

1.2 Symbols used in the manual

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



Danger of electric shock

Indicates: an imminently hazardous situation

Consequence if not avoided: Will result in death or serious injury.

- This is how to avoid the hazard.



Danger

Indicates: an imminently hazardous situation

Consequence if not avoided: Will result in death or serious injury.

- This is how to avoid the hazard.



Warning

Indicates: a potentially hazardous situation

Consequence if not avoided: Could result in death or serious injury.

- This is how to avoid the hazard.



Caution

Indicates: a potentially hazardous situation

Consequence if not avoided: Could result in minor or moderate injury.

- This is how to avoid the hazard.



Notice

Indicates: a potential risk of damage to the supported product

Consequence if not avoided: Could result in damage to the product or other property.

- This is how to avoid the hazard.



Important

Please note: important information.

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



See

Reference to other manuals or pages in this manual.



Helpful information or extra guidance.



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

2 Description of the product

2.1 Boiler types

The following boiler types are available:

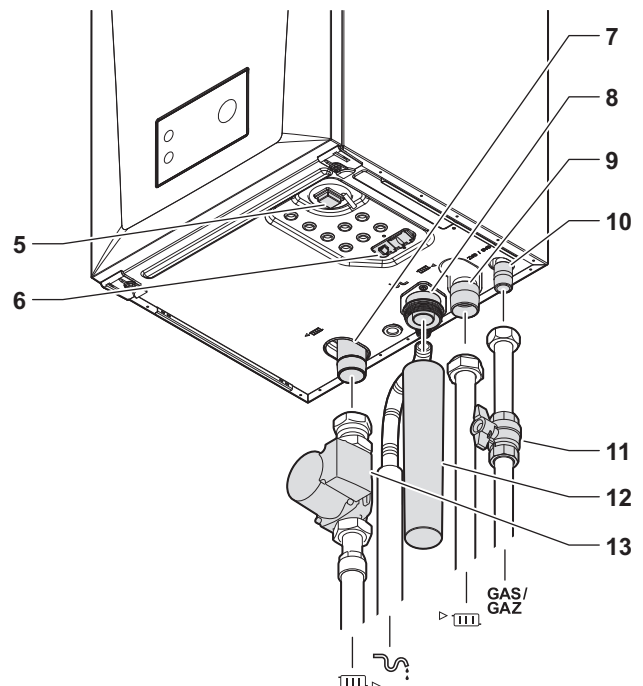
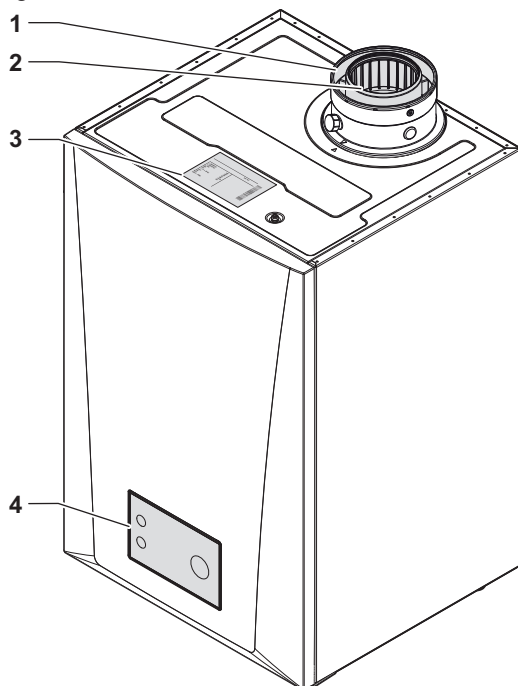
Tab.1 Boiler types

Name	Output ⁽¹⁾	Output ⁽²⁾
AMC PRO EVO 35 ⁽³⁾	35.0 kW	33.2 kW
AMC PRO EVO 45	42.4 kW	40.0 kW
AMC PRO EVO 65	65.0 kW	60.9 kW
AMC PRO EVO 90	89.5 kW	84.2 kW
AMC PRO EVO 115	109.7 kW	103.9 kW

(1) Nominal output P_{nc} 50/30 °C.
 (2) Nominal output P_n 80/60 °C.
 (3) This boiler type is a AMC PRO EVO 45 configured at 35 kW. Use the AMC PRO EVO 35 information given in this manual.

2.2 Main components

Fig.1 General

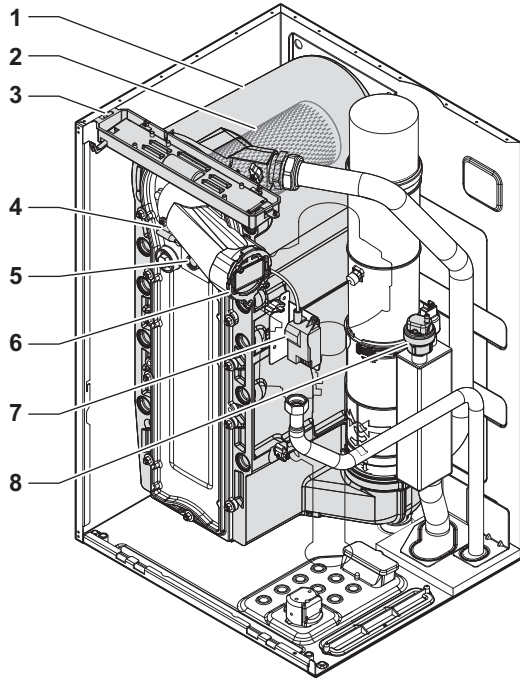


- 1 Air inlet connection
- 2 Flue gas outlet connection
- 3 Data plate
- 4 Control panel
- 5 Power button
- 6 Quick connect

- 7 Return connection
- 8 Condensate connection
- 9 Flow connection
- 10 Gas connection
- 11 Gas cock
- 12 Trap
- 13 Pump
- System return pipe
- Condensate drain pipe
- System flow pipe
- Gas supply pipe

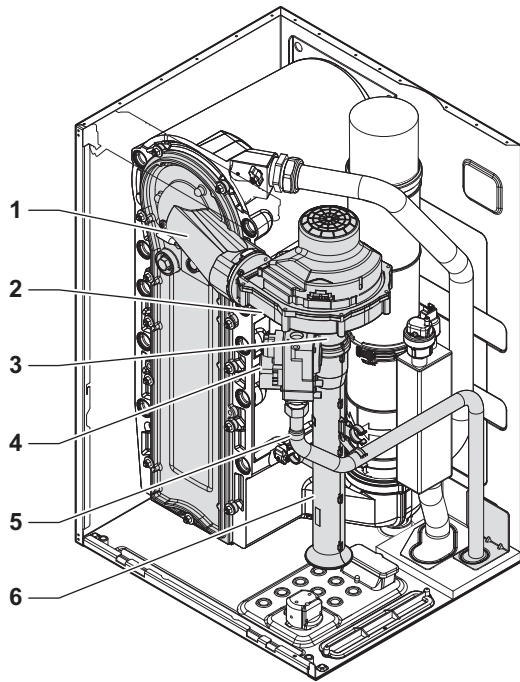
AD-3002806-01

Fig.2 Internal



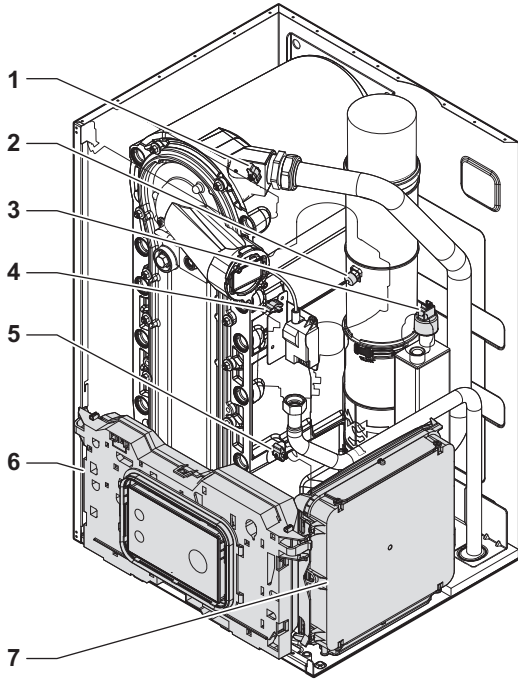
- 1 Heat exchanger
- 2 Burner
- 3 Interior light
- 4 Ignition / ionisation electrode
- 5 Flame inspection glass
- 6 Non-return valve
- 7 Ignition / ionisation transformer
- 8 Automatic air vent

Fig.3 Gas - air unit



- 1 Front plate with mixing tube
- 2 Fan
- 3 Venturi
- 4 Gas control valve
- 5 Gas supply tube
- 6 Air inlet silencer

Fig.4 Sensors and boxes



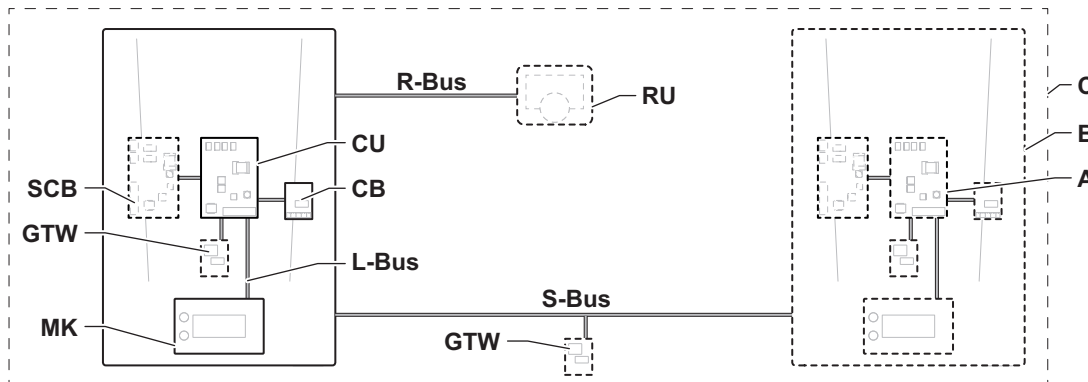
- 1 Flow temperature sensor
- 2 Flue gas temperature sensor
- 3 Water pressure sensor
- 4 Heat exchanger temperature sensor
- 5 Return temperature sensor
- 6 Control box
- 7 Expansion box

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2.3 Introduction to the controls platform

The AMC PRO EVO boiler is equipped with the controls platform. This is a modular system, and offers compatibility and connectivity between all products that make use of the same platform.

Fig.5 Generic example



AD-3001366-02

Tab.2 Components in the example

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

Item	Description	Function
S-bus	System Bus: Connection between appliances	The system bus provides communication between appliances.
R-bus	Room unit Bus: Connection to a room unit	The room unit bus provides communication to a room unit.
A	Device	A device is a PCB, control panel or a room unit.
B	Appliance	An appliance is a set of devices connected via the same L-bus
C	System	A system is a set of appliances connected via the same S-bus

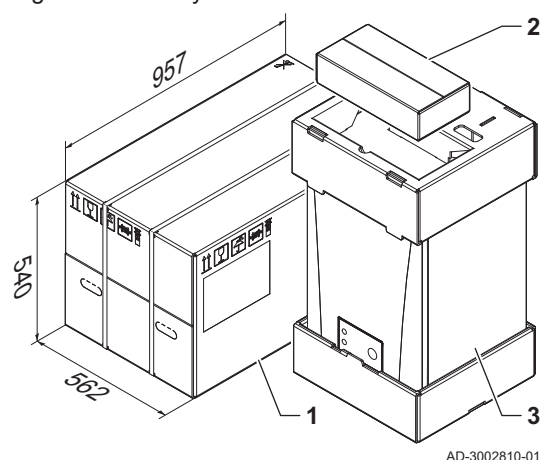
Tab.3 Specific devices delivered with the AMC PRO EVO boiler

Name visible in display	Software version	Description	Function
CU-GH22	1.0	Control unit CU-GH22	The CU-GH22 control unit handles all basic functionality of the AMC PRO EVO boiler.
MK3	1.98	Control panel Diematic Evolution	The Diematic Evolution is the user interface to the AMC PRO EVO boiler.
SCB-10	1.04	Expansion PCB SCB-10	The SCB-10 provides functionality for one DHW and two central heating zones, a 0-10 V connection for a PWM system pump and a potential-free contact for status notification. Extend the SCB-10 with the AD249 (optional). The AD249 provides functionality for one extra central heating zone and a DHW circulation loop.

2.4 Standard delivery

The boiler is delivered in packaging. The delivery includes:

Fig.6 Delivery

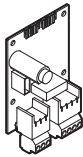
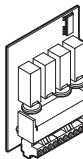


- 1 Packaging
- 2 Box with additional parts:
 - Wall bracket with fasteners
 - Trap with hose
 - Cable glands
 - Outdoor temperature sensor
 - Literature pack with mounting template
- 3 Boiler, with:
 - Expansion PCB **SCB-10**

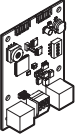

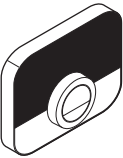
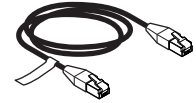
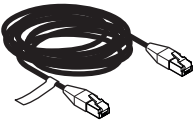


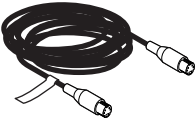


2.5 Accessories and options

Various accessories and options are available.

Tab.4 Electrical accessories and options

Item	Description	Function
 AD-3001447-01	Expansion PCB SCB-09	The SCB-09 provides functionality to connect an external gas valve, gas pressure switch and heat recovery unit.
 AD-3001449-01	PCB AD249	The AD249 provides functionality for an extra zone for the expansion PCB SCB-10.

