



INSTALLATION- AND OPERATING INSTRUCTIONS

Steam generator
Condair **Sigma**

Thank you for choosing Condair

Installation date (MM/DD/YYYY):

Commissioning date (MM/DD/YYYY):

Site:

Model:

Serial number:

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1 Introduction

1.1 To the very beginning

We thank you for having purchased the steam generator Condair Sigma.

The steam generator Condair Sigma incorporates the latest technical advances and meets all recognized safety standards. Nevertheless, improper use of the Condair Sigma may result in danger to the user or third parties and/or impairment of material assets.

To ensure a safe, proper, and economical operation of the steam generator Condair Sigma, please observe and comply with all information and safety instructions contained in the present installation and operating instructions.

If you have questions after reading this documentation, please contact your Condair representative. They will be glad to assist you.

1.2 Notes on the installation and operating instructions

Limitation

The subject of these installation and operating instructions is the steam generator Condair Sigma. The various accessories are only described insofar as this is necessary for proper operation of the equipment. Further information on accessories can be obtained in the respective instructions.

These installation and operating instructions are restricted to the **installation, commissioning, operation, servicing and trouble shooting** of the steam generator Condair Sigma and is meant for **well trained personnel being sufficiently qualified for their respective work.**

These installation and operating instructions are supplemented by various separate items of documentation (spare parts list, manuals for accessories, etc.). Where necessary, appropriate cross-references are made to these publications in the present documentation.

Explanation of the symbols used in this manual



CAUTION!

The catchword "CAUTION" designates notes in this documentation that, if neglected, may cause **damage and/or malfunction of the unit or other material assets**.



WARNING!

The catchword "WARNING" used in conjunction with the general caution symbol designates safety and danger notes in this documentation that, if neglected, may cause to **injury to persons**.



DANGER!

The catchword "DANGER" used in conjunction with the general caution symbol designates safety and danger notes in this documentation that, if neglected, may lead to **severe injury or even death of persons**.

Safekeeping

Please safeguard these installation and operating instructions in a safe place, where it can be immediately accessed. If the equipment changes hands, the documentation should be passed on to the new operator. If the documentation gets mislaid, please contact your Condair supplier.

Language versions

The present installation and operation manual is available in various languages. Please contact your Condair supplier for information.

2 For your safety

General

Every person working with the Condair Sigma must have read and understood the present installation and operating instructions before carrying out any work.

Knowing and understanding the contents of the installation and operating instructions is a basic requirement for protecting the personnel against any kind of danger, to prevent faulty operation, and to operate the unit safely and correctly.

All ideograms, signs and markings applied to the unit must be observed and kept in readable state.

Qualification of personnel

All actions described in the present Installation and operating instructions (installation, operation, maintenance, etc.) must be carried out only by **well trained and sufficiently qualified personnel authorised by the owner**.

For safety and warranty reasons any action beyond the scope of this manuals must be carried out only by qualified personnel authorised by the manufacturer.

It is assumed that all persons working with the Condair Sigma are familiar and comply with the appropriate regulations on work safety and the prevention of accidents.

This unit may not be used by persons (including children) with reduced physical, sensory or mental abilities or persons with lacking experience and/or knowledge, unless they are supervised by a person responsible for their safety or they received instructions on how to operate the unit.

Children must be supervised to make sure that they do not play with unit.

Intended use

The steam generator Condair Sigma is exclusively intended for the production of steam for SPA applications within the specified operating conditions (see [chapter 10](#)). Any other type of application without the express written consent of the manufacturer is considered as not conforming with the intended purpose and may lead to the Condair Sigma becoming dangerous.

Operation of the equipment in the intended manner requires **that all the information in this installation and operation manual is observed (in particular the safety instructions)**.

Danger that may arise from the unit



DANGER!
Danger of electric hazard!

The Condair Sigma is mains powered. One may get in touch with live parts when the unit is open. Touching live parts may cause severe injury or danger to life.

Prevention: Before carrying out any work set the Condair Sigma out of operation as described in [chapter 6.5](#) (switch off the unit, disconnect it from the mains and stop the water supply) and secure the unit against inadvertent power-up.



WARNING!
Hot water vapour - Danger of scalding!

The Condair Sigma produces hot water vapour. There is danger of scalding when getting in touch with hot water vapour.

Prevention: Do not carry out any work on the steam system during operation (steam lines, steam distributor, etc.). If the steam system is leaky set the Condair Sigma immediately out of operation as described in [chapter 6.5](#). Correctly seal the steam system before putting the unit into operation again.



WARNING!
Danger of burning!

