

## Installation manual Cascade system

Quinta Ace S

Dear Customer,

Thank you very much for buying this appliance. Please read through the manual carefully before using the product, and keep it in a safe place for later reference. In order to ensure continued safe and efficient operation we recommend that the product is serviced regularly. Our service and customer service organisation can assist with this. We hope you enjoy years of problem-free operation with the product.

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# 1 Safety


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## 1.1 Liabilities

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### 1.1.1 Manufacturer's liability

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Our products are manufactured in compliance with the requirements of the various directives applicable. They are therefore delivered with the  marking and any documents necessary. In the interests of the quality of our products, we strive constantly to improve them. We therefore reserve the right to modify the specifications given in this document.

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

- Failure to abide by the instructions on installing and maintaining the product.
- Failure to abide by the instructions on using the product.
- Faulty or insufficient maintenance of the product.

### 1.1.2 Installer's liability

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

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

### 1.1.3 User's liability

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

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

# 2 About this manual

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## 2.1 General

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This manual is intended for the installer.



### Important

Some illustrations in this manual show parts that may not be available in your market.

## 2.2 Additional documentation

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The following documentation is available in addition to this manual:

- Product information

## 2.3 Symbols used in the manual

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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.

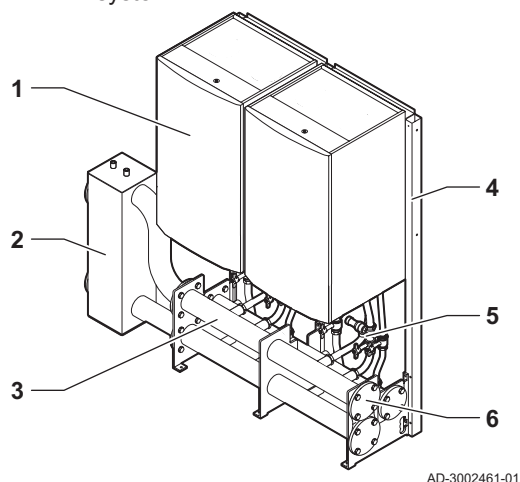


Direct menu navigation, confirmations will not be shown. Use if you are familiar with the system.

## 3 Description of the product

### 3.1 Main components

Fig.1 Main components of a cascade system



AD-3002461-01

Tab.1 Main components

Item	Description	Function
1	Appliance	The wall-hung boiler used in cascade.
2	Hydraulic separator	A hydraulic separator between the boiler side and system side of an installation maintains a correct water flow and a constant flow temperature. A hydraulic separator can be a plate heat exchanger or a low loss header.
3	Collector pipe	A collector pipe assembly combines the flow, return and gas pipes into a single frame. A 40 mm condensate collector pipe (not supplied) can be installed in the frame. Holes in the frame allow the pipe to be fitted to the left or right with a downwards slope.
4	Supporting frame	Floor standing supporting frames are needed when a wall is not available. Supporting frames consists of I-poles, L-poles and intermediate frames.
5	Boiler connection set	Boiler connection sets connect the boilers to the collector pipes.
6	Blanking flange	A blanking flange seals the end of the collector pipe assembly.

### 3.2 Cascade types

Tab.2 Cascade types

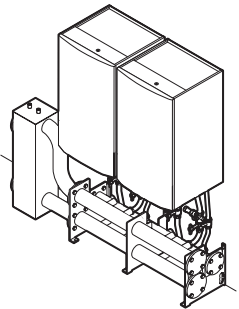
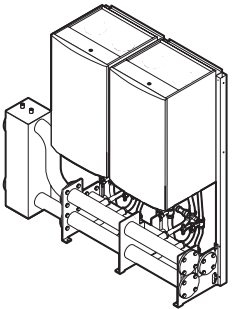
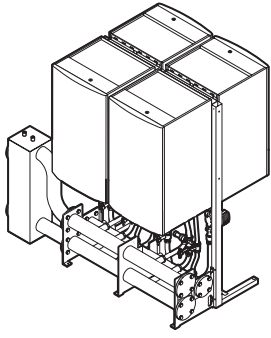
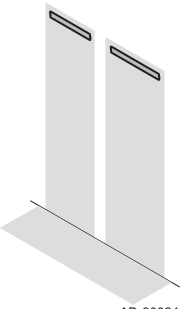
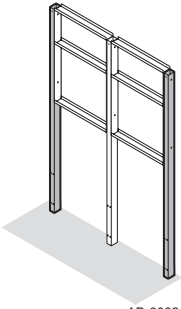
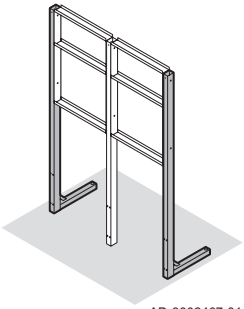
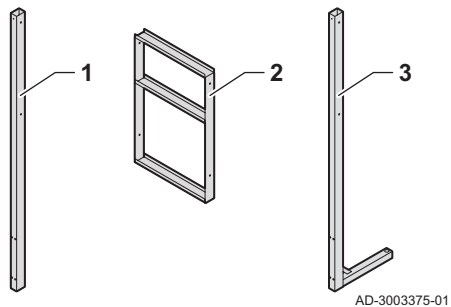
Cascade type	In-line wall mounted configuration	In-line standing configuration	Back-to-back configuration
Description	Boilers in line, mounted to the wall. The collector pipe assembly is mounted to the wall. The frame consists of wall brackets.	Boilers in line, mounted to the frame. The collector pipe assembly is mounted to the frame. The frame consists of I-poles.	Boilers back to back, mounted to the frame. The collector pipe assembly is mounted to the frame. The frame consists of I-poles and L-poles.
Example	 AD-3002462-01	 AD-3002463-01	 AD-3002464-01
Frame type	 AD-3002465-01	 AD-3002466-01	 AD-3002467-01

Fig.2 Supporting frame components



- 1 I-pole
- 2 Intermediate frame
- 3 L-pole

## 4 Before installation

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### 4.1 Installation regulations

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**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 Choice of the location

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#### 4.2.1 Boiler room

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If the combined maximum load of the cascade system is higher than 130 kW, the boiler room must comply with specific regulations.



**See**

- The local regulations.
- BS6644: Specification for the installation and maintenance of gas-fired hot water boilers of rated inputs between 70 kW (net) and 1.8 MW (net)

### 4.3 Requirements for water connections

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- 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

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- We recommend installing a central heating filter in the return pipe to prevent clogging of boiler components.

#### 4.3.2 Requirements for the condensate drain

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- The drain pipe must be  $\varnothing$  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.

### 4.4 Requirements for expansion vessels

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An expansion vessel must be installed at each boiler.

When a plate heat exchanger is installed, an additional expansion vessel must be fitted on the boiler side of the heat exchanger. A blanking flange set with an expansion vessel connection is available separately for this purpose.

### 4.5 Choosing a heat exchanger type

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A plate heat exchanger can be used as a hydraulic separator. Refer to the following table to determine the correct plate heat exchanger type.

All values in the table are valid for a  $\Delta T$  of 20 °C.