2 Description of the product

Item	Description	Function
 <p>AD-3001452-01</p>	<p>Gateway GTW-08 Modbus</p>	<p>The GTW-08 provides functionality to connect to a building management system via Modbus.</p>
 <p>AD-3001453-01</p>	<p>Gateway GTW-21 BACNet</p>	<p>The GTW-21 BACNet provides functionality to connect to a building management system via BACnet.</p>
 <p>AD-3001458-01</p>	<p>Thermostat Smart TC°</p>	<p>The Smart TC° is a smart room thermostat with advanced functionalities.</p>
 <p>AD-3001499-01</p>	<p>Cable S-Bus 1,5 m AD308</p>	<p>The S-Bus cable is necessary for the communication connection between appliances.</p>
 <p>AD-3001500-01</p>	<p>Cable S-Bus 12 m AD309</p>	<p>The S-Bus cable is necessary for the communication connection between appliances.</p>
 <p>AD-3001501-01</p>	<p>Cable S-Bus 20 m AD310</p>	<p>The S-Bus cable is necessary for the communication connection between appliances.</p>
 <p>AD-3001502-01</p>	<p>Cable ModBus 1,5 m AD124</p>	<p>The ModBus cable is necessary for the communication connection between appliances.</p>
 <p>AD-3001503-01</p>	<p>Cable ModBus 12 m AD134</p>	<p>The ModBus cable is necessary for the communication connection between appliances.</p>
 <p>AD-3001504-01</p>	<p>Cable ModBus 40 m DB219</p>	<p>The ModBus cable is necessary for the communication connection between appliances.</p>
 <p>AD-3001505-01</p>	<p>S-Bus terminator set AD321</p>	<p>The S-Bus terminator set is necessary to define the start and end of the S-Bus connection.</p>

3 Technical specifications

3.1 Homologations

3.1.1 Certifications

Tab.5 Certifications

CE identification number	PIN 0063DP3280
Class NO _x ⁽¹⁾	6
Type of flue gas connection	B ₂₃ , B _{23P} , B ₃₃ ⁽²⁾ C _{13(X)} , C _{33(X)} , C _{43P} , C ₅₃ , C _{63(X)} , C _{93(X)}
(1) EN 15502-1 (2) When installing a boiler with connection type B ₂₃ , B _{23P} , B ₃₃ , the IP rating of the boiler is lowered to IP20.	

3.1.2 Unit categories

Tab.6 Unit categories

Country	Category ⁽¹⁾	Gas type	Connection pressure (mbar)
Austria	II _{2H3B/P}	G20 (H gas) G30/G31 (butane/propane)	20 50
Bulgaria	II _{2H3B/P}	G20 (H gas) G30/G31 (butane/propane)	20 30
Switzerland	II _{2H3B/P}	G20 (H gas) G30/G31 (butane/propane)	20 30-50
Cyprus	I _{3B/P}	G30/G31 (butane/propane)	30-50
Czech Republic	II _{2H3B/P}	G20 (H gas) G30/G31 (butane/propane)	20 30-50
Georgia	II _{2H3B/P}	G20 (H gas) G30/G31 (butane/propane)	20 50
Estonia	II _{2H3P}	G20 (H gas) G31 (propane)	20 30
Finland	II _{2H3B/P}	G20 (H gas) G30/G31 (butane/propane)	20 30
France	II _{2Esi3P}	G20 (H gas) G25 (L gas) G31 (propane)	20 25 37-50
Greece	II _{2H3B/P}	G20 (H gas) G30/G31 (butane/propane)	20 30-50
Ireland	II _{2H3P}	G20 (H gas) G31 (propane)	20 30
Italy	II _{2H3B/P}	G20 (H gas) G30/G31 (butane/propane)	20 30
Kazakhstan	II _{2H3B/P}	G20 (H gas) G30/G31 (butane/propane)	20 50
Lithuania	II _{2H3B/P}	G20 (H gas) G30/G31 (butane/propane)	20 30
Luxembourg	II _{2E3P}	G20/G25 (E gas) G31 (propane)	20 50
Latvia	I _{2H}	G20 (H gas)	20
Norway	II _{2H3B/P}	G20 (H gas) G30/G31 (butane/propane)	20 30
Portugal	II _{2H3P}	G20 (H gas) G31 (propane)	20 30-50
Romania	II _{2H3P}	G20 (H gas) G31 (propane)	20 50

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

3.1.3 Directives

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

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

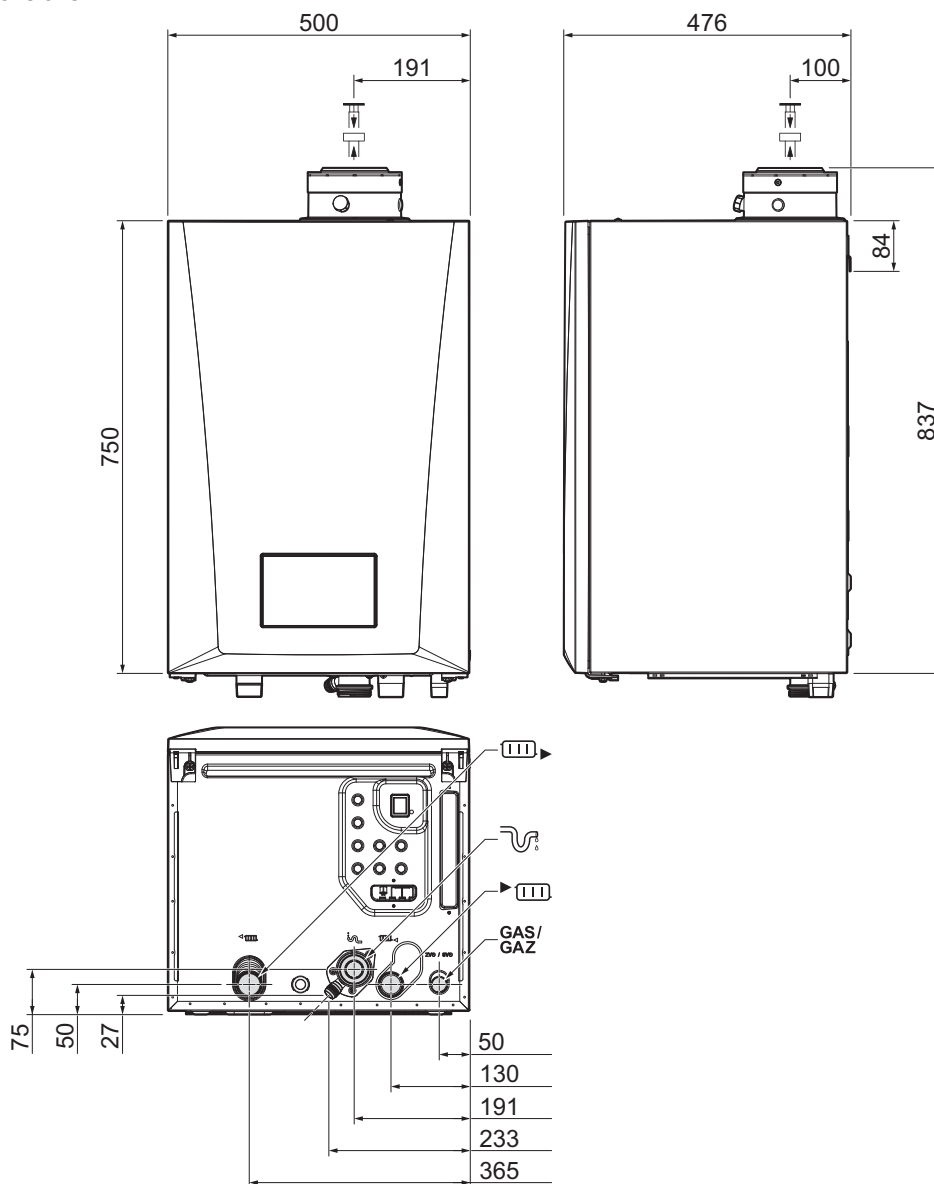
3.1.4 Factory test

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

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

3.2 Dimensions and connections

Fig.7 Dimensions

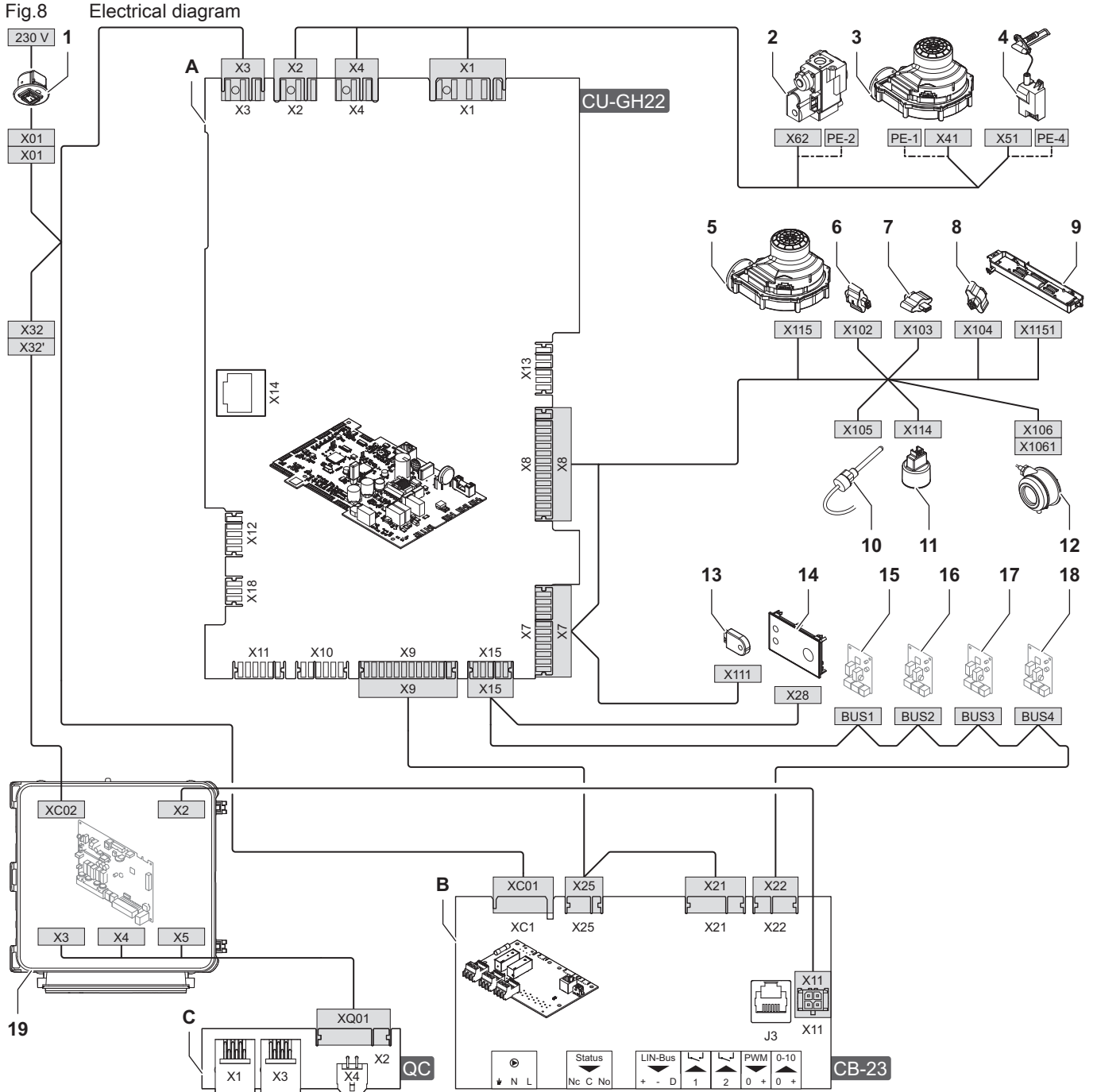


AD-3002812-01

Tab.7 Connections

	AMC PRO EVO	35 45	65 90 115
	Flue gas outlet connection	Ø 80 mm	Ø 100 mm
	Air inlet connection	Ø 125 mm	Ø 150 mm
	Condensate connection	22.5 mm	22.5 mm
	Flow connection	1 ¼" male thread	1 ¼" male thread
	Return connection	1 ¼" male thread	1 ¼" male thread
	Gas connection	¾" male thread	¾" male thread

3.3 Electrical diagram




- | | |
|--|---|
| <p>A Control unit - CU-GH22</p> <p>B Connection board - CB-23</p> <p>C Quick connection board - Quick connect</p> <p>1 On / off switch</p> <p>2 Gas control valve</p> <p>3 Fan power supply</p> <p>4 Ignition transformer power supply</p> <p>5 Fan PWM signal</p> <p>6 Return temperature sensor</p> <p>7 Heat exchanger temperature sensor</p> <p>8 Flow temperature sensor</p> | <p>9 Interior light</p> <p>10 Flue gas temperature sensor</p> <p>11 Water pressure sensor</p> <p>12 Air pressure differential switch (optional)</p> <p>13 Configuration storage unit (CSU)</p> <p>14 Control panel (HMI)</p> <p>15 CAN connection for PCB</p> <p>16 CAN connection for PCB</p> <p>17 CAN connection for PCB</p> <p>18 CAN connection for PCB</p> <p>19 Expansion box</p> |
|--|---|

AD-3002915-02

3.4 Technical data

Tab.8 General

AMC PRO EVO				35	45	65	90	115
Nominal output	P_n 80/60 °C	kW	min max ⁽¹⁾	8.0 33.2	8.0 40.0	12.0 60.9	14.1 84.2	18.9 103.9
Nominal output	P_{nc} 50/30 °C	kW	min max ⁽¹⁾	9.1 35.0	9.1 42.4	13.5 65.0	15.8 89.5	21.2 109.7
Nominal input	Q_{nh} (H_i)	kW	min max ⁽¹⁾	8.2 34.0	8.2 41.2	12.2 62.0	14.6 86.0	19.6 107.0
Nominal input	Propane Q_{nh} (H_i)	kW	min max	8.8 34.0	8.8 41.2	12.2 62.0	22.1 86.0	21.2 107.0
Nominal input	Q_{nh} (H_s)	kW	min max ⁽¹⁾	9.1 37.8	9.1 45.7	13.6 68.9	16.2 95.5	21.9 118.8
Nominal input	Propane Q_{nh} (H_s)	kW	min max	9.6 37.0	9.6 44.8	13.3 67.4	24.0 93.6	23.1 116.4
Reduced input	Q_{Y20h} (H_i)	kW	min max ⁽¹⁾	7.6 31.6	7.6 38.3	11.3 57.7	13.9 80.0	18.2 99.5
Reduced input	Q_{Y20h} (H_s)	kW	min max ⁽¹⁾	8.5 35.2	8.5 42.5	12.6 64.0	15.1 88.8	20.4 110.5
Full load central heating efficiency	P_n (H_i) 80/60 °C	%		97.5	97.2	98.3	97.9	97.1
Full load central heating efficiency	H_i 50/30 °C	%		102.9	102.9	104.6	104.1	102.5
Min load central heating efficiency	H_i RT=60 °C ⁽²⁾	%		97.5	97.2	98.3	96.6	96.5
Part load central heating efficiency	P_n (H_i) RT=30 °C ⁽²⁾	%		108.4	108.4	108.9	108.1	108.0
Full load central heating efficiency	P_n (H_s) 80/60 °C	%		87.8	87.5	88.5	88.2	87.4
Full load central heating efficiency	H_s 50/30 °C	%		92.7	92.7	94.2	93.7	92.3
Min load central heating efficiency	H_s RT=60 °C ⁽²⁾	%		87.8	87.5	88.5	87.0	86.9
Part load central heating efficiency	P_n (H_s) RT=30 °C ⁽²⁾	%		97.6	97.6	98.1	97.3	97.3
(1)  Factory setting.								
(2) Return temperature.								