During operation the components of the steam system (steam cylinder, steam distributor, etc.) get very hot (up to 100 °C). There is danger of burning when touching the hot components.

Prevention: Before carrying out any work on the steam system set the Condair Sigma out of operation as described in [chapter 6.5](#), then wait until the components have cooled down sufficiently thus preventing danger of burning.

Behaviour in case of danger

If it is suspected that **safe operation is no longer possible**, then the Condair Sigma should immediately **be shut down and secured against accidental power-up according to [chapter 6.5](#)**. This can be the case under the following circumstances:

- if the Condair Sigma is damaged
- if the electrical installations are damaged
- if the Condair Sigma is no longer operating correctly
- if connections and/or piping are not sealed

All persons working with the Condair Sigma must report any alterations to the unit that may affect safety to the owner without delay.

Prohibited modifications to the unit

No modifications must be undertaken on the Condair Sigma without the express written consent of the manufacturer.

For the replacement of defective components use exclusively **original accessories and spare parts** available from your Condair supplier.

3 Product Overview

3.1 Models overview

Steam generators Condair Sigma are available with **different heating voltages** and **steam capacities ranging from 4 kg/h up to a max. of 65 kg/h.**

Heating voltage **	Max. steam capacity in kg/h	Model Condair Sigma	Unit size		
			small	medium	large
400V3 (400 V/3~/50...60 Hz)	5	534		1	
	8	834		1	
	15	1534		1	
	23	2364			1
	32	3264			1
	45	4564			1
	65	6564			1
400V2 (400 V/2~/50...60 Hz)	5	524		1	
	8	824		1	
230V3 (230 V/3~/50...60 Hz)	5	532		1	
	8	832		1	
	15	1532		1	
	23	2362			1
	32	3262			1
230V1 (230 V/1~/50...60 Hz)	4	422	1		
	5	522		1	
	8	822		1	

** Other heating voltages on request

Key model designation

Example:
Condair Sigma 4564 400V3

Product designation: _____

Unit model: _____

Heating voltage: _____

400V/3~/50...60Hz: **400V3**

400V/2~/50...60Hz: **400V2**

230V/3~/50...60Hz: **230V3**

230V/1~/50...60Hz: **230V1**

3.2 Identification of the unit

The identification of the unit is found on the type plate:

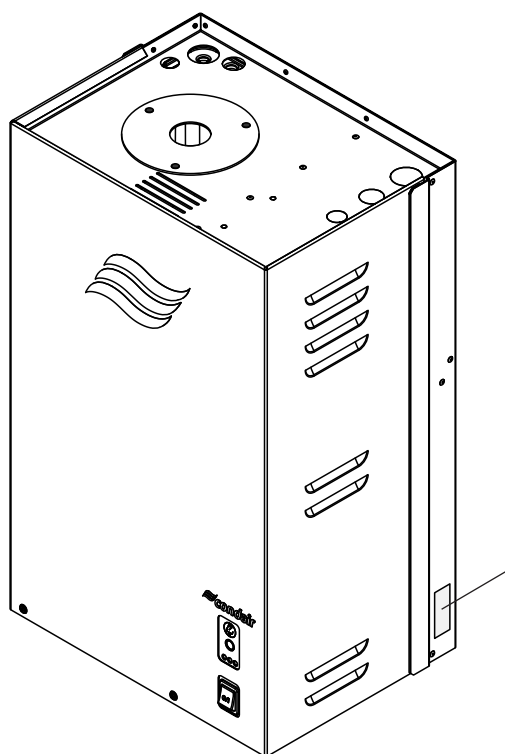
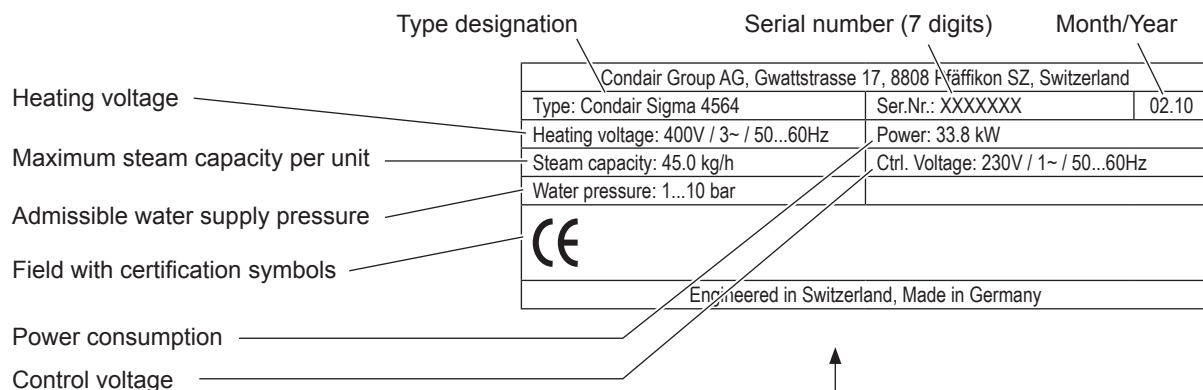