Tab.3 Plate heat exchanger per boiler type

Number of boilers	Quinta Ace S - 35 kW	Quinta Ace S - 50 kW	Quinta Ace S - 60 kW	Quinta Ace S - 70 kW	Quinta Ace S - 90 kW	Quinta Ace S - 110 kW	Quinta Ace S - 130 kW	Quinta Ace S - 150 kW
2	RHB-60-60	RHB-60-60	RHB-60-80	RHB-60-80	RHB-110-80	RHB-110-160	RHB-110-100	RMB-235-80
3	RHB-60-60	RHB-60-80	RHB-60-100	RHB-110-80	RHB-110-100	RMB-235-80	RMB-235-80	RMB-235-140
4	RHB-60-80	RHB-110-80	RHB-110-80	RHB-110-100	RHB-110-140	RMB-235-120	RMB-235-100	RMB-235-200
5	RHB-60-100	RHB-110-80	RHB-110-100	RHB-110-120	RMB-235-80	RMB-235-160	RMB-235-120	RMB-235-280
6	RHB-60-120	RHB-110-100	RHB-110-120	RHB-110-140	RMB-235-100	RMB-235-200	RMB-235-140	RMB-235-280
7	RHB-110-80	RHB-110-120	RHB-110-140	RMB-235-80	RMB-235-100	RMB-235-260	RMB-235-180	RMB-235-280
8	RHB-110-100	RHB-110-140	RHB-110-160	RMB-235-100	RMB-235-120	RMB-235-280	RMB-235-220	RMB-235-280
9	RHB-110-100	RHB-110-180	RMB-235-100	RMB-235-100	RMB-235-140	RMB-235-280	-	-
10	RHB-110-120	RMB-235-80	RMB-235-100	RMB-235-120	RMB-235-160	RMB-235-280	-	-

## 4.6 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.
- We recommend installing a gas filter to prevent clogging of the gas valve unit.

## 4.7 Requirements for the flue gas discharge system

### 4.7.1 Material



#### Danger

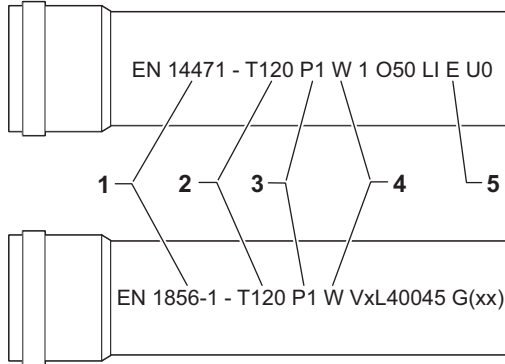
#### Flue gas leakage

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.3 Sample string



AD-3001120-01

- 1 **EN 14471 or EN 1856-1**: The material is UKCA and 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.4 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"> <li>• Plastic<sup>(1)</sup></li> <li>• Stainless steel<sup>(2)</sup></li> <li>• Thick-walled, aluminium<sup>(2)</sup></li> </ul>	<ul style="list-style-type: none"> <li>• With UKCA and/or CE marking</li> <li>• Temperature class T120 or higher</li> <li>• Condensate class W (wet)</li> <li>• Pressure class P1 or H1</li> <li>• Fire resistance class E or better<sup>(3)</sup></li> </ul>	<ul style="list-style-type: none"> <li>• Plastic</li> <li>• Stainless steel</li> <li>• Aluminium</li> </ul>	<ul style="list-style-type: none"> <li>• With UKCA and/or CE marking</li> <li>• Pressure class P1 or H1</li> <li>• Fire resistance class E or better<sup>(3)</sup></li> </ul>
<p>(1) According to EN 14471.                      (2) According to EN 1856.                      (3) According to EN 13501-1.</p>				

#### 4.7.2 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.

##### ■ 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.

#### 4.8 Water quality and water treatment

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.

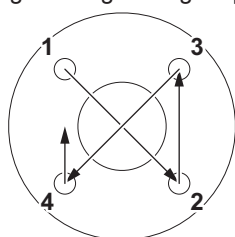
Tab.5 Water quality requirements according to VDI 2035

Heat exchanger material	Unit	Stainless steel
Degree of acidity at 25 °C	pH	8.2 - 10.0
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

### 5.1 General

Fig.4 Flange bolt tightening sequence



AD-3002638-01



#### **Danger** **Leakage**

Risk of explosion, burns and material damage.

- Make sure that the given tightening torques are applied when tightening flange bolts and tube connections.
- Apply two tightening stages for flange bolts. For example: First tighten all the bolts with 20 N·m before tightening to the final torque of 40 N·m.
- Make sure that flange bolts are tightened in a cross wise pattern.
- Always perform a leak detection test before commissioning the installation.



#### **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.

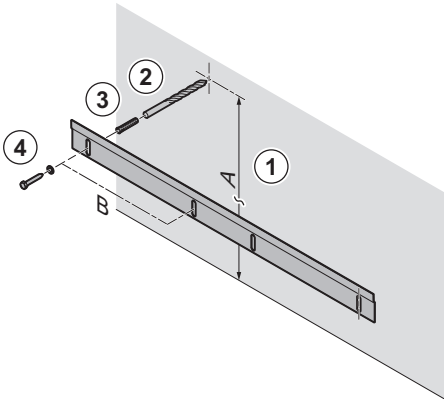
### 5.2 Assembly

#### 5.2.1 Mounting the wall bracket

Specific wall cascade brackets are available to support multiple boilers. When using the single brackets supplied with the boiler, refer to the boiler installation manual for the mounting instructions.

**Caution**  
 Make sure that the wall is suitable for the weight of the boilers and their water content.

Fig.5 Mounting the wall bracket



AD-3002516-01

1. Determine the correct height and number of holes from the table.

Tab.6 Boiler mounting strip height and number of holes (DN65 collector pipes)

Boiler type	A - Height	A - Height with calorifier set	B - Number of holes per boiler position
Quinta Ace S	1747 mm	1747 mm	2

Tab.7 Boiler mounting strip height and number of holes (DN100 collector pipes)

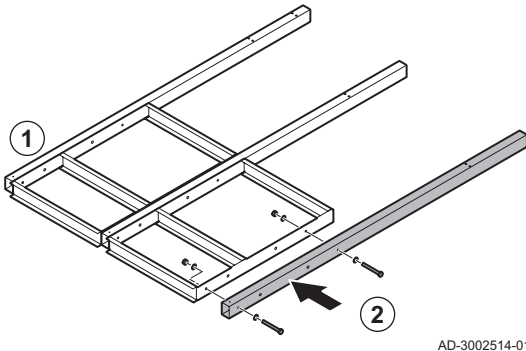
Boiler type	A - Height	A - Height with calorifier set	B - Number of holes per boiler position
Quinta Ace S	1747 mm	1747 mm	2

2. Drill the required number of holes with a 10 mm drill.
3. Insert the wall plugs.
4. Mount the bracket.

5.2.2 Assembling the frames

Proceed as follows to assemble the cascade frames:

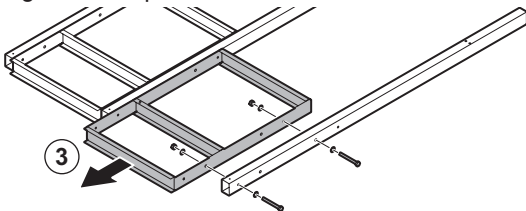
Fig.6 Assemble the frames



AD-3002514-01

1. Put all the frame parts on the floor in the correct order.
2. Assemble the frame parts with the supplied bolts.

Fig.7 Preparation for boiler connection



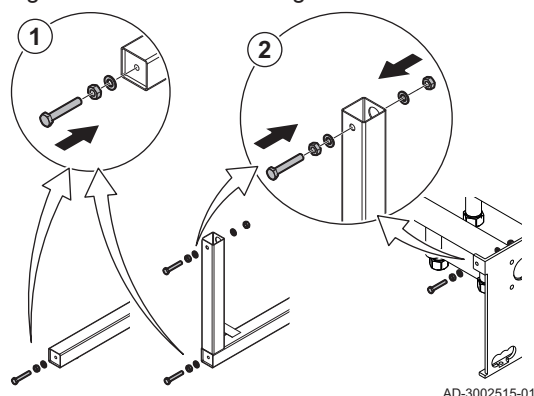
AD-3002658-01

3. For a calorifier connection on a DN65 collector pipe set, mount the frame as indicated in the picture. This height adjustment is only required for the boiler position on which the calorifier connection will be made.

■ Installing the levelling feet (optional)

If the floor of the installation area is not flat, it is advised to install levelling feet. Levelling feet are only available for standing configurations.