Tab.9 Gas and flue gas data

AMC PRO EVO				35	45	65	90	115
Gas test pressure	G20	mbar	min max	17 25	17 25	17 25	17 25	17 25
Gas test pressure	G25	mbar	min max	20 30	20 30	20 30	20 30	20 30
Gas test pressure	G31	mbar	min max	37 50	37 50	37 50	37 50	37 50
Gas consumption	G20	m ³ /h	min max	0.8 3.5	0.8 4.3	1.3 6.5	1.5 9.0	2.0 11.1
Gas consumption	G25	m ³ /h	min max	1.0 4.1	1.0 5.0	1.5 7.5	1.7 10.4	2.3 12.9
Gas consumption	G31	m ³ /h	min max	0.3 1.3	0.3 1.6	0.5 2.4	0.8 3.4	0.8 4.2
Gas resistance between boiler connection point and measurement point on the gas control valve	Measured with G20	mbar	max	-	0.4	0.7	0.6	0.8

AMC PRO EVO				35	45	65	90	115
NOx annual emissions	G20 H_s (EN15502)	mg/kWh		33	39	40	54	51
NOx annual emissions ⁽¹⁾	G20 H_s (EN15502)	mg/kWh		33	39	40	54	47
NOx annual emissions	G25 H_s	mg/kWh		29	34	35	52	45
NOx annual emissions	G31 H_s	mg/kWh		47	56	56	59	55
NOx annual emissions ⁽¹⁾	G31 H_s	mg/kWh		47	56	49	59	44
CO annual emissions ⁽¹⁾	G20 H_s (EN15502)	mg/kWh		51	66	64	73	89
CO annual emissions	G25 H_s	mg/kWh		16	20	20	26	29
CO annual emissions ⁽¹⁾	G31 H_s	mg/kWh		61	84	83	80	99
Flue gas amount		kg/h	min	14	14	21	28	36
			max	50	69	104	138	178
Flue gas temperature		°C	min	30	30	30	30	30
			max	65	67	68	68	72
Maximum counter pressure for flue gas outlet		Pa		80	150	100	160	220
Flue efficiency	(H_f) 80/60 °C AT=20 °C ⁽²⁾	%		99.3	99.1	99.2	97.9	97.1
Flue losses with burner on	(H_f) 80/60 °C AT=20 °C ⁽²⁾	%		0.7	0.9	0.8	2.1	2.9
(1) For Switzerland. (2) Ambient temperature.								

Tab.10 Central heating circuit data

AMC PRO EVO				35	45	65	90	115
Water content		l		4.3	4.3	6.4	9.4	9.4
Water operating pressure		bar	min	0.8	0.8	0.8	0.8	0.8
Water operating pressure	<i>PMS</i>	bar	max	6.0	6.0	6.0	6.0	6.0
Water temperature		°C	max	110.0	110.0	110.0	110.0	110.0
Operating temperature		°C	max	90.0	90.0	90.0	90.0	90.0
Hydraulic resistance ($\Delta T=20$ K)			mbar	80	114	163	153	250
Casing-related losses		ΔT 30 °C	W	101	101	110	123	123
				201	201	232	254	254
		ΔT 50 °C						

Tab.11 Electrical data

AMC PRO EVO				35	45	65	90	115
Supply voltage		V~/Hz		230/50	230/50	230/50	230/50	230/50
Power consumption ⁽¹⁾	Max input CH	W	max	49	71	83	111	169
Power consumption ⁽¹⁾	Max input CH <i>el-max</i>	W	max	49	71	83	111	169
Power consumption ⁽¹⁾	Min input CH	W	min	18	18	23	23	19
Power consumption ⁽¹⁾	Min input CH <i>elmin</i>	W	min	19	19	26	26	24
Power consumption ⁽¹⁾	Standby	W	max	4	4	4	4	5
Electrical protection index ⁽²⁾		IP		X4D	X4D	X4D	X4D	X4D
Electrical shock protection type	Class			I	I	I	I	I

AMC PRO EVO			35	45	65	90	115
Fuse – CU-GH22		(AT)	2.5	2.5	2.5	2.5	2.5
Fuse – CB		(AT)	6.3	6.3	6.3	6.3	6.3
(1) Without pump. (2) For a room-sealed system.							

Tab.12 Other data

AMC PRO EVO			35	45	65	90	115
Total weight with packaging		kg	61	61	67	76	77
Minimum mounting weight	Without front panel	kg	52	52	58	67	68
Average acoustic level at a distance of 1 metre from the boiler ⁽¹⁾	LpA	dB(A)	42.0	45.1	46.7	51.6	51.1
Average acoustic level ⁽¹⁾	LwA	dB(A)	52.0	53.1	54.7	59.5	59.1
(1) For a sealed installation.							

Tab.13 Technical parameters

AMC PRO EVO			35	45	65	90	115
Condensing boiler			Yes	Yes	Yes	Yes	Yes
Low-temperature boiler ⁽¹⁾			No	No	No	No	No
B1 boiler			No	No	No	No	No
Cogeneration space heater			No	No	No	No	No
Combination heater			No	No	No	No	No
Rated heat output	<i>P_{rated}</i>	kW	33	40	61	84	104
Useful heat output at nominal heat output and high temperature operation ⁽²⁾	<i>P₄</i>	kW	33.2	40.0	60.9	84.2	103.9
Useful heat output at 30% of rated heat output and low temperature regime ⁽¹⁾	<i>P₁</i>	kW	11.1	13.4	20.2	27.9	34.7
Seasonal space heating energy efficiency	η_s	%	92	93	93	-	-
Useful efficiency at rated heat output and high temperature regime ⁽²⁾	η_4	%	87.8	87.5	88.5	88.2	87.4
Useful efficiency at 30% of rated heat output and low temperature regime ⁽¹⁾	η_1	%	97.6	97.6	98.1	97.3	97.3
Auxiliary electricity consumption							
Full load	<i>el_{max}</i>	kW	0.049	0.071	0.083	0.111	0.169
Part load	<i>el_{min}</i>	kW	0.018	0.018	0.023	0.023	0.019
Standby mode	<i>P_{SB}</i>	kW	0.004	0.004	0.004	0.004	0.005
Other items							
Standby heat loss	<i>P_{stby}</i>	kW	0.101	0.101	0.110	0.123	0.123
Ignition burner power consumption	<i>P_{ign}</i>	kW	-	-	-	-	-
Annual energy consumption	<i>Q_{HE}</i>	kWh GJ	103	124	189	-	-
Sound power level, indoors	<i>L_{WA}</i>	dB	52	53	55	60	59
Emissions of nitrogen oxides	NO _x	mg/kWh	33	39	40	54	51
(1) Low temperature means 30 °C for condensing boilers, 37 °C for low temperature boilers and 50 °C (at heater inlet) for other heating appliances. (2) High temperature operation means 60 °C return temperature at heater inlet and 80 °C feed temperature at heater outlet.							

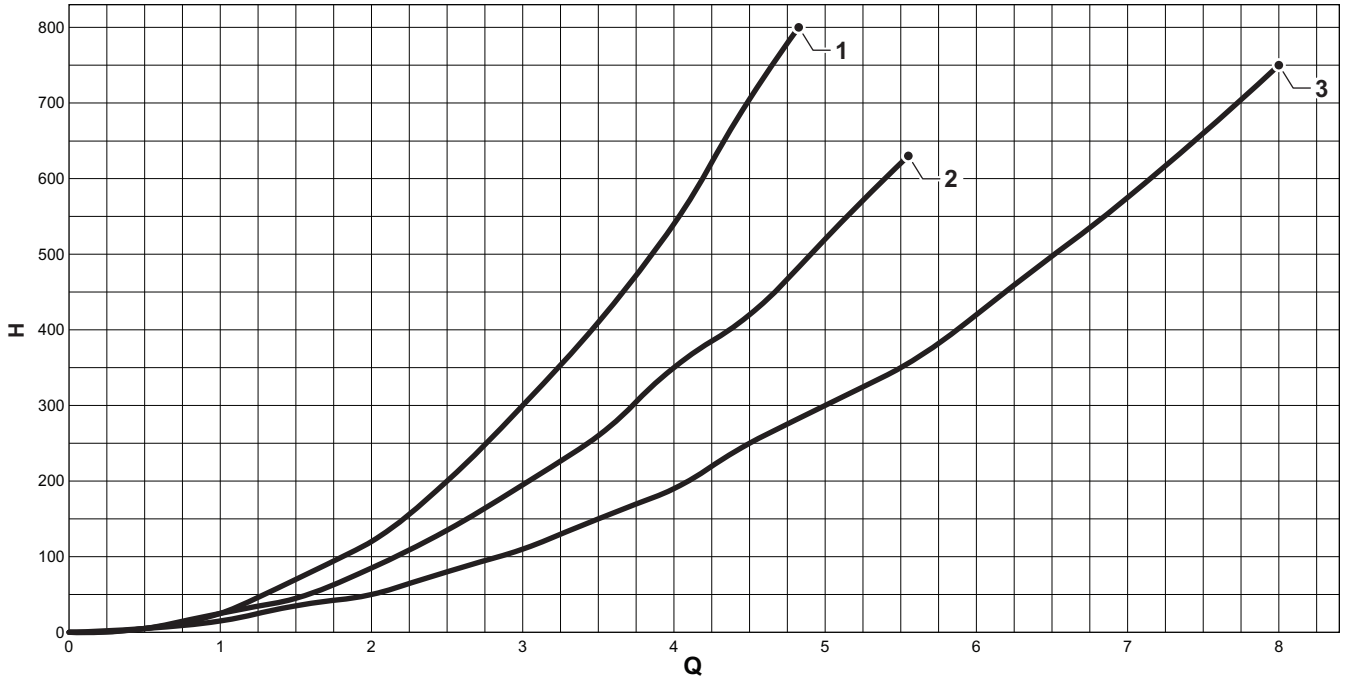
**See**

Refer to the back cover for contact details.

3.5 Hydraulic resistance

Take the boiler resistance and system resistance into account when selecting a pump. The graph shows the hydraulic resistance at various water flow rates. The table shows some significant nominal flow data and the corresponding hydraulic resistance.

Fig.9 Hydraulic resistance



AD-3002814-01

- Q** Water flow (m³/h)
- H** Hydraulic resistance (mbar)
- 1** AMC PRO EVO 35 - 45
- 2** AMC PRO EVO 65
- 3** AMC PRO EVO 90 - 115

Tab.14 Nominal flow data

	Unit	35	45	65	90	115
Q at $\Delta T = 10\text{ }^{\circ}\text{C}$	m ³ /h	2.90	3.50	5.28	7.20	9.0
H at $\Delta T = 10\text{ }^{\circ}\text{C}$	mbar	320	456	652	612	1000
Q at $\Delta T = 20\text{ }^{\circ}\text{C}$	m ³ /h	1.45	1.75	2.64	3.60	4.50
H at $\Delta T = 20\text{ }^{\circ}\text{C}$	mbar	80	114	163	153	250
Q at $\Delta T = 35\text{ }^{\circ}\text{C}$	m ³ /h	-	-	-	-	2.55
H at $\Delta T = 35\text{ }^{\circ}\text{C}$	mbar	-	-	-	-	72
Q at $\Delta T = 40\text{ }^{\circ}\text{C}$	m ³ /h	0.73	0.90	1.32	1.80	-
H at $\Delta T = 40\text{ }^{\circ}\text{C}$	mbar	18	30	45	40	-

4 Installation requirements

4.1 Installation regulations



Warning
Hazardous appliance
 Chance of injury.

- Installation of the appliance must only be carried out by a qualified installer in accordance with regulations and the information given in the manual.

4.2 Location requirements



Danger
Combustible element
 Chance of fire

- Never store, even temporarily, combustible products or substances in or near the appliance.



Warning
Heat damage
 Damage to the product.

- Do not place the appliance above a heat source or a cooking appliance.



Warning
UV damage
 Damage to the product.

- Do not locate the appliance in direct or indirect sunlight.



Notice
Frost damage
 Damage to the product.

- Only install the appliance in a frost-free area.



Notice
Insufficient support
 Damage to the product.

- Make sure the wall or construction can hold the weight of the appliance.



Important

- An earthed electrical connection must be available close to the appliance.
- A connection to the drain must be available close to the appliance.