Abb. 1: Position of the type plate

3.3 Construction of the Condair Sigma

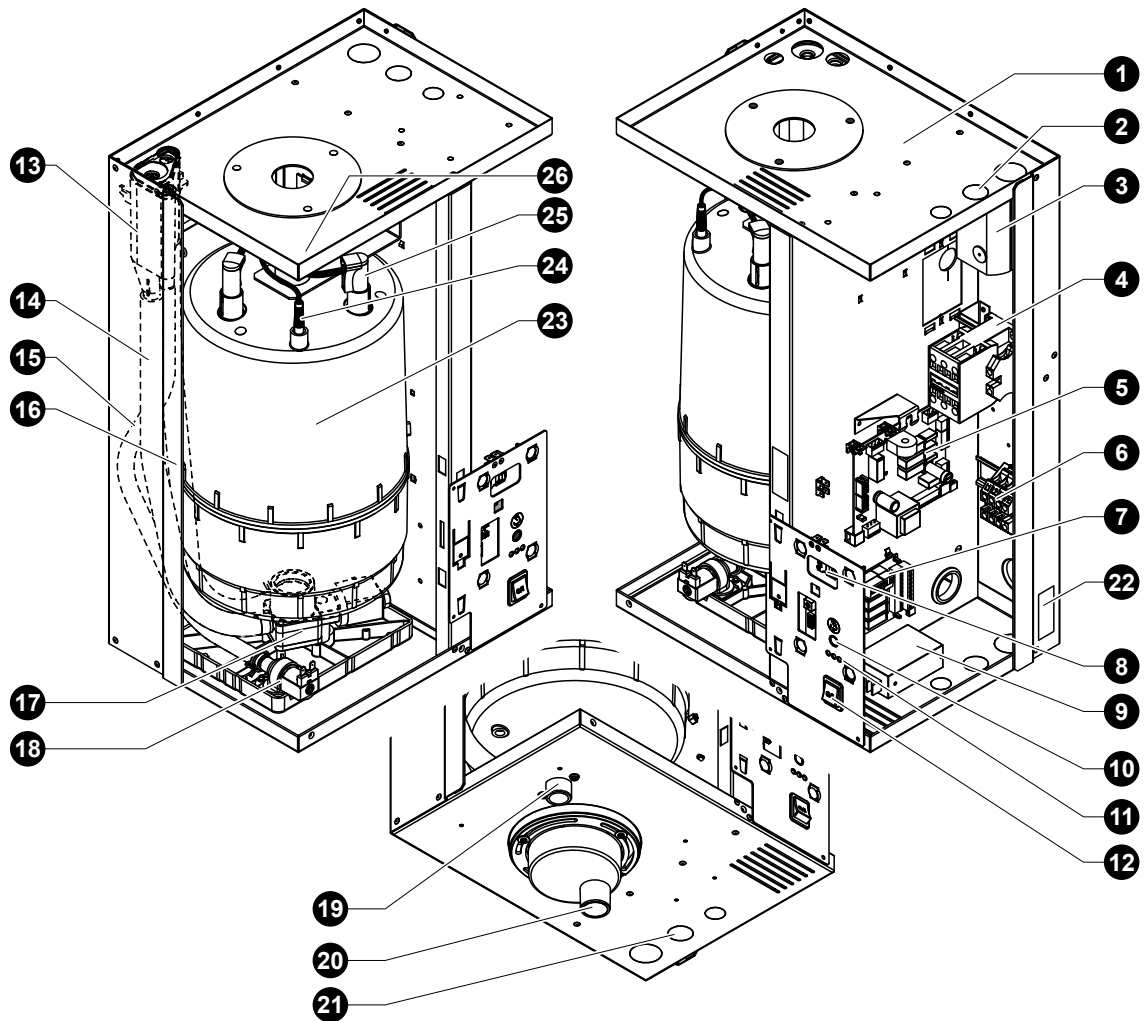


Abb. 2: Construction of the Condair Sigma (figure shows medium unit)

- | | |
|--|--------------------------------|
| 1 Housing (small, large) | 14 Filling hose |
| 2 Cable openings, top side | 15 Water supply hose |
| 3 SC pump (