Fig.8 Insert the levelling feet



AD-3002515-01

### 5.2.3 Assembling the collector pipes

Be aware that there are two types of levelling feet. Use the levelling feet with the extra nut for holes without thread. Continue as follows:

1. Screw in the levelling feet at the bottom of the I-poles and L-poles.
2. Insert the levelling feet with the extra nut at the end of the L-poles and collector tubes.



#### Caution

Make sure all mounting surfaces are clean before assembling the collector pipes.

Proceed as follows to assemble the collector pipes:

1. Connect the collector pipe segments.

Tightening torque:

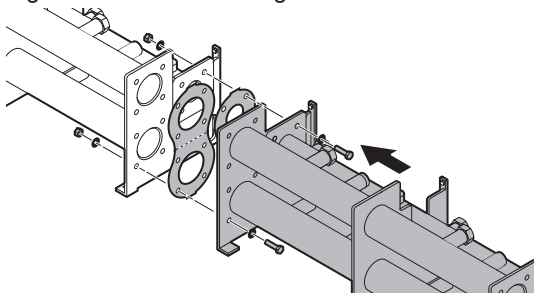
- Flow and return pipe: 35 N·m
- Gas pipe: 35 N·m



#### Warning

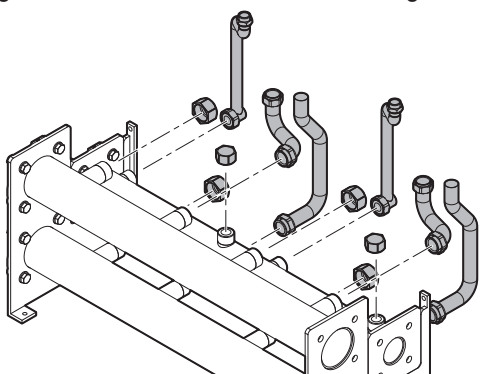
Make sure to put gaskets in between the segments, for both the gas and hydraulic connections.

Fig.9 Connect the segments



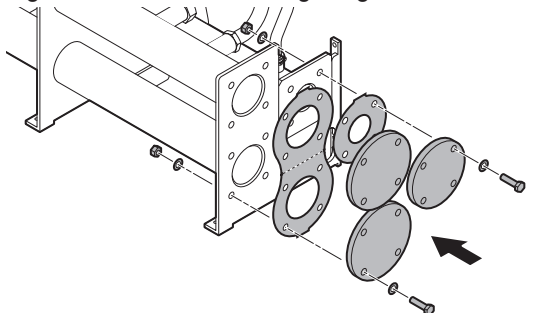
AD-3002576-01

Fig.10 Install the connection set tubing



AD-3003425-01

Fig.11 Install the blanking flanges



AD-3002578-01

2. Install the bottom tubing and blanking caps of the connection sets.  
Tightening torque: Tighten by hand

3. Install the blanking flanges on the end segment.



If a plate heat exchanger is to be installed, use a blanking flange with an expansion vessel connection.

Tightening torque:

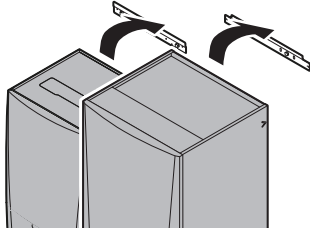
- Flow and return flange: 35 N·m
- Gas flange: 35 N·m

4. Move the assembled collector pipe to its approximate location.

### 5.2.4 Installing the boilers - wall hung type

Proceed as follows to assemble the collector tubes:

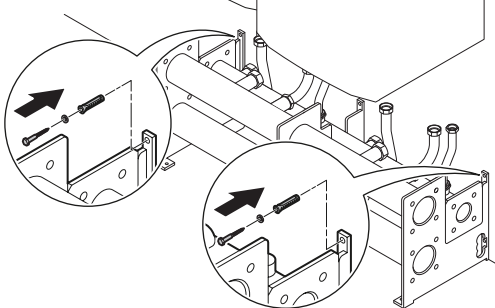
Fig.12 Hang the boilers in place



AD-3002581-02

1. Hang the boilers in place.

Fig.13 Fasten the collector tubes



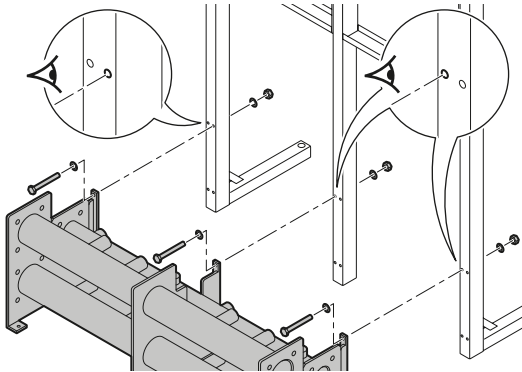
AD-3002585-02

2. Fasten the collector tubes to the wall.

### 5.2.5 Installing the boilers - standing type

Proceed as follows to assemble the collector tubes:

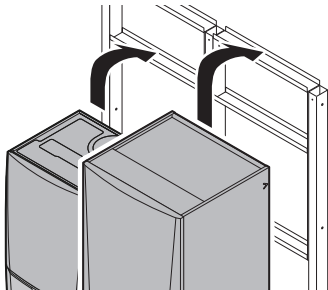
Fig.14 Mount the collector pipes



AD-3002587-02

1. Mount the collector pipes to the frames.

Fig.15 Place the boilers on the frames



AD-3002588-02

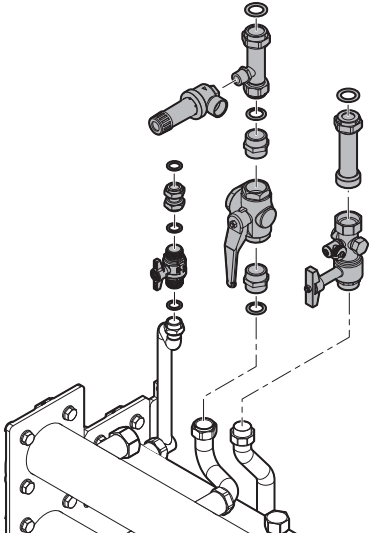
2. Place the boilers on the frames.

If installed, use the levelling feet to level the cascade setup before proceeding to the next chapter.

### 5.2.6 Installing the boiler connection sets

Proceed as follows to install the boiler connection sets:

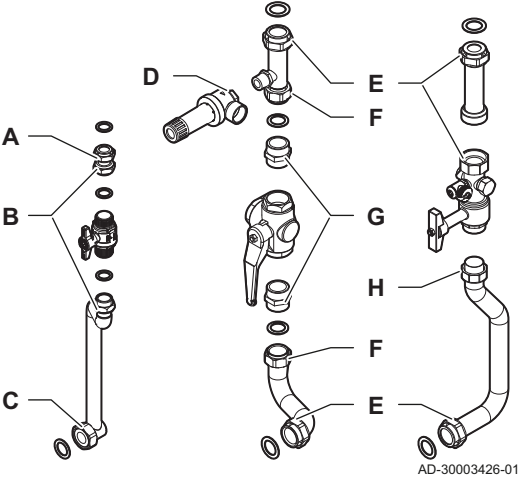
Fig.16 Install the connection sets



AD-3003427-01

1. Install the connection sets.  
Tightening torque: Tighten by hand

Fig.17 Tightening torques



AD-30003426-01

2. Tighten all the connections with the torques specified in the table.

Tab.8 Tightening torques

Item	Tightening torque for ≤ 70 kW versions	Tightening torque for ≥ 90 kW versions
A	15 N·m	15 N·m
B	15 N·m	15 N·m
C	15 N·m	15 N·m
D	15 N·m <sup>(1)</sup>	15 N·m <sup>(2)</sup>
E	15 N·m	30 N·m
F	15 N·m	15 N·m
G	30 N·m <sup>(1)</sup>	30 N·m <sup>(2)</sup>
H	30 N·m	30 N·m

(1) Apply thread sealer, for example PTFE tape.  
(2) Apply thread sealer, for example PTFE tape.