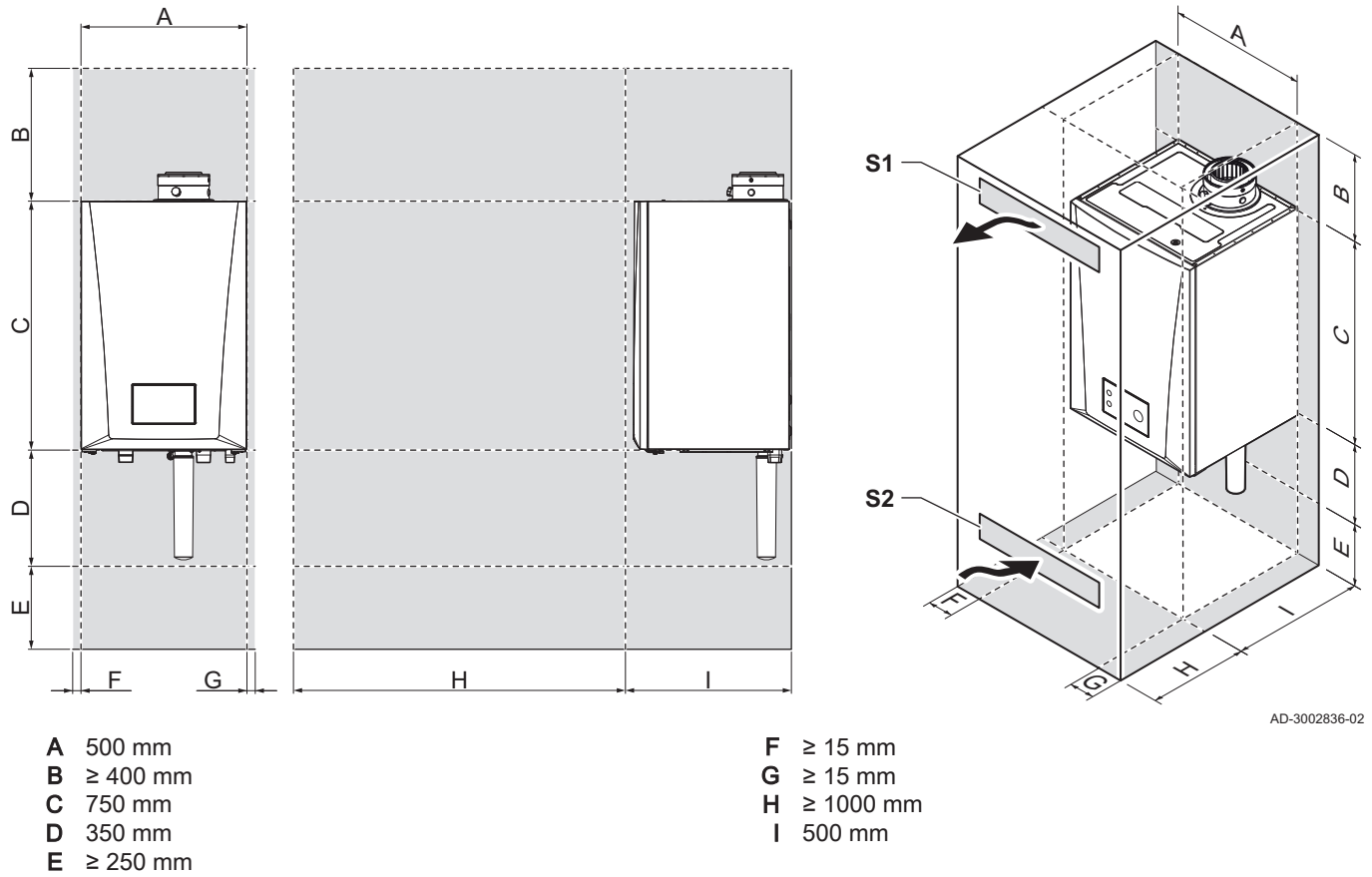
When choosing the best installation location, consider:

- The regulations.
- The required installation space.
- The required space around the appliance for good access and to facilitate maintenance.
- The required space under the appliance for the installation and removal of the trap.
- The permitted position of the flue gas outlet and/or air supply opening.
- The evenness of the surface.

When installing in a closed cupboard (or similar), consider:

- The minimum distance between the appliance and the walls of the cupboard.
- The required ventilation openings with a minimum cross section: $S1 + S2 = 150 \text{ cm}^2$. This will prevent the following hazards:
 - Accumulation of gas in the closed cupboard.
 - Heating of the closed cupboard.

Fig.10 Location requirements



4.3 Requirements for water connections

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

4.3.1 Requirements for the central heating connections

- We recommend to install an isolation valve in the flow pipe and return pipe to facilitate servicing work.
- We recommend to install a fill and drain valve in the return pipe to facilitate servicing work. Place it between the isolation valve and the appliance.
- We recommend to install an expansion vessel in the return pipe. Place it between the isolation valve and the appliance.
- We recommend to install a central heating filter in the return pipe to prevent clogging of internal components.

4.4 Requirements for the condensate drain

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

4.5 Requirements for the gas connection

- Carry out any welding work required at a safe distance from the boiler.
- Before installing, check that the gas meter has sufficient capacity. Take into account the consumption of all appliances. Notify the local energy company if the gas meter has insufficient capacity.
- An installed boiler gas cock must always be accessible.
- We recommend installing a gas filter to prevent clogging of the gas control valve.
- For France: Pipe diameters must be defined in accordance with ATG's (Association Technique de Gaz) B171 specifications.

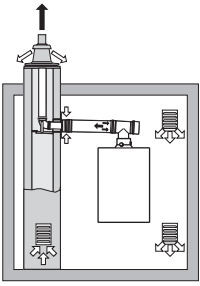
4.6 Requirements for the flue gas discharge system

4.6.1 Classification

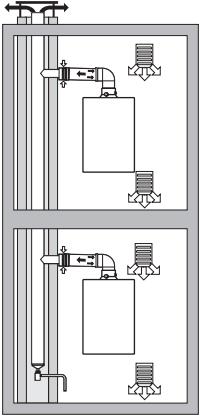
i Important

- The installer is responsible for choosing the correct type, diameter, and length of the flue system.
- Always use connection materials, roof terminal and/or horizontal flue terminal supplied by the same manufacturer. Consult the manufacturer for compatibility details.
- The use of flue systems from other manufacturers is allowed in addition to the recommended manufacturers listed in this manual. Use is only allowed when all our requirements are met and the description of flue system C_{63(X)} is respected.

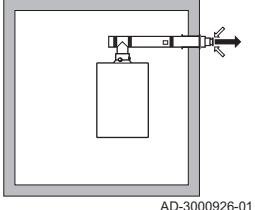
Tab.15 Type of flue system: B₂₃ - B_{23P}

Principle	Description	Recommended manufacturers ⁽¹⁾
 <p>AD-3000924-01</p>	<p>Room-ventilated version.</p> <ul style="list-style-type: none"> • Without down-draught diverter. • Flue gas discharge via the roof. • Air supply from the installation area. • The air inlet connection of the boiler must stay open. • The installation area must be vented to ensure sufficient air supply. The vents must not be obstructed or shut off. • The IP rating of the boiler is lowered to IP20. 	<p>Connection material and roof terminal:</p> <ul style="list-style-type: none"> • Cox Geelen • Poujoulat • Ubbink
<p>(1) The material must also satisfy the material property requirements from the relevant chapter.</p>		

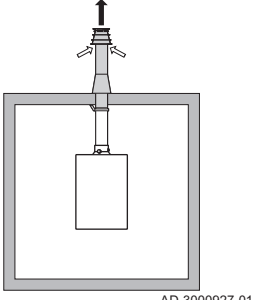
Tab.16 Type of flue system: B₃₃

Principle	Description	Recommended manufacturers ⁽¹⁾
 <p>AD-3000925-01</p>	<p>Room-ventilated version.</p> <ul style="list-style-type: none"> • Without down-draught diverter. • Joint flue gas discharge via the roof, with guaranteed natural draft (at all times underpressure in the joint discharge duct). • Flue rinsed with air, air from the installation area (special construction). • The IP rating of the boiler is lowered to IP20. 	<p>Connection material:</p> <ul style="list-style-type: none"> • Cox Geelen • Poujoulat • Ubbink
<p>(1) The material must also satisfy the material property requirements from the relevant chapter.</p>		

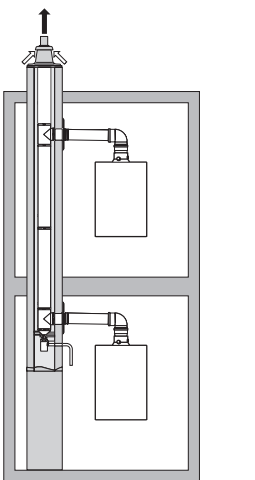
Tab.17 Type of flue system: C_{13(X)}

Principle	Description	Recommended manufacturers ⁽¹⁾
 <p style="text-align: center; font-size: small;">AD-3000926-01</p>	<p>Room-sealed version.</p> <ul style="list-style-type: none"> • Flue gas discharge in the outside wall. • The air inlet is in the same pressure zone as the flue (for example a horizontal flue terminal). • Parallel wall terminal not permitted. 	<p>Horizontal flue terminal and connection material:</p> <ul style="list-style-type: none"> • Cox Geelen
<p>(1) The material must also satisfy the material property requirements from the relevant chapter.</p>		

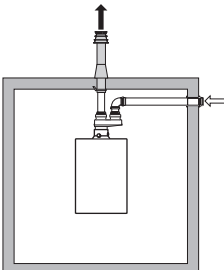
Tab.18 Type of flue system: C_{33(X)}

Principle	Description	Recommended manufacturers ⁽¹⁾
 <p style="text-align: center; font-size: small;">AD-3000927-01</p>	<p>Room-sealed version.</p> <ul style="list-style-type: none"> • Flue gas discharge via the roof. • The air inlet is in the same pressure zone as the flue (for example a concentric roof terminal). 	<p>Roof terminal and connection material</p> <ul style="list-style-type: none"> • Cox Geelen • Poujolat • Ubbink
<p>(1) The material must also satisfy the material property requirements from the relevant chapter.</p>		

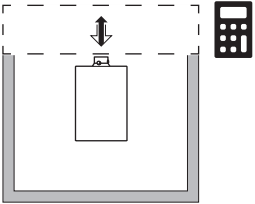
Tab.19 Type of flue system: C_{43P}

Principle ⁽¹⁾	Description	Recommended manufacturers ⁽²⁾
 <p style="text-align: center; font-size: small;">AD-3000928-01</p>	<p>Combined air inlet and flue system (common shared flue system) with overpressure.</p> <ul style="list-style-type: none"> • Concentric (preferably). • Parallel (if concentric is not possible). • Minimum permitted pressure difference between the air inlet and the flue is -200 Pa (including -100 Pa wind pressure). • The duct must be designed for a nominal flue gas temperature of 25 °C. • Place a condensation drain, equipped with a trap, at the bottom of the duct. • Maximum permissible recirculation of 10%. • The common shared flue system must be appropriate for a pressure of at least 200 Pa. • The roof terminal must be designed for this configuration and must cause a draught in the duct. • A draught diverter is not permitted. <p>i Important</p> <ul style="list-style-type: none"> • Modify the fan speed for this configuration. • Contact us for more information. 	<p>Connecting material to the common shared flue system:</p> <ul style="list-style-type: none"> • Cox Geelen • Poujolat • Ubbink
<p>(1) EN 15502-2-1: 0.5 mbar suction due to negative pressure. (2) The material must also satisfy the material property requirements from the relevant chapter.</p>		

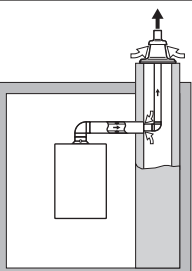
Tab.20 Type of flue system: C₅₃

Principle	Description	Recommended manufacturers ⁽¹⁾
 <p>AD-3003420-01</p>	<p>Connection in different pressure zones.</p> <ul style="list-style-type: none"> • Closed unit. • Separate air inlet and flue. • Discharging into various pressure areas. • The air inlet and flue must not be placed on opposite walls. 	<p>Connection material and roof terminal:</p> <ul style="list-style-type: none"> • Cox Geelen • Poujoulat • Ubbink
<p>(1) The material must also satisfy the material property requirements from the relevant chapter.</p>		

Tab.21 Type of flue system: C_{63(X)}

Principle	Description	Recommended manufacturers ⁽¹⁾
 <p>AD-3003358-01</p>	<p>This system is supplied by us without an air inlet and flue. When selecting the material, please note the following:</p> <ul style="list-style-type: none"> • Condensed water must flow back to the boiler. • The material must be resistant to the flue gas temperature of this boiler. • Maximum permissible recirculation of 10%. • The air inlet and flue must not be placed on opposite walls. • Minimum permitted pressure difference between the air inlet and the flue is -200 Pa (including -100 Pa wind pressure). • A common shared flue system with overpressure is not permitted. 	<p>Use is only allowed when all our requirements are met and the description of this flue system type is respected.</p>
<p>(1) The material must also satisfy the material property requirements from the relevant chapter.</p>		

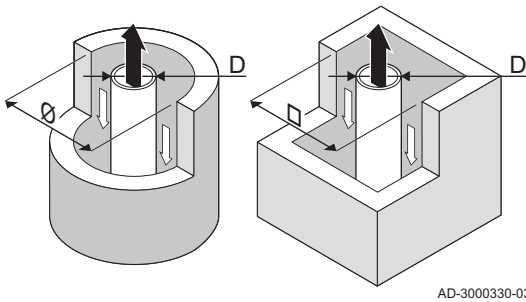
Tab.22 Type of flue system: C_{93(X)}

Principle ⁽¹⁾	Description	Recommended manufacturers ⁽²⁾
 <p>AD-3000931-02</p>	<p>Room-sealed version.</p> <ul style="list-style-type: none"> • Air inlet and flue in shaft or duct: <ul style="list-style-type: none"> - Concentric. - Air supply from existing shaft or duct. - Flue gas discharge via the roof. - Air inlet is in the same pressure zone as the flue. 	<p>Connection material and roof terminal:</p> <ul style="list-style-type: none"> • Cox Geelen • Poujoulat • Ubbink
<p>(1) See table for shaft or duct requirements. (2) The material must also satisfy the material property requirements from the relevant chapter.</p>		

Tab.23 Minimum dimensions of shaft or duct C_{93(X)}

Version (D)	Without air supply		With air supply	
Rigid 80 mm	Ø 130 mm	□ 130 x 130 mm	Ø 140 mm	□ 130 x 130 mm
Rigid 100 mm	Ø 160 mm	□ 160 x 160 mm	Ø 170 mm	□ 160 x 160 mm
Concentric 80/125 mm	Ø 145 mm	□ 145 x 145 mm	Ø 145 mm	□ 145 x 145 mm
Concentric 100/150 mm	Ø 170 mm	□ 170 x 170 mm	Ø 170 mm	□ 170 x 170 mm

Fig.11 Minimum dimensions of shaft or duct C_{93(X)}



AD-3000330-03



Important

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



Important

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

4.6.2 Material



Danger

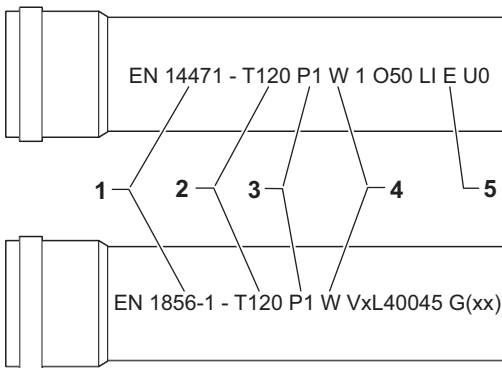
Flue gas leakage

Chance of CO poisoning.

- Do not combine pipes, coupling, roof terminals, and connection methods from different manufacturers. This also applies to common shared flue ducts.
- Follow the instructions provided by the manufacturer of the flue gas material.
- The materials used must comply with the prevailing regulations and standards.
- Please contact us when using flexible flue gas outlet material.

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

Fig.12 Sample string



AD-3001120-01

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

Tab.24 Overview of material properties

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

4.6.3 Dimensions of flue gas outlet pipe



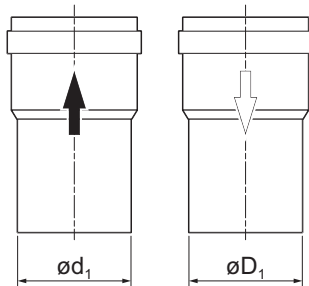
Danger

Flue gas leakage

Chance of CO poisoning.

- Only connect pipes to the flue gas adapter that satisfy the dimension requirements.

Fig.13 Dimensions of parallel connection



AD-3000963-01

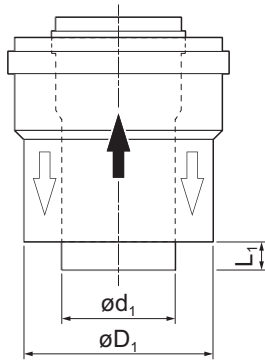
d_1 External dimensions of flue gas outlet pipe

D_1 External dimensions of air supply pipe

Tab.25 Dimensions of pipe

	d_1 (min-max)	D_1 (min-max)
80/80 mm	79.3 – 80.3 mm	79.3 – 80.3 mm
100/100 mm	99.3 – 100.3 mm	99.3 – 100.3 mm

Fig.14 Dimensions of concentric connection



AD-3000962-01

d_1 External dimensions of flue gas outlet pipe

D_1 External dimensions of air supply pipe

L_1 Length difference between flue gas outlet pipe and air supply pipe

Tab.26 Dimensions of pipe

	d_1 (min-max)	D_1 (min-max)	$L_1^{(1)}$ (min-max)
80/125 mm	79.3 – 80.3 mm	124 – 125.5 mm	0 – 15 mm
100/150 mm	99.3 – 100.3 mm	149 – 151 mm	0 – 15 mm

(1) Shorten the inner pipe if the length difference is too great.

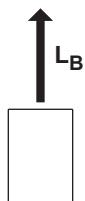
4.6.4 Length of the flue and air supply pipes

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

- If a boiler is not compatible with a specific flue system or diameter, it is indicated with "-" in the table.
- When using bends, the maximum flue length (L) must be shortened according to the reduction table.
- Use approved flue reducers for adaptation to another diameter.

■ Maximum flue lengths for B₂₃, B_{23P}, B₃₃

Fig.15 Flue system length



AD-3002009-01

L_B Length from the flue gas connection up to the terminal.

Calculation: $L = L_B$

Tab.27 Maximum length (L)

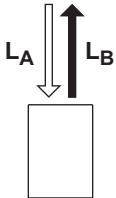
Diameter ⁽¹⁾	80 mm ⁽²⁾	80 mm ⁽³⁾	100 mm ⁽²⁾	100 mm ⁽³⁾
AMC PRO EVO 35	29 m	40 m	40 m ⁽¹⁾	40 m ⁽¹⁾
AMC PRO EVO 45	39 m	40 m ⁽¹⁾	40 m ⁽¹⁾	40 m ⁽¹⁾
AMC PRO EVO 65	11 m	23 m	26 m	40 m ⁽¹⁾

Diameter ⁽¹⁾	80 mm ⁽²⁾	80 mm ⁽³⁾	100 mm ⁽²⁾	100 mm ⁽³⁾
AMC PRO EVO 90	10 m	21 m	24 m	40 m
AMC PRO EVO 115	8 m	17 m	19 m	39 m

(1) While maintaining the maximum length, additional 5 times 90° or 10 times 45° bends can be used (indicated for each boiler type and diameter).
 (2) Maximum length (L) at nominal load.
 (3) Maximum length (L) at 10% load reduction.

■ Maximum flue lengths for C_{13(X)}, C_{33(X)}, C_{63(X)}, C_{93(X)}

Fig.16 Flue system length (Parallel)



L_A Length from the terminal up to the air inlet connection.
 L_B Length from the flue gas connection up to the terminal.

Calculation: $L = L_A + L_B$

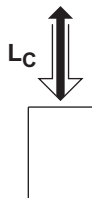
AD-3002010-01

Tab.28 Maximum length (L)

Diameter ⁽¹⁾	80 mm ⁽²⁾	80 mm ⁽³⁾	100 mm ⁽²⁾	100 mm ⁽³⁾
AMC PRO EVO 35	24 m	40 m	40 m ⁽¹⁾	40 m ⁽¹⁾
AMC PRO EVO 45	34 m	40 m ⁽¹⁾	40 m ⁽¹⁾	40 m ⁽¹⁾
AMC PRO EVO 65	2 m	16 m	20 m	40 m
AMC PRO EVO 90	-	14 m	16 m	40 m
AMC PRO EVO 115	-	8 m	12 m	34 m

(1) While maintaining the maximum length, additional 5 times 90° or 10 times 45° bends can be used (indicated for each boiler type and diameter).
 (2) Maximum length (L) at nominal load.
 (3) Maximum length (L) at 10% load reduction.

Fig.17 Flue system length (Concentric)



L_C Length from the air inlet connection and flue gas connection up to the terminal.

Calculation: $L = L_C$

AD-3002011-01

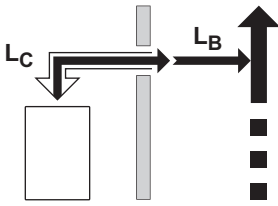
Tab.29 Maximum length (L)

Diameter ⁽¹⁾	80/125 mm ⁽²⁾	80/125 mm ⁽³⁾	100/150 mm ⁽²⁾	100/150 mm ⁽³⁾
AMC PRO EVO 35	18 m	20 m ⁽¹⁾	20 m ⁽¹⁾	20 m ⁽¹⁾
AMC PRO EVO 45	20 m	20 m ⁽¹⁾	20 m ⁽¹⁾	20 m ⁽¹⁾
AMC PRO EVO 65	4 m	13 m	18 m	20 m ⁽¹⁾
AMC PRO EVO 90	4 m	12 m	17 m	20 m ⁽¹⁾
AMC PRO EVO 115	-	8 m	13 m	20 m ⁽¹⁾

(1) While maintaining the maximum length, additional 5 times 90° or 10 times 45° bends can be used (indicated for each boiler type and diameter).
 (2) Maximum length (L) at nominal load.
 (3) Maximum length (L) at 10% load reduction.

■ Maximum flue lengths for C_{43P}

Fig.18 Flue system length



AD-3002012-01

- L_B** Maximum of 2 m extra length of the flue can be added up to the common shared flue system.
- L_C** Length from the air inlet connection and flue gas connection up to the common shared flue system.

$$\text{Calculation: } L = L_C$$

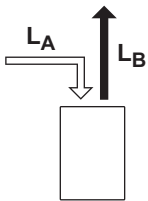
Tab.30 Maximum length (L)

Diameter ⁽¹⁾	80/125 mm ⁽²⁾	80/125 mm ⁽³⁾
AMC PRO EVO 35	13 m	20 m ⁽¹⁾
AMC PRO EVO 45	20 m	20 m ⁽¹⁾
AMC PRO EVO 65	4 m	13 m
AMC PRO EVO 90	4 m	13 m
AMC PRO EVO 115	4 m	10 m

- (1) While maintaining the maximum length, additional 5 times 90° or 10 times 45° bends can be used (indicated for each boiler type and diameter).
- (2) Maximum length (L) at nominal load.
- (3) Maximum length (L) at 10% load reduction.

■ Maximum flue lengths for C₅₃

Fig.19 Flue system length



AD-3002013-01

- L_A** Length from the terminal up to the air inlet connection.
- L_B** Length from the flue gas connection up to the terminal.

$$\text{Calculation: } L = L_A + L_B$$



Important

The maximum permitted height difference between the air inlet and the roof terminal is 36 m.

Tab.31 Maximum length (L)

Diameter ⁽¹⁾	80 mm ⁽²⁾	80 mm ⁽³⁾	100 mm ⁽²⁾	100 mm ⁽³⁾
AMC PRO EVO 35	16 m	40 m	40 m	40 m ⁽¹⁾
AMC PRO EVO 45	29 m	40 m ⁽¹⁾	40 m ⁽¹⁾	40 m ⁽¹⁾
AMC PRO EVO 65	5 m	17 m	16 m	40 m
AMC PRO EVO 90	-	17 m	17 m	40 m
AMC PRO EVO 115	-	13 m	14 m	34 m

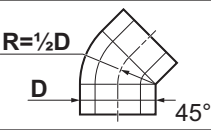
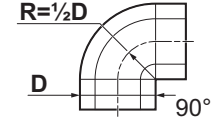
- (1) While maintaining the maximum length, additional 5 times 90° or 10 times 45° bends can be used (indicated for each boiler type and diameter).
- (2) Maximum length (L) at nominal load.
- (3) Maximum length (L) at 10% load reduction.

■ Reduction table

Tab.32 Pipe reduction for each bend - radius ½D (parallel)

Diameter	80 mm	100 mm
	1,2 m	1,4 m
	4,0 m	4,9 m

Tab.33 Pipe reduction for each bend - radius $\frac{1}{2}D$ (concentric)

Diameter	80/125 mm	100/150 mm
	1,0 m	1,0 m
	2,0 m	2,0 m

4.6.5 Additional guidelines

■ Installation

- For installing the flue gas outlet and air supply materials, refer to the instructions of the manufacturer of the material.
- After installation, check at least all flue gas outlet and air supply parts for tightness.
- Install the flue gas outlet pipe towards the boiler with a sufficient gradient (at least 50 mm per metre).
- Install a sufficient condensate collector and discharge at least 1 m before the outlet of the boiler.
- The bends used must be larger than 90° to guarantee the gradient and a good seal on the lip rings.
- For Italy: The flue gas outlet must be carefully positioned so that the flue gases are dispersed correctly, in accordance with UNI - CIG 7129.

■ Condensation

- Direct connection of the flue gas outlet to structural ducts is not permitted because of condensation.
- If condensate from a plastic or stainless steel pipe section can flow back to an aluminium part in the flue gas outlet, this condensate must be discharged via a trap before it reaches the aluminium.
- Newly installed aluminium flue gas pipes with longer lengths can produce relatively larger quantities of corrosion products. Also casting sand and processing metal chips from new boilers can fill the boiler trap on short term after installation. Check and clean the trap more often for these reasons.

4.7 Requirements for the electrical connections

- Establish the electrical connections in accordance with all current local and national regulations and standards.
- Electrical connections must only be made by qualified installers, and only while the power supply is disconnected.
- The appliance is completely pre-wired. Never change the internal connections of the control panel.
- Always connect the appliance to a well-earthed installation.
- If the power cord is permanently connected, you must always install a main bipolar switch with an opening gap of at least 3 mm (EN 60335-1).
- For France: The standard NF C 15,100.
- For Italy: The standard CEI.
- The wiring must comply with the instructions in the electrical diagrams.
- Follow the recommendations in this manual.
- Separate the sensor cables from the 230 V cables
- Outside the appliance: Use 2 cables spaced at least 10 cm apart.

Make sure the following requirements are met when connecting the cables to the PCB connectors:

Tab.34 PCB connectors

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

4.8 Water quality and water treatment



Notice

Water quality

Damage to the product.
Warranty void.

- Make sure the water quality requirements are fulfilled.

For this appliance, the quality of the heating water must comply with all requirements as listed in **VDI 2035**. If water quality requirements for other components in the system are stated, the most stringent requirements apply.

If water quality is not met, consult a specialist.

Tab.35 Water quality requirements according to VDI 2035

Heat exchanger material	Unit	Aluminium
Degree of acidity at 25 °C	pH	6.5 - 8.5
Electrical conductivity at 25 °C (for low saline water)	µS/cm	≤ 100
Electrical conductivity at 25 °C (for saline water)	µS/cm	100 - 1500
Oxygen (for low saline water)	mg/l	≤ 0.1
Oxygen (for saline water)	mg/l	≤ 0.02
Sum of alkaline earth metals	mmol/l	≤ 0.02

5 Installation examples

5.1 Electrical connections

5.1.1 Introduction to the CB-23 connection PCB

The AMC PRO EVO boiler is equipped with the new generation connection PCB. The **CB-23** offers more connection options and reduces the need for expansion PCBs.