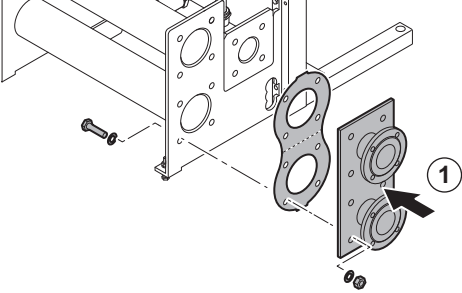
5.3 Hydraulic connections

5.3.1 Installing an adapter plate for the low loss header

A DN65 low loss header can be fitted to a DN100 collector pipe set. In that case, an adapter plate must be installed.

Proceed as follows to install the adapter plate:

Fig.18 Install the adapter plate



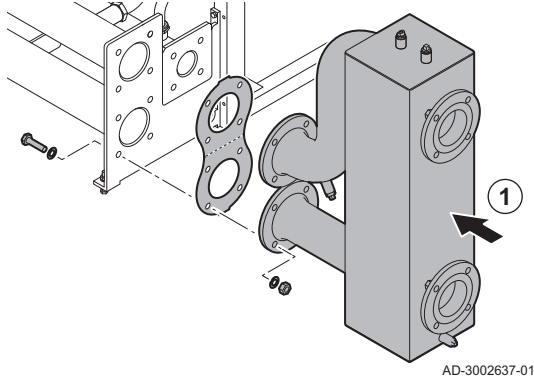
AD-3002636-01

1. Install the adapter plate.  
Tightening torque: 35 N·m

5.3.2 Installing a low loss header

Proceed as follows to install the low loss header:

Fig.19 Install the low loss header



1. Install the low loss header.  
Tightening torque: 35 N·m

### 5.3.3 Installing a plate heat exchanger

The installation procedure differs per plate heat exchanger type:

Tab.9 Heat exchanger mounting

Type	Floor mounting base	Connection type
RHB-60	no	Outer thread 1 1/4"
RHB-110	yes	Outer thread 2"
RMB-235	yes	DN80
RMB-400	yes	DN100

1. Remove as much of the packaging material as possible.
2. Prepare the heat exchanger (only for types with floor mounting base):
  - 2.1. Mount the lifting brackets.
  - 2.2. Carefully lift up the heat exchanger.

Fig.20 Mount the lifting brackets

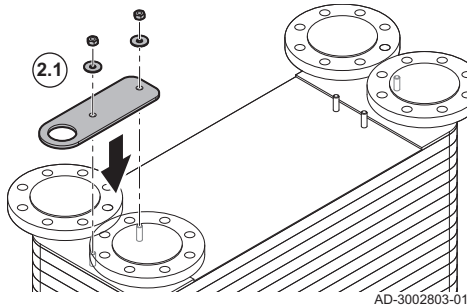
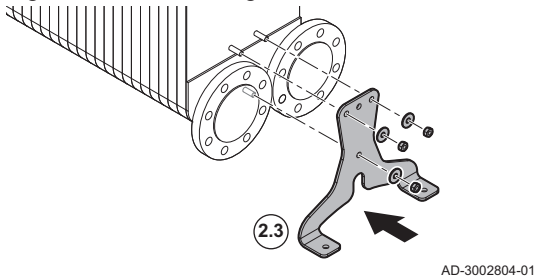


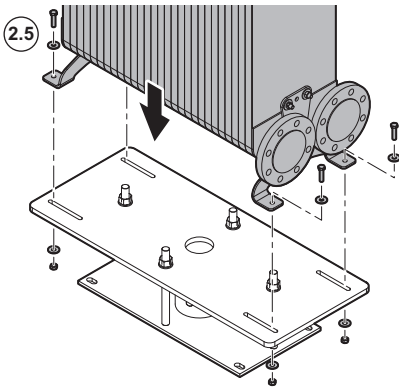
Fig.21 Mount the legs



- 2.3. Mount the legs on both sides.



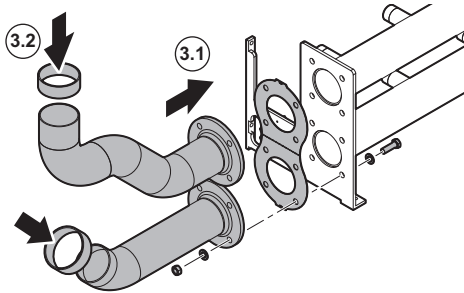
Fig.22 Place the heat exchanger



AD-3002855-01

- 2.4. Lift the heat exchanger onto the base.
- 2.5. Fasten the legs to the base.

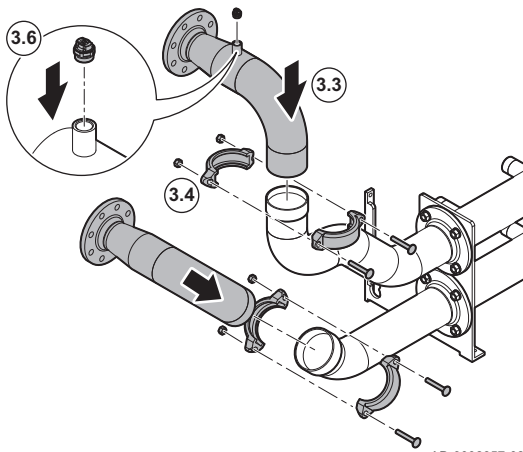
Fig.23 Mount the connection set



AD-3002856-01

- 3. Mount the connection set pipes:
  - 3.1. Mount the bottom part to the collector tubes.
  - 3.2. Mount the rubber gasket.

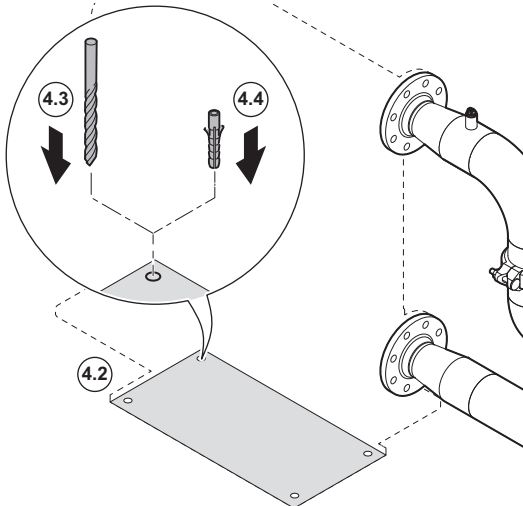
Fig.24 Mount the connection set



AD-3002857-02

- 3.3. Insert the top part into the rubber gasket and hold it in place.
- 3.4. Mount the clamp around the rubber part.
- 3.5. Repeat the previous steps for the other pipe.
- 3.6. Install the bleed valve on the top pipe.

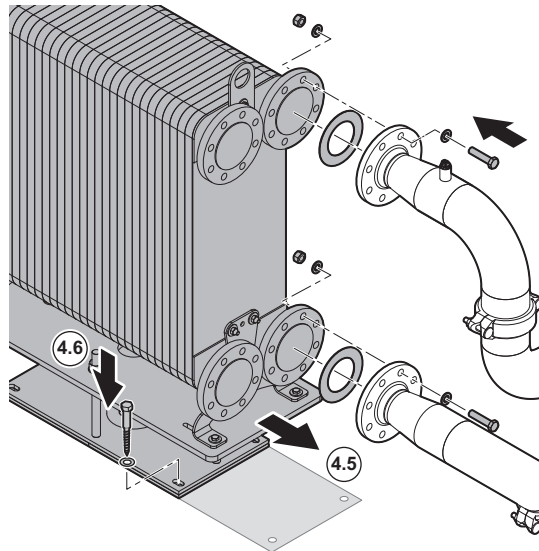
Fig.25 Prepare the holes



AD-3002858-02

- 4. Mount the base plate:
  - 4.1. Position the heat exchanger based on the connection set.
  - 4.2. Mark the holes on the ground.
  - 4.3. Drill the holes.
  - 4.4. Insert the plugs (if required).