Tab.36 Available options

Options	Description
Configurable input and output	This option makes it possible to configure the input and output connectors. Depending on the desired system, you can select and combine the available configurations. You can change the behaviour of the connectors with a parameter setting.
0-10 V input	This option makes it possible to connect an external 0-10 V heat demand control. You can control the boiler based on temperature or power setpoint.
LIN-Bus	This option makes it possible to connect a LIN pump. The LIN-Bus protocol gives you more insight about the performance, diagnostics and failure detection of the pump.
Cascade management	This option makes it possible to link boilers in a cascade system. The S-Bus connections can be made externally on the Quick connect.



The combination of the extended connections and software features gives you more options as standard. The tables give an overview of the possible combinations.

- You can apply the desired fixed combination.
- You can extend the fixed combination with optional inputs and outputs.



Tab.37 Configurable inputs and outputs - Fixed combinations

Connector ⁽¹⁾	Status ▼ Nc C No	 1	 2
Boiler room ventilation: • Extractor fan (F ₁) • Extractor fan signal (F ₃)	F ₁		F ₃
(1) The letter F indicates a fixed combination of two connectors for each configuration.			

Tab.38 Configurable inputs and outputs - Extend options

Connector ⁽¹⁾⁽²⁾	Status ▼ Nc C No	 1	 2
Hydraulic valve	A ₁		
External gas valve	A ₁		
Status contact	A ₁		
Heat demand signal		A ₂	B ₃
Boiler relief signal		A ₂	B ₃
Blocking input		A ₂	B ₃
Release input		A ₂	B ₃
Gas pressure switch		A ₂	B ₃
(1) The letter A indicates the first option for the connection of each input or output. (2) The letter B indicates the second option for the connection of each input or output.			

Tab.39 Example of possible combinations

Connector	Status ▼ Nc C No	 1	 2
Fixed combination: Boiler room ventilation: • Extractor fan (F ₁) • Extractor fan signal (F ₃) Extended with: • Gas pressure switch (A ₂)	F ₁	A ₂	F ₃

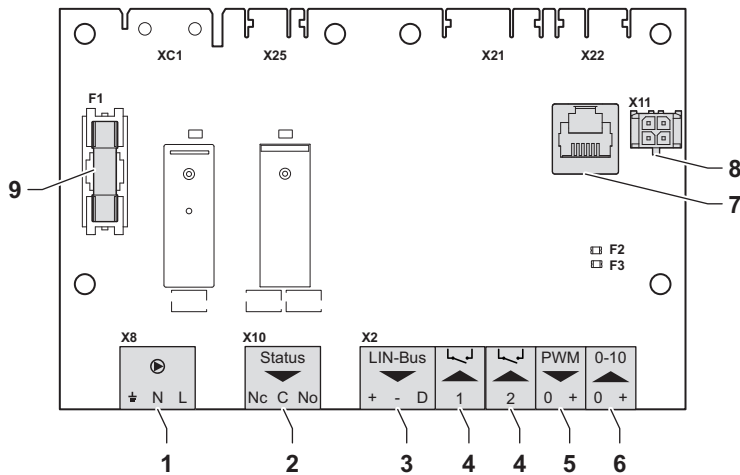
To connect and configure the desired installation, please refer to:

- The following chapter for the available connectors.
- The connecting diagrams in the manual or online.

5.1.2 The CB-23 connection PCB

The **CB-23** is placed in the control box. It provides easy access to all the standard connectors.

Fig.20 Connection PCB CB-23



AD-3002741-03

- 1 Pump connector, page 29
Connect a boiler pump.
- 2 Status connector, page 29
Connect a:
 - Extractor fan, page 30
 - Hydraulic valve, page 30
 - External gas valve, page 30
 - Status contact, page 30
- 3 LIN-Bus connector, page 30
Connect a LIN pump.
- 4 Programmable input connectors, page 30
Connect a:
 - Extractor fan signal, page 30
 - Heat demand signal, page 31
- 5 Pump PWM connector, page 31
Connect a PWM signal for the boiler pump.
- 6 0-10 V connector, page 32
Connect a 0-10 V signal.
- 7 Service port connector, page 32
Connect a service tool.
- 8 L-Bus connector, page 32
Connect the expansion box (L-Bus).
- 9 Fuse F1
Protects all connected components (for example, pumps, valves and PCBs).

■ Pump connector

You can connect a boiler pump to the connector.

Connect the pump as follows:

- Earth
- N** Neutral
- L** Phase

AD-3001306-02

Fig.21 Pump connector



Important

The maximum power consumption is 300 VA.

You can change the post run time, maximum speed and minimum speed with parameters **PP015**, **PP016** and **PP018**.

See also

Pump PWM connector, page 31

■ Status connector

You can connect a fan, range of pumps, two types of valves or a contact to the connector. You can configure it as required. Each configuration has a specific setting.

Connect the fan, pump, valve or contact as follows:

- Nc** Normally closed contact (contact will open when status occurs)
- C** Main contact
- No** Normally opened contact (contact will close when status occurs)

AD-3002781-01

Fig.22 Status connector



Important

The status connector functions as a potential free contact. Apply an external 230 V power supply for a fan, pump and valve.

Fig.23 Extractor fan



AD-3002781-01

Fig.24 Hydraulic valve



AD-3002781-01

Fig.25 External gas valve



AD-3002781-01

Fig.26 Status contact



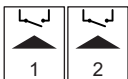
AD-3002781-01

Fig.27 LIN-Bus connector



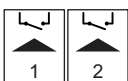
AD-3002779-01

Fig.28 Programmable input connectors



AD-3002780-01

Fig.29 Extractor fan signal



AD-3002780-01

- Extractor fan

You can connect an extractor fan for boiler room ventilation to the connector. When the appliance is active, the fan ventilates the room.

- Hydraulic valve

You can connect a hydraulic valve to the connector. This valve isolates the appliance from the system.

- External gas valve


You can connect an external gas valve to the connector. This valve will follow the behaviour of the gas control valve in the appliance.

- Status contact

You can connect a status contact to the connector. This contact will report the current status of the appliance to an external device or building management system.

■ LIN-Bus connector

You can connect a LIN-Bus pump to the connector. The LIN-Bus controls the pump and receives data from the pump.


 The LIN-Bus pumps from Grundfos have been tested and approved to work with the appliance. Pumps from other brands may also work, but have not been tested.

Connect the LIN-Bus wires as follows:


- + Plus
- Minus
- D Signal

■ Programmable input connectors

You can connect a range of input signals to each connector. The programmable input connectors function as a potential free contact.

 Two programmable connectors are available on the connection PCB. For more connections, you will need to use an expansion PCB.

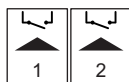
You can configure it as required. Depending on the setting, a type of input signal can be connected.

 The wires are interchangeable. It does not matter which wire is connected to which clamp.

- Extractor fan signal

You can connect an extractor fan feedback signal for boiler room ventilation to the connector. When the extractor fan is on, the contact will close.

Fig.30 Heat demand signal

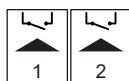


AD-3002780-01

– Heat demand signal

You can connect an on/off contact for central heating to the connector. This will generate a heat demand for central heating to the system.

Fig.31 Boiler relief signal



AD-3002780-01

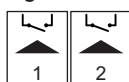
– Boiler relief signal

You can connect a BMS to the connector. This will connect the appliance to a building management system that controls several heating appliances. Use this on/off contact to relieve the appliance for heat demands. The other appliances in the system can still take on heat production. For example:

- When the input is active, the appliance will not produce heat for central heating.
- When the input is active, the appliance will not produce heat for domestic hot water.
- When the input is active, the appliance will not produce heat for central heating and domestic hot water.

The input can be set to opened or closed for the relief of the heat demand.

Fig.32 Blocking input



AD-3002780-01

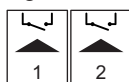
– Blocking input

You can use the connector as a blocking input. This will block the appliance on request for specific types of heat demands. You can configure it as required. For example:

- The appliance will block heat demands for central heating.
- The appliance will block heat demands for domestic hot water.
- The appliance will block heat demands for central heating and domestic hot water.

The input can be set to opened or closed for the blocking of the heat demand. It is also possible to have the appliance show an error code.

Fig.33 Release input



AD-3002780-01

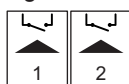
– Release input

You can use the connector as a release input. This will release the appliance on request for specific types of heat demands. You can configure it as required. For example:

- The appliance will activate for domestic hot water and must be released for central heating demands.
- The appliance will not activate for central heating or domestic hot water and must be released for both heat demands.

The input can be set to opened or closed for the release of the heat demand.

Fig.34 Gas pressure switch



AD-3002780-01

– Gas pressure switch

You can connect a gas pressure switch to the connector.

- When the gas pressure is too low, the switch will activate. This will block the appliance for 10 minutes and show the error code **H.01.09**.
- When the gas pressure is too high, the switch will activate. This will block the appliance for 10 minutes and show the error code **H.01.26**.

The input can be set to opened or closed for the switch activation.

Fig.35 Pump PWM connector



AD-3002782-01

■ Pump PWM connector

You can connect a PWM pump signal wire to the connector. The PWM signal modulates and controls the boiler pump.

Connect the PWM signal wires as follows:

- 0 Zero
- + Plus

■ **0-10 V connector**

You can connect a 0-10 V heat demand to the connector. The 0-10 V signal has two modes:

- Control based on temperature setpoint.
- Control based on power setpoint.

Connect the 0-10 V signal as follows:

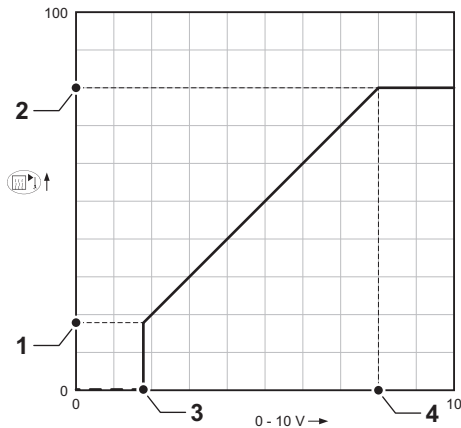
- Minus
- + Plus

Fig.36 0-10 V connector



AD-3001304-03

Fig.37 0-10 V control



AD-3001543-01

You can change the mode of the analogue input with parameter **EP014**:

Temperature control: The 0-10 Volts controls the appliance flow temperature. The output varies between the minimum and maximum value on the basis of the flow temperature setpoint with a fixed power setpoint.

Power control: The 0-10 Volts controls the appliance heat output. The output will be converted towards a 0 – 100 % relative power setpoint with a fixed temperature setpoint. The minimum output is linked to the appliance modulation depth.

- 1 Minimum setpoint for temperature (parameter **EP030**) or power (parameter **EP032**)
- 2 Maximum setpoint for temperature (parameter **EP031**) or power (parameter **EP033**)
- 3 Minimum setpoint for voltage (parameter **EP034**)
- 4 Maximum setpoint for voltage (parameter **EP035**)

The measured values can be read with signals:

- EM010** The voltage on the 0-10 V input.
- EM018** When control based on temperature is set, the calculated temperature setpoint.
- EM021** When control based on heat output is set, the calculated power setpoint.

■ **Service port connector**

You can connect a service tool to the connector. The service tool connects to the following devices:

- Laptop
- Smart phone
- Tablet

You can use the Service tool Smart Service app to enter, change and read out various settings.

■ **L-Bus connector**

You can connect the cable for the expansion box to the connector. This extends the local bus to the expansion box.

💡 The connector is already in use for the expansion box.

Fig.38 Service port connector (RJ12)



AD-3003112-01

Fig.39 L-Bus connector



AD-3003113-01

5.1.3 The SCB-10 expansion PCB

The SCB-10 has the following features:

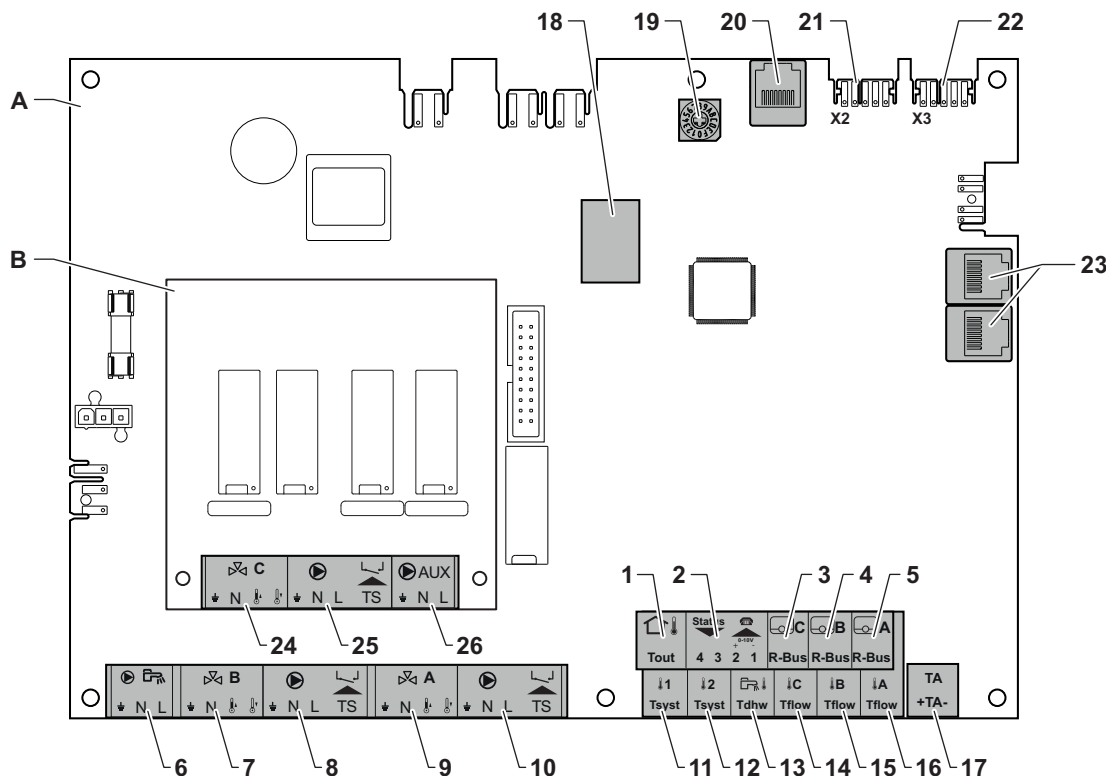
- Control of 2 (mixing) zones
- Control of one domestic hot water (DHW) zone
- Cascade layout