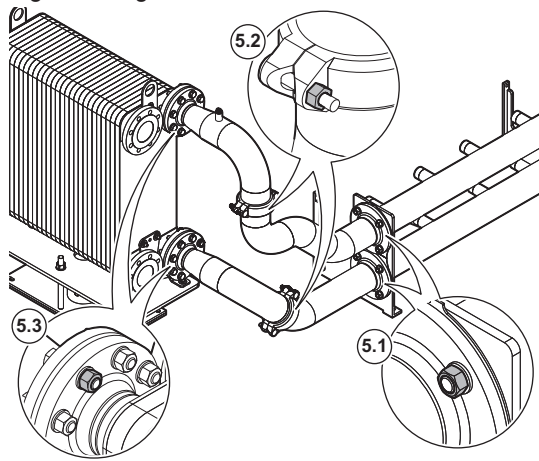
Fig.26 Place the heat exchanger



AD-3002918-02

- 4.5. Put the heat exchanger in place.
- 4.6. Mount the base to the ground using suitable fasteners.

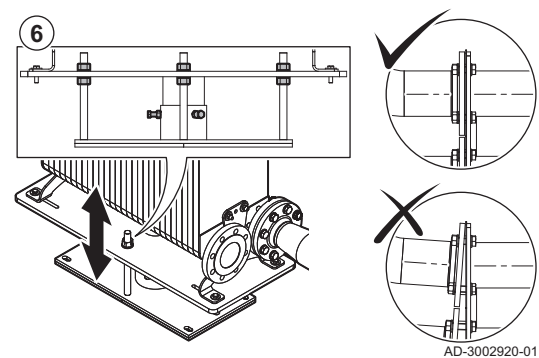
Fig.27 Tighten all connections



AD-3002919-02

- 5. Tighten all connections:  
Work from the collector tubes towards the heat exchanger.
- 5.1. Tighten the flange connections on the collector tubes.
- 5.2. Tighten the pipe clamps.
- 5.3. Tighten the heat exchanger connections.

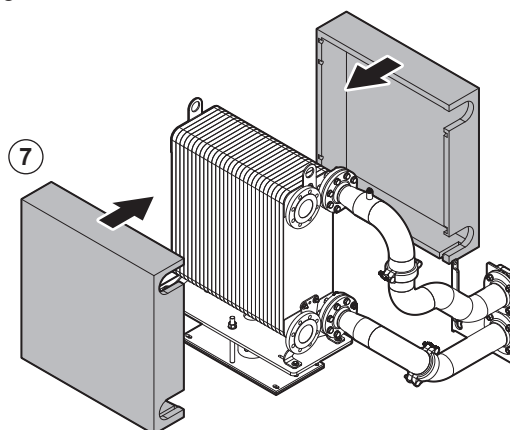
Fig.28 Adjust the height



AD-3002920-01

- 6. Carefully adjust the height and position of the heat exchanger until all connections are free of tension.

Fig.29 Place the insulation

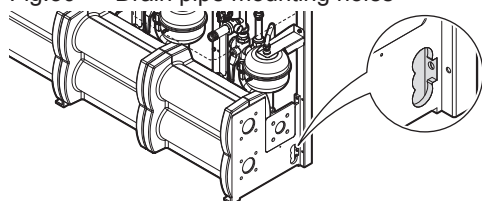


AD-3003026-02

7. Place the insulation.
8. Insulate the connection set.

### 5.3.4 Connecting to the drain

Fig.30 Drain pipe mounting holes



AD-3003429-01


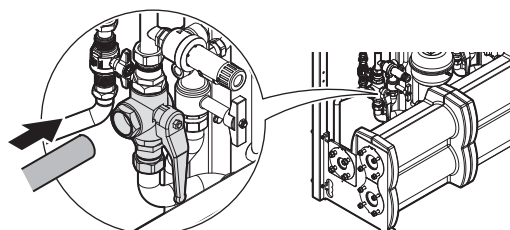
-  The cascade collector tubes have mounting holes to fit a sloping 40 mm drain pipe.

Fig.31 Connecting the isolation valve to the drain



AD-3003430-01

1. Connect the open connection of each isolation valve to a drain.
2. Follow the instructions in the boiler manual to connect each boiler to a drain.

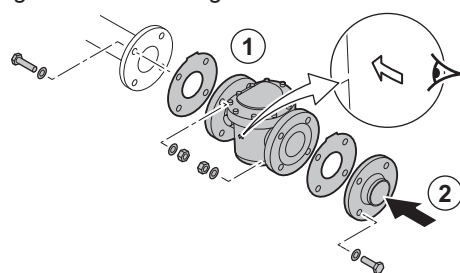
## 5.4 Air inlet/flue gas outlet connections

Refer to the data plate and the boiler documentation for the available flue configurations.

## 5.5 Gas connection

### 5.5.1 Installing the gas filter

Fig.32 Install the gas filter



AD-3002591-01

Proceed as follows to install the gas filter:

1. Install the gas filter.  
Make sure that the flow direction of the gas filter is correct.  
Tightening torque: 35 N·m
2. Install the gas flange.  
Tightening torque: 35 N·m

## 5.6 Completing the installation

1. Connect the cascade to the heating installation.
2. Perform the required installation steps from the manuals of the boilers.

3. Perform the required installation steps from the manual of the controller.
4. Connect the cascade to the gas supply.
5. Fill the heating installation with water.

## 6 Commissioning

### 6.1 Commissioning procedure

1. Perform a leak detection test on the gas connections.
2. Perform a pressurised leak detection test on the water connections. Use cold water at a pressure that is 1.3 times the intended working pressure of the system.
3. If a plate heat exchanger is installed, deaerate the primary side using the valve on the heat exchanger connection set.
4. Perform the commissioning steps on the boilers as described in their manuals.

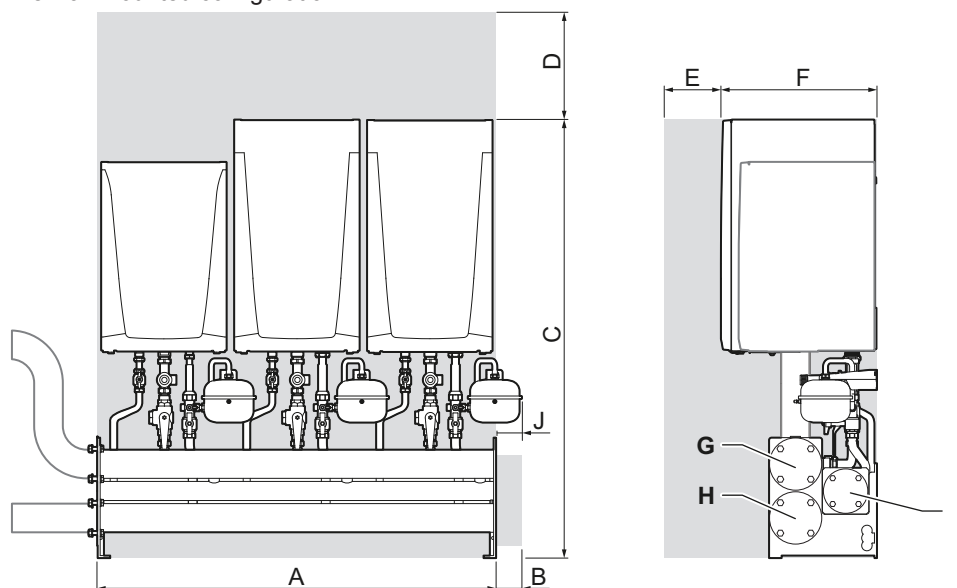
## 7 Technical specifications

### 7.1 Dimensions and connections

#### 7.1.1 Dimensions and connections - Cascade setup

The images in this chapter show DN100 collector pipes.