You can combine the SCB-10 with the AD249. This will add the following features:

- Control of 1 extra (mixing) zone
- DHW circulation loop

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

Fig.40 SCB-10 with AD249



AD-3002665-01

- | | |
|---|---|
| <p>A SCB-10
 B AD249 (optional)</p> <p>1 Outdoor temperature sensor
 2 Programmable and 0-10 V input
 3 Room temperature sensor - circuit C
 4 Room temperature sensor - circuit B
 5 Room temperature sensor - circuit A
 6 DHW cylinder pump
 7 Mixing valve - circuit B
 8 Pump and thermal switch - circuit B
 9 Mixing valve - circuit A
 10 Pump and thermal switch - circuit A</p> | <p>11 System sensor 1
 12 System sensor 2
 13 DHW temperature sensor
 14 Flow temperature sensor - circuit C
 15 Flow temperature sensor - circuit B
 16 Flow temperature sensor - circuit A
 17 Impressed current anode
 18 Modbus connectors
 19 Coding wheel, selects the producer number in the cascade in Mod-Bus
 20 S-BUS connector
 21 End connector for L-BUS connection
 22 L-BUS connector
 23 S-BUS connector
 24 Mixing valve - circuit C (optional)
 25 Pump and thermal switch - circuit C (optional)
 26 DHW circulation loop pump (optional)</p> |
|---|---|

■ **Connecting a domestic hot water (DHW) pump**

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

Fig.41 DHW pump connector



AD-4000123-02

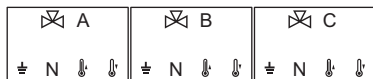
Connect the pump as follows:

- ⊥ Earth
- N Neutral
- L Phase

■ **Connecting a mixing valve**

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

Fig.42 Mixing valve connectors

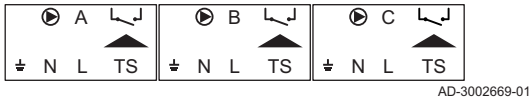


AD-3002668-01

Connect the mixing valve as follows:

- ⊥ Earth
- N Neutral
- ⏏ Open
- ⏏ Close

Fig.43 Pump with protection thermostat connector



■ Connecting the pump with a protection thermostat

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

Connect the pump and the protection thermostat as follows:

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

■ Connecting a DHW circulation pump

Connecting a DHW circulation pump. The maximum power consumption is 300 VA.

Fig.44 DHW circulation pump connector



Connect the pump as follows:

- ⏏ Earth
- N Neutral
- L Phase

■ Connecting an outdoor sensor

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

Fig.45 Outdoor sensor



■ Connecting the input/output connector

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

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

Fig.46 Input/output connector



Connect the input/output connector as follows:

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

■ Connecting room thermostats per zone

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

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

The software recognizes which type of thermostat is connected.

■ Connecting system sensors

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

Fig.48 System sensor connectors

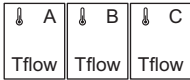


Fig.49 DHW sensor



AD-4000009-03

Fig.50 Contact temperature sensor connectors



AD-4000007-03

Fig.51 Anode connector



AD-4000005-03

■ Connecting the domestic hot water (DHW) sensor

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

■ Connecting contact temperature sensors

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

■ Connecting the DHW cylinder anode

You can connect a TAS anode (Titan Active System) for a DHW cylinder to the connector.

Connect the anode as follows:

- + Plus, connection on the DHW cylinder
- Minus, connection on the anode



Important

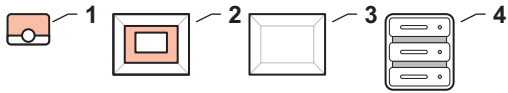
If the DHW cylinder does not have a TAS anode, connect the simulation anode (optional).

5.2 Hydraulic diagrams

5.2.1 Symbols used

The diagrams consist of the following symbols:

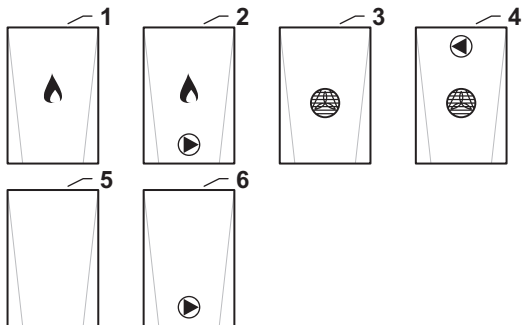
Fig.52 Controllers



AD-6000163-01

- 1 Room unit (thermostat) (R)
- 2 Controller (R)
- 3 Wall box (R)
- 4 Building management system (R)

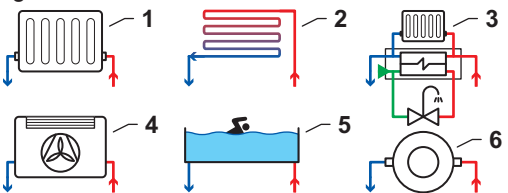
Fig.53 Producers



AD-6000164-01

- 1 Gas boiler (A)
- 2 Gas boiler with internal pump (A)
- 3 Heat pump (A)
- 4 Heat pump with internal pump (A)
- 5 Undefined producer (A)
- 6 Undefined producer with internal pump (A)

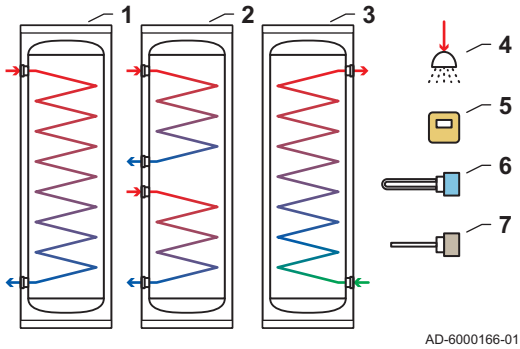
Fig.54 Consumers



AD-6000165-01

- 1 Radiator
- 2 Underfloor heating
- 3 Heat interface unit
- 4 Fan convactor
- 5 Swimming pool
- 6 Process heat (generic heating)

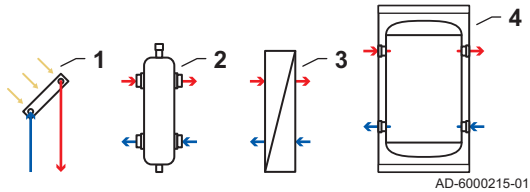
Fig.55 Domestic hot water



- 1 Domestic hot water cylinder with single coil
- 2 Domestic hot water cylinder with double coil
- 3 Domestic hot water cylinder with hygienic coil
- 4 Shower
- 5 Internal control sensor (S)
- 6 Immersion heater (B)
- 7 Sacrificial anode (D)

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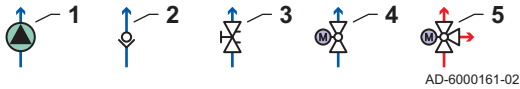
Fig.56 Hydraulic separation



- 1 Solar collector
- 2 Low loss header (H)
- 3 Plate heat exchanger (H)
- 4 Buffer tank (H)

AD-6000215-01

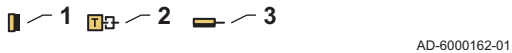
Fig.57 Components



- 1 Pump (P)
- 2 Non-return valve
- 3 Balancing valve
- 4 Hydraulic valve (V)
- 5 Diverter valve (V)

AD-6000161-02

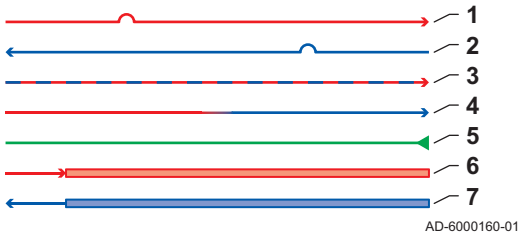
Fig.58 Sensors



- 1 Outdoor temperature sensor (S)
- 2 Temperature sensor (S)
- 3 Safety temperature limiter (S)

AD-6000162-01

Fig.59 Tubing

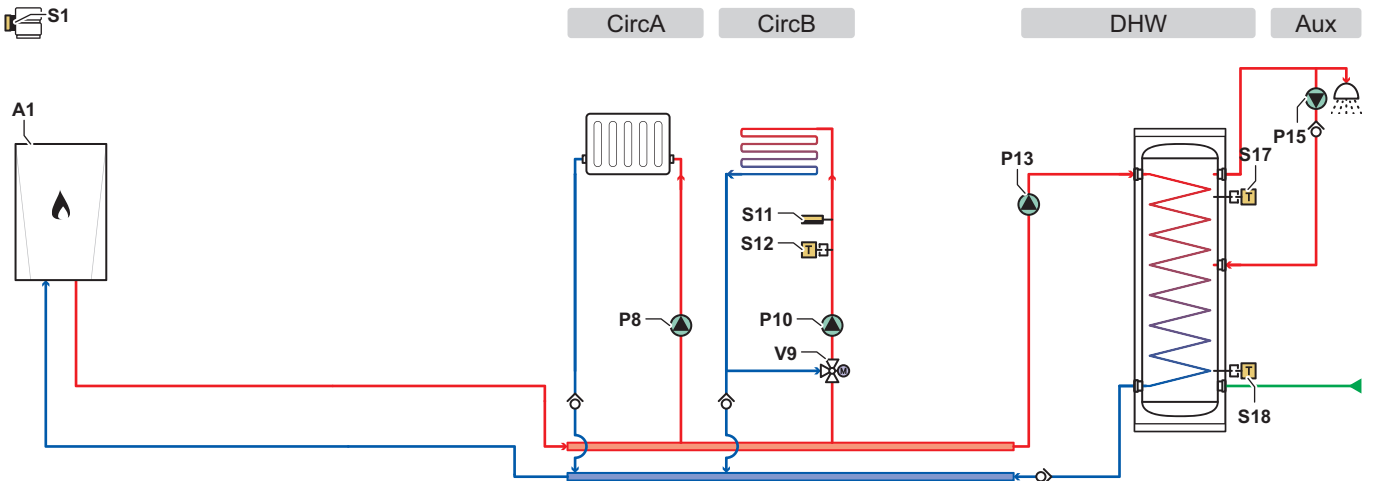


- 1 Flow pipe
- 2 Return pipe
- 3 Heating or cooling pipe
- 4 Flow to return pipe
- 5 Water supply
- 6 Flow collector pipe
- 7 Return collector pipe

AD-6000160-01

5.2.2 Single boiler - 2 circuits (Direct circuit, Underfloor mixing circuit) - Domestic hot water cylinder with two sensors

Fig.60 Diagram and components - 6000254



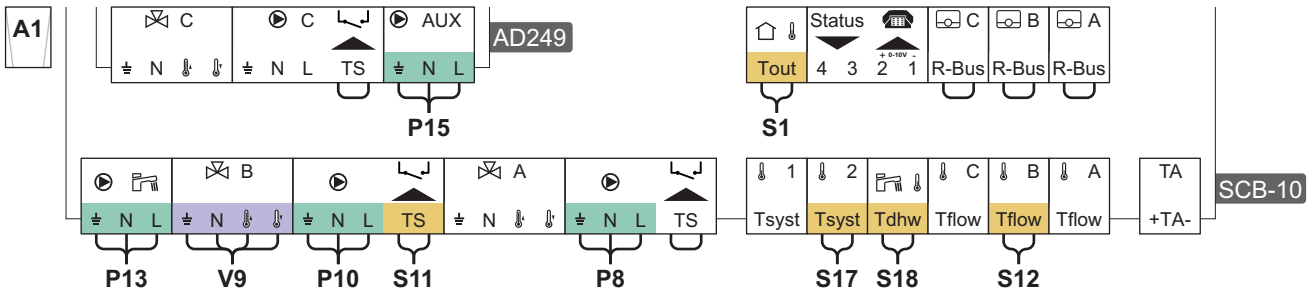
AD-6000254-01

- CircA** Circuit A (Direct circuit)
- CircB** Circuit B (Underfloor mixing circuit)
- DHW** DHW circuit (Domestic hot water cylinder with two sensors)

- Aux** Auxiliary circuit (Domestic hot water loop)
- A1** Boiler with SCB-10 and AD249
- P8** Circuit A pump
- P10** Circuit B pump
- P13** DHW charge pump
- P15** DHW circulation loop pump

- S1** Outdoor temperature sensor
- S11** Circuit B safety temperature limiter
- S12** Circuit B flow temperature sensor
- S17** DHW cylinder top temperature sensor
- S18** DHW cylinder bottom temperature sensor
- V9** Circuit B mixing valve

Fig.61 Electrical connections - Boiler A1



AD-6000107-01

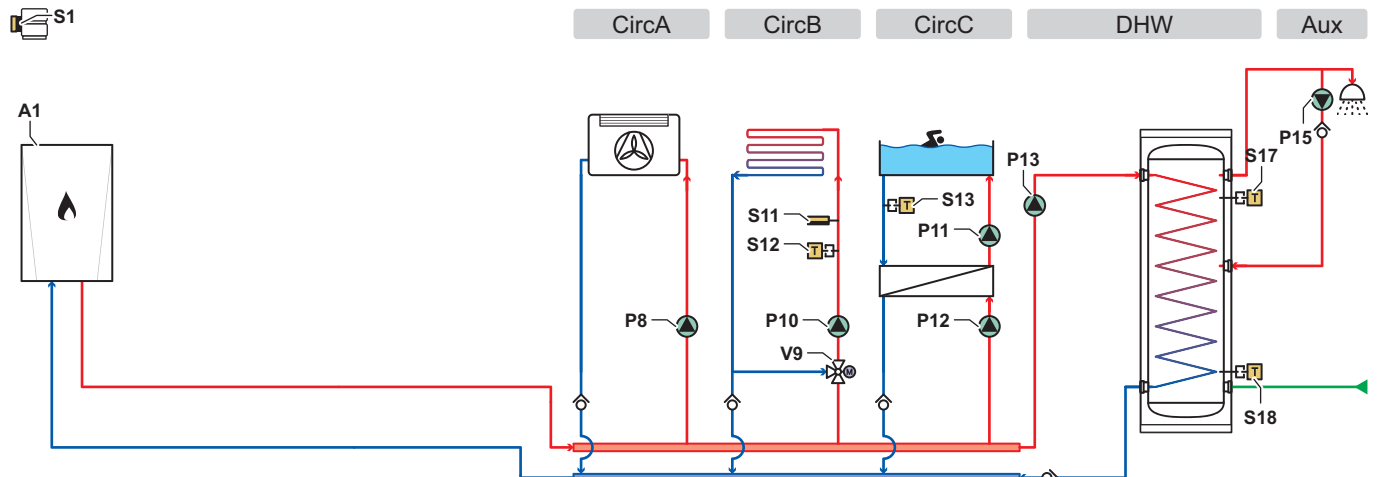
Tab.40 Parameter list

Code ⁽¹⁾	Display text	Set on device	Set to
CP020	Zone Function	SCB-10	1 = Direct
CP021	Zone Function	SCB-10	2 = Mixing Circuit
CP022	Zone Function	SCB-10	10 = DHW Layered
CP023	Zone Function	SCB-10	0 = Disable
CP024	Zone Function	SCB-10	0 = Disable
CP294	ConfigZonePumpOut	SCB-10	8 = DHW looping
EP037	Sensor input config	SCB-10	2 = DHW tank top

(1) Use this parameter code with the search function (Search datapoints) of the control panel to access the parameter.