Fig.33 In-line wall mounted configuration



AD-3003379-01

Tab.10 Dimensions in mm with DN65 collector pipes

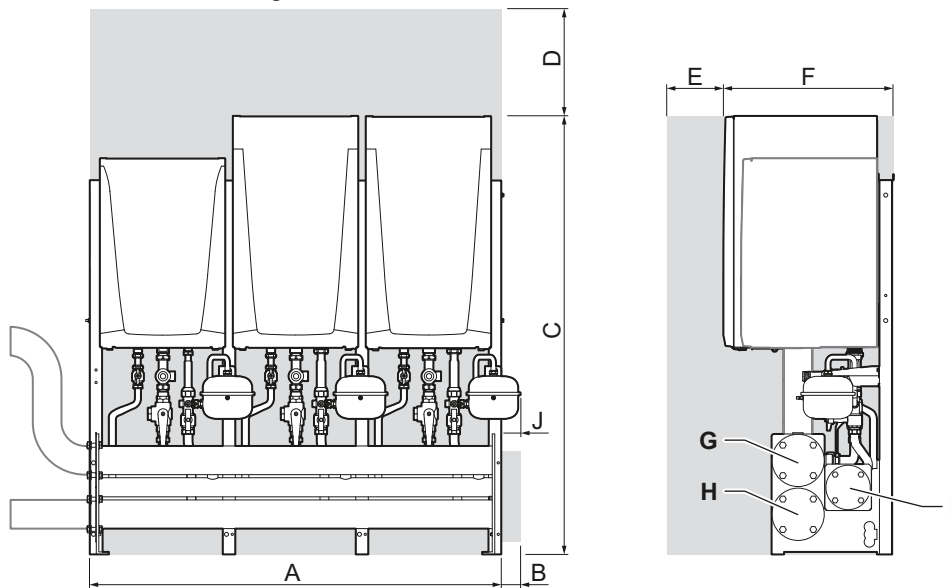
Description	2 boilers	3 boilers	4 boilers	5 boilers	6 boilers	7 boilers	8 boilers
<b>A</b> Total width	1060	1590	2120	2650	3180	3710	4240
<b>B</b> Free space required for mounting the blanking flanges <sup>(1)</sup>	50	50	50	50	50	50	50
<b>C</b> Total height	1579	1579	1579	1579	1579	1579	1579
<b>D</b> Free space above the boilers (recommended minimum) <sup>(2)</sup>	700	700	700	700	700	700	700
<b>E</b> Free space in front of the boilers (recommended)	1000	1000	1000	1000	1000	1000	1000
<b>F</b> Total depth	560	560	560	560	560	560	560

	Description	2 boilers	3 boilers	4 boilers	5 boilers	6 boilers	7 boilers	8 boilers
<b>G</b>	Flow connection	DN65 PN6	DN65 PN6	DN65 PN6	DN65 PN6	DN65 PN6	DN65 PN6	DN65 PN6
<b>H</b>	Return connection	DN65 PN6	DN65 PN6	DN65 PN6	DN65 PN6	DN65 PN6	DN65 PN6	DN65 PN6
<b>I</b>	Gas connection	DN50 PN16	DN50 PN16	DN50 PN16	DN50 PN16	DN50 PN16	DN50 PN16	DN50 PN16
<b>J</b>	Free space required for expansion vessel	102	102	102	102	102	102	102
(1) When fitting a blanking flange with an expansion vessel connection, make sure there is enough space for fitting the vessel. (2) Make sure there is enough space for the flue gas system.								

Tab.11 Dimensions in mm with DN100 collector pipes

	Description	2 boilers	3 boilers	4 boilers	5 boilers	6 boilers	7 boilers	8 boilers
<b>A</b>	Total width	1060	1590	2120	2650	3180	3710	4240
<b>B</b>	Free space required for mounting the blanking flanges <sup>(1)</sup>	50	50	50	50	50	50	50
<b>C</b>	Total height For a cascade with Quinta Ace S ≤ 70 kW boiler models	1579	1579	1579	1579	1579	1579	1579
<b>C</b>	Total height For a cascade with Quinta Ace S ≥ 90 kW boiler models	1748	1748	1748	1748	1748	1748	1748
<b>D</b>	Free space above the boilers (recommended minimum) <sup>(2)</sup>	700	700	700	700	700	700	700
<b>E</b>	Free space in front of the boilers (recommended)	1000	1000	1000	1000	1000	1000	1000
<b>F</b>	Total depth For a cascade with Quinta Ace S ≤ 70 kW boiler models	560	560	560	560	560	560	560
<b>F</b>	Total depth For a cascade with Quinta Ace S ≥ 90 kW boiler models	631	631	631	631	631	631	631
<b>G</b>	Flow connection	DN100 PN6	DN100 PN6	DN100 PN6	DN100 PN6	DN100 PN6	DN100 PN6	DN100 PN6
<b>H</b>	Return connection	DN100 PN6	DN100 PN6	DN100 PN6	DN100 PN6	DN100 PN6	DN100 PN6	DN100 PN6
<b>I</b>	Gas connection	DN65 PN16	DN65 PN16	DN65 PN16	DN65 PN16	DN65 PN16	DN65 PN16	DN65 PN16
<b>J</b>	Free space required for expansion vessel	102	102	102	102	102	102	102
(1) When fitting a blanking flange with an expansion vessel connection, make sure there is enough space for fitting the vessel. (2) Make sure there is enough space for the flue gas system.								

Fig.34 In-line frame mounted configuration



AD-3003380-01

Tab.12 Dimensions in mm with DN65 collector pipes

	Description	2 boilers	3 boilers	4 boilers	5 boilers	6 boilers	7 boilers	8 boilers
<b>A</b>	Total width	1110	1640	2170	2700	3230	3760	4290
<b>B</b>	Free space required for mounting the blanking flanges <sup>(1)</sup>	50	50	50	50	50	50	50
<b>C</b>	Total height	1687	1687	1687	1687	1687	1687	1687
<b>D</b>	Free space above the boilers (recommended minimum) <sup>(2)</sup>	700	700	700	700	700	700	700
<b>E</b>	Free space in front of the boilers (recommended)	1000	1000	1000	1000	1000	1000	1000
<b>F</b>	Total depth	610	610	610	610	610	610	610
<b>G</b>	Flow connection	DN65 PN6	DN65 PN6	DN65 PN6	DN65 PN6	DN65 PN6	DN65 PN6	DN65 PN6
<b>H</b>	Return connection	DN65 PN6	DN65 PN6	DN65 PN6	DN65 PN6	DN65 PN6	DN65 PN6	DN65 PN6
<b>I</b>	Gas connection	DN50 PN16	DN50 PN16	DN50 PN16	DN50 PN16	DN50 PN16	DN50 PN16	DN50 PN16
<b>J</b>	Free space required for expansion vessel	76	76	76	76	76	76	76

(1) When fitting a blanking flange with an expansion vessel connection, make sure there is enough space for fitting the vessel.  
(2) Make sure there is enough space for the flue gas system.

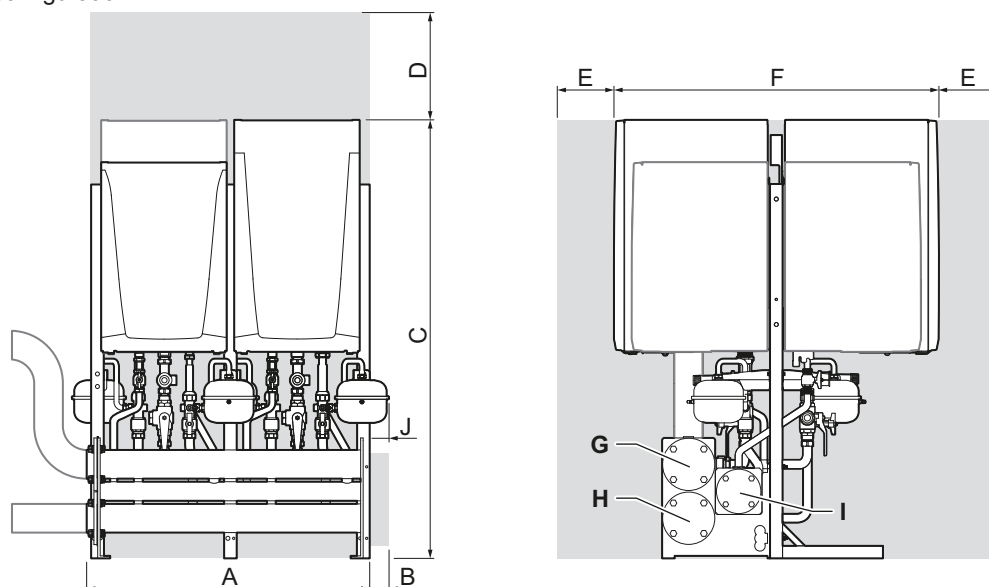
Tab.13 Dimensions in mm with DN100 collector pipes

	Description	2 boilers	3 boilers	4 boilers	5 boilers	6 boilers	7 boilers	8 boilers
<b>A</b>	Total width	1110	1640	2170	2700	3230	3760	4290
<b>B</b>	Free space required for mounting the blanking flanges <sup>(1)</sup>	50	50	50	50	50	50	50
<b>C</b>	Total height For a cascade with Quinta Ace S ≤ 70 kW boiler models	1687	1687	1687	1687	1687	1687	1687
<b>C</b>	Total height For a cascade with Quinta Ace S ≥ 90 kW boiler models	1748	1748	1748	1748	1748	1748	1748
<b>D</b>	Free space above the boilers (recommended minimum) <sup>(2)</sup>	700	700	700	700	700	700	700
<b>E</b>	Free space in front of the boilers (recommended)	1000	1000	1000	1000	1000	1000	1000

	Description	2 boilers	3 boilers	4 boilers	5 boilers	6 boilers	7 boilers	8 boilers
F	Total depth For a cascade with Quinta Ace S ≤ 70 kW boiler models	610	610	610	610	610	610	610
F	Total depth For a cascade with Quinta Ace S ≥ 90 kW boiler models	681	681	681	681	681	681	681
G	Flow connection	DN100 PN6	DN100 PN6	DN100 PN6	DN100 PN6	DN100 PN6	DN100 PN6	DN100 PN6
H	Return connection	DN100 PN6	DN100 PN6	DN100 PN6	DN100 PN6	DN100 PN6	DN100 PN6	DN100 PN6
I	Gas connection	DN65 PN16	DN65 PN16	DN65 PN16	DN65 PN16	DN65 PN16	DN65 PN16	DN65 PN16
J	Free space required for ex- pansion vessel	76	76	76	76	76	76	76

(1) When fitting a blanking flange with an expansion vessel connection, make sure there is enough space for fitting the vessel.  
(2) Make sure there is enough space for the flue gas system.

Fig.35 Back-to-back configuration



AD-3003381-01

Tab.14 Dimensions in mm with DN65 collector pipes

	Description	3-4 boilers	5-6 boilers	7-8 boilers
A	Total width	1110	1640	2170
B	Free space required for mounting the blanking flanges <sup>(1)</sup>	50	50	50
C	Total height	1687	1687	1687
D	Free space above the boilers (recom- mended minimum) <sup>(2)</sup>	700	700	700
E	Free space in front of the boilers (recom- mended)	1000	1000	1000
F	Total depth	1170	1170	1170
G	Flow connection	DN65 PN6	DN65 PN6	DN65 PN6
H	Return connection	DN65 PN6	DN65 PN6	DN65 PN6
I	Gas connection	DN50 PN16	DN50 PN16	DN50 PN16
J	Free space required for expansion ves- sel	76	76	76

(1) When fitting a blanking flange with an expansion vessel connection, make sure there is enough space for fitting the vessel.  
(2) Make sure there is enough space for the flue gas system.

Tab.15 Dimensions in mm with DN100 collector pipes

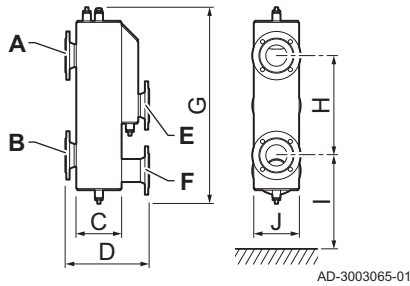
	Description	3 – 4 boilers	5 – 6 boilers	7 – 8 boilers
<b>A</b>	Total width	1110	1640	2170
<b>B</b>	Free space required for mounting the blanking flanges <sup>(1)</sup>	50	50	50
<b>C</b>	Total height For a cascade with Quinta Ace S ≤ 70 kW boiler models	1687	1687	1687
<b>C</b>	Total height For a cascade with Quinta Ace S ≥ 90 kW boiler models	1748	1748	1748
<b>D</b>	Free space above the boilers (recommended minimum) <sup>(2)</sup>	700	700	700
<b>E</b>	Free space in front of the boilers (recommended)	1000	1000	1000
<b>F</b>	Total depth For a cascade with Quinta Ace S - ≤ 70 kW boiler models	1170	1170	1170
<b>F</b>	Total height For a cascade with Quinta Ace S ≥ 90 kW boiler models	1312	1312	1312
<b>G</b>	Flow connection	DN100 PN6	DN100 PN6	DN100 PN6
<b>H</b>	Return connection	DN100 PN6	DN100 PN6	DN100 PN6
<b>I</b>	Gas connection	DN65 PN16	DN65 PN16	DN65 PN16
<b>J</b>	Free space required for expansion vessel	76	76	76

(1) When fitting a blanking flange with an expansion vessel connection, make sure there is enough space for fitting the vessel.  
 (2) Make sure there is enough space for the flue gas system.

7.1.2 Dimensions and connections - Low loss headers

The images in this chapter show DN65 low loss headers.

Fig.36 Low loss header dimensions - DN65 <350 kW



Tab.16 Low loss header dimensions - DN65 <350 kW

	Description	DN65 <350 kW	DN65 - DN100 <sup>(1)</sup>
<b>A</b>	flange size flow, system side	DN65 PN6	DN65 PN6
<b>B</b>	flange size return, system side	DN65 PN6	DN65 PN6
<b>C</b>	body depth	143	143
<b>D</b>	total depth	277	357
<b>E</b>	flange size flow, boiler side	DN65 PN6	DN100 PN6
<b>F</b>	flange size return, boiler side	DN65 PN6	DN100 PN6
<b>G</b>	total height	610	610
<b>H</b>	flange distance, system side	330	330
<b>I</b>	flange height, system side	200	200
<b>J</b>	total width	160	200

(1) Includes an adapter to connect the DN65 low loss header to an DN100 collector pipe set.