5.2.3 Single boiler - 3 circuits (Underfloor mixing circuit, Fan coil unit (direct), Swimming pool (direct)) - Domestic hot water cylinder with two sensors

Fig.62 Diagram and components - 6000255

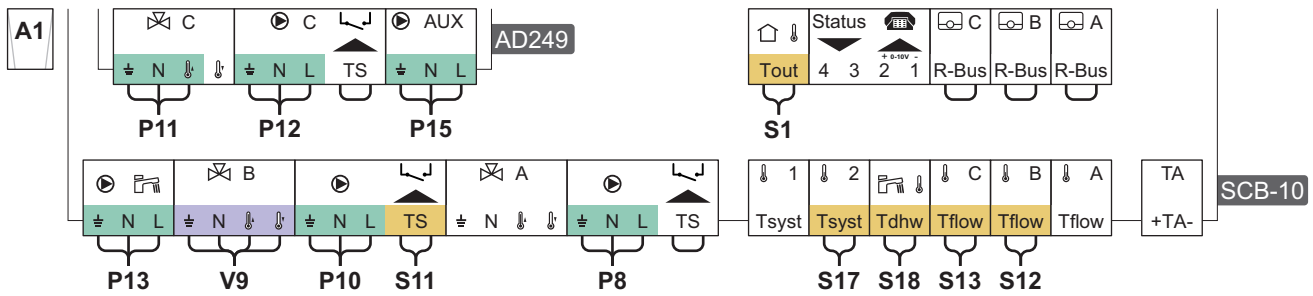


AD-6000255-01

- CircA** Circuit A (Underfloor mixing circuit)
- CircB** Circuit B (Fan coil unit (direct))
- CircC** Circuit C (Swimming pool (direct))
- DHW** DHW circuit (Domestic hot water cylinder with two sensors)
- Aux** Auxiliary circuit (Domestic hot water loop)
- A1** Boiler with SCB-10 and AD249
- P8** Circuit A pump
- P10** Circuit B pump
- P11** Swimming pool pump

- P12** Circuit C pump
- P13** DHW charge pump
- P15** DHW circulation loop pump
- S1** Outdoor temperature sensor
- S11** Circuit B safety temperature limiter
- S12** Circuit B flow temperature sensor
- S13** Circuit C return temperature sensor
- S17** DHW cylinder top temperature sensor
- S18** DHW cylinder bottom temperature sensor
- V9** Circuit B mixing valve

Fig.63 Electrical connections - Boiler A1



AD-6000109-01

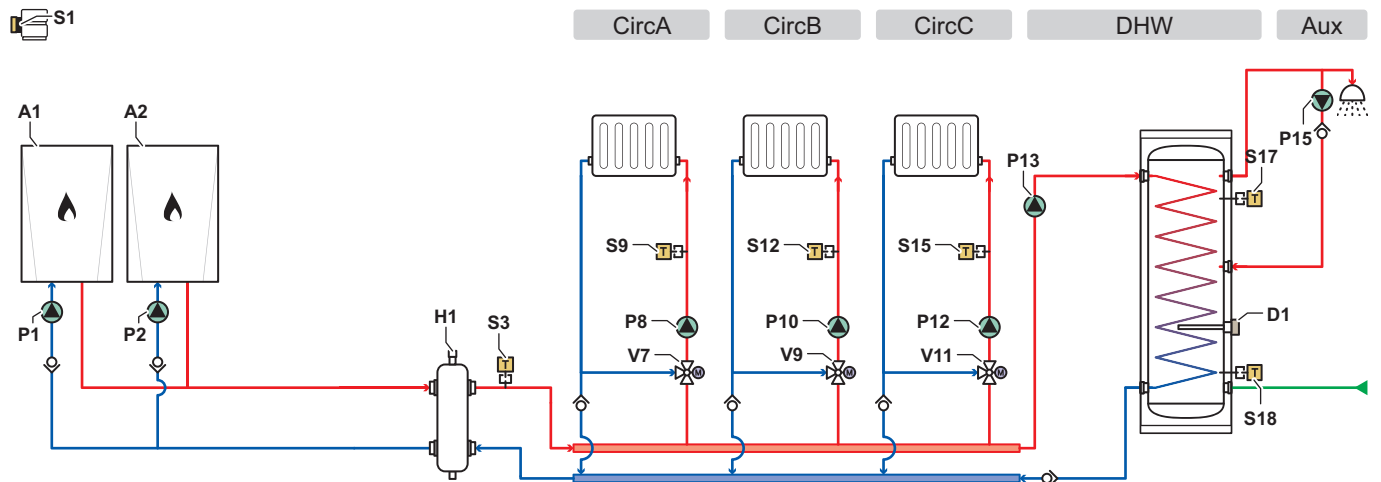
Tab.41 Parameter list

Code ⁽¹⁾	Display text	Set on device	Set to
CP020	Zone Function	SCB-10	5 = Fan Convector
CP021	Zone Function	SCB-10	2 = Mixing Circuit
CP022	Zone Function	SCB-10	10 = DHW Layered
CP023	Zone Function	SCB-10	3 = Swimming pool
CP024	Zone Function	SCB-10	0 = Disable
CP294	ConfigZonePumpOut	SCB-10	8 = DHW looping
EP037	Sensor input config	SCB-10	2 = DHW tank top

(1) Use this parameter code with the search function (Search datapoints) of the control panel to access the parameter.

5.2.4 Cascade of two boilers - 3 circuits (Mixing circuit, Mixing circuit, Mixing circuit) - Domestic hot water cylinder with two sensors

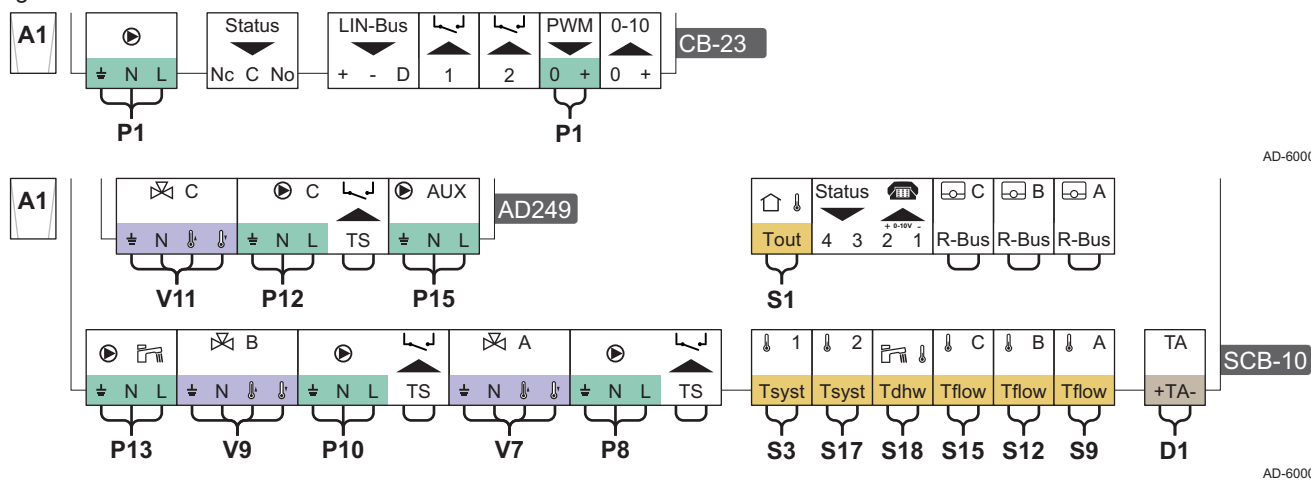
Fig.64 Diagram and components - 6000256



AD-6000256-01

- CircA** Circuit A (Mixing circuit)
- CircB** Circuit B (Mixing circuit)
- CircC** Circuit C (Mixing circuit)
- DHW** DHW circuit (Domestic hot water cylinder with two sensors)
- Aux** Auxiliary circuit (Domestic hot water loop)
- A1** Lead boiler with CB-23, SCB-10 and AD249
- A2** Lag boiler with CB-23 and SCB-10
- D1** Sacrificial anode
- H1** Low loss header
- P1** Appliance A1 pump
- P2** Appliance A2 pump
- P8** Circuit A pump
- P10** Circuit B pump
- P12** Circuit C pump
- P13** DHW charge pump
- P15** DHW circulation loop pump
- S1** Outdoor temperature sensor
- S3** Low loss header flow temperature sensor
- S9** Circuit A flow temperature sensor
- S12** Circuit B flow temperature sensor
- S15** Circuit C flow temperature sensor
- S17** DHW cylinder top temperature sensor
- S18** DHW cylinder bottom temperature sensor
- V7** Circuit A mixing valve
- V9** Circuit B mixing valve
- V11** Circuit C mixing valve

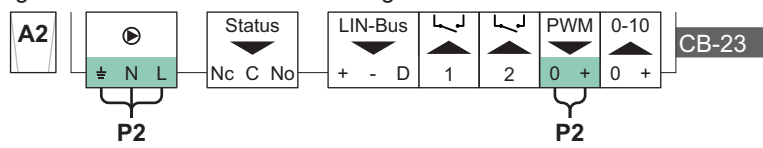
Fig.65 Electrical connections - Lead boiler A1



AD-6000073-01

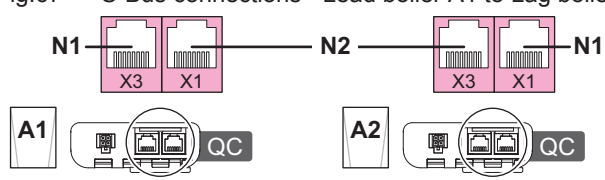
AD-6000259-01

Fig.66 Electrical connections - Lag boiler A2



AD-6000074-01

Fig.67 S-Bus connections - Lead boiler A1 to Lag boiler A2



AD-6000157-01

N1 S-Bus terminator

N2 S-Bus connection between appliances

Tab.42 Parameter list

Code ⁽¹⁾	Display text	Set on device	Set to
CP020	Zone Function	SCB-10	2 = Mixing Circuit
CP021	Zone Function	SCB-10	2 = Mixing Circuit
CP022	Zone Function	SCB-10	10 = DHW Layered
CP023	Zone Function	SCB-10	2 = Mixing Circuit
CP024	Zone Function	SCB-10	8 = Time Program
CP294	ConfigZonePumpOut	SCB-10	8 = DHW looping
EP037	Sensor input config	SCB-10	2 = DHW tank top

(1) Use this parameter code with the search function (Search datapoints) of the control panel to access the parameter.

6 Appendix

6.1 ErP information

6.1.1 Product fiche

Tab.43 Product fiche

De Dietrich – AMC PRO EVO		35	45	65	90	115
Seasonal space heating energy efficiency class		A	A	A	-	-
Rated heat output (<i>Prated or Psup</i>)	kW	33	40	61	84	104
Seasonal space heating energy efficiency	%	92	93	93	-	-

De Dietrich – AMC PRO EVO		35	45	65	90	115
Annual energy consumption	GJ	103	124	189	-	-
Sound power level L_{WA} indoors	dB	52	53	55	60	59

- III The value of the mathematical expression: $294/(11 \cdot \text{Prated})$, whereby 'Prated' is related to the preferential space heater.
 IV The value of the mathematical expression $115/(11 \cdot \text{Prated})$, whereby 'Prated' is related to the preferential space heater.

Tab.44 Weighting of boilers

$P_{sup} / (Prated + P_{sup})^{(1)(2)}$	II, package without hot water storage tank	II, package with hot water storage tank
0	0	0
0.1	0.3	0.37
0.2	0.55	0.70
0.3	0.75	0.85
0.4	0.85	0.94
0.5	0.95	0.98
0.6	0.98	1.00
≥ 0.7	1.00	1.00

(1) The intermediate values are calculated by linear interpolation between the two adjacent values.
 (2) Prated is related to the preferential space heater or combination heater.

6.2 EC Declaration of conformity

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



You can go to the website for the declaration of conformity: <https://declaration-of-conformity.bdrthermeagroup.com>

Fig.69 QR code



AD-3001616-01

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