Fig.37 Low loss header dimensions - DN65 <350 kW - DN100

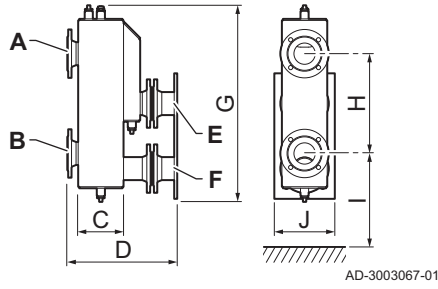
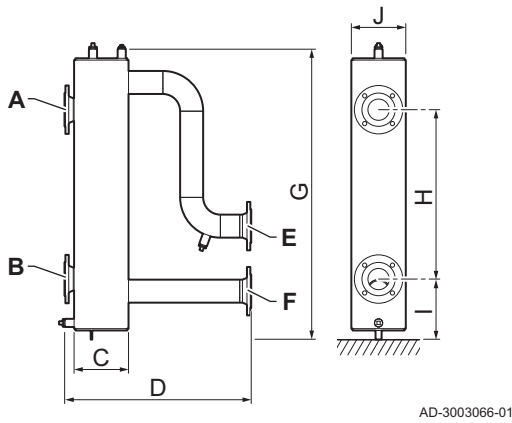


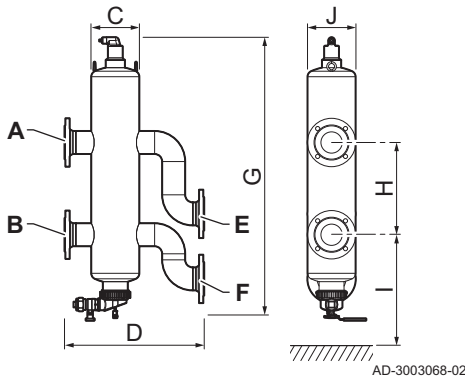
Fig.38 Low loss header dimensions



Tab.17 Low loss header dimensions

	Description	DN65	DN100
A	flange size flow, system side	DN65 PN6	DN100 PN6
B	flange size return, system side	DN65 PN6	DN100 PN6
C	body depth	180	250
D	total depth	617	631
E	flange size flow, boiler side	DN65 PN6	DN100 PN6
F	flange size return, boiler side	DN65 PN6	DN100 PN6
G	total height	960	960
H	flange distance, system side	560	560
I	flange height, system side	200	200
J	total width	180	250

Fig.39 Low loss header with dirt separator dimensions

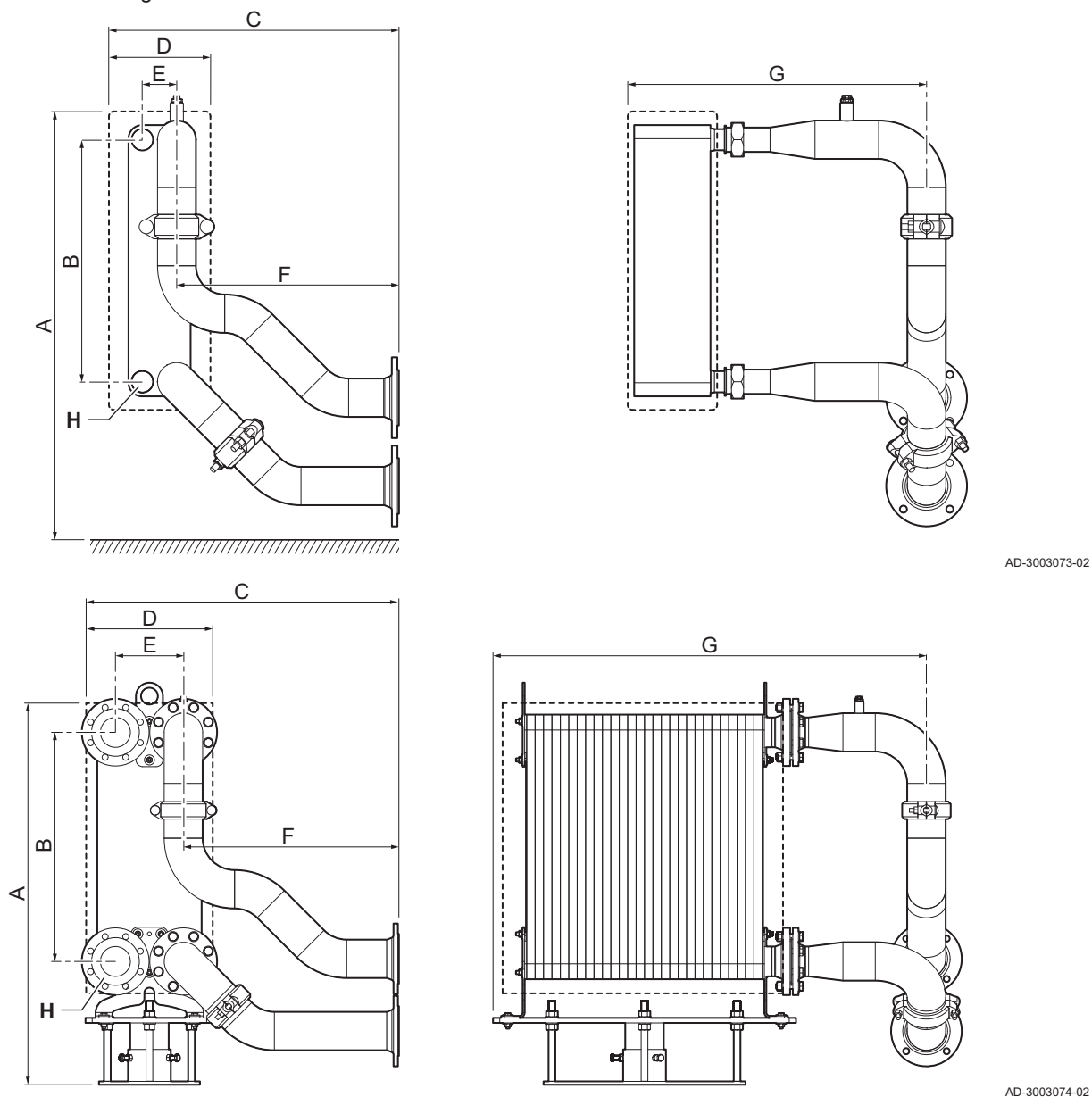


Tab.18 Low loss header with dirt separator dimensions

	Description	DN65	DN100
A	flange size flow, system side	DN65 PN6	DN100 PN6
B	flange size return, system side	DN65 PN6	DN100 PN6
C	body depth	ø159	ø219
D	total depth	462	744
E	flange size flow, boiler side	DN65 PN6	DN100 PN6
F	flange size return, boiler side	DN65 PN6	DN100 PN6
G	total height	905	1261
H	flange distance, system side	305	460
I	flange height, system side	306	414
J	total width	ø159	ø219

### 7.1.3 Dimensions and connections - Plate heat exchangers

Fig.40 Plate heat exchanger dimensions



AD-3003073-02

AD-3003074-02

Tab.19 Plate heat exchanger dimensions in mm

Dimension	A	B	C	D	E	F	G	H
Description	total height	flange distance	total depth	depth	flange distance	connection depth	total width	connection size
RHB-60-60	752	480	617	201	68	400	604	1 1/4" outer thread
RHB-60-80	752	480	617	248	68	400	651	1 1/4" outer thread
RHB-60-100	752	480	617	295	68	400	698	1 1/4" outer thread
RHB-60-120	752	480	617	342	68	400	745	1 1/4" outer thread
RHB-60-140	752	480	617	389	68	400	792	1 1/4" outer thread
RHB-110-80	964	520	684	308	91	400	703	2" outer thread
RHB-110-100	964	520	684	360	91	400	755	2" outer thread
RHB-110-120	964	520	684	412	91	400	807	2" outer thread
RHB-110-140	977	520	698	526	91	400	890	2" outer thread

Dimension	A	B	C	D	E	F	G	H
Description	total height	flange distance	total depth	depth	flange distance	connection depth	total width	connection size
RHB-110-160	964	520	684	516	91	400	911	2" outer thread
RHB-110-180	964	520	684	568	91	400	963	2" outer thread
RMB-235-80	1140	682	1016	333	204	400	757	DN80
RMB-235-100	1140	682	1016	383	204	400	807	DN80
RMB-235-120	1140	682	1016	433	204	400	857	DN80
RMB-235-140	1140	682	1016	483	204	400	907	DN80
RMB-235-160	1140	682	1016	533	204	400	957	DN80
RMB-235-180	1140	682	1016	583	204	400	1007	DN80
RMB-235-200	1140	682	1016	633	204	400	1057	DN80
RMB-235-220	1140	682	1016	683	204	400	1107	DN80
RMB-235-240	1140	682	1016	733	204	400	1157	DN80
RMB-235-260	1140	682	1016	783	204	400	1207	DN80
RMB-235-280	1140	682	1016	833	204	400	1257	DN80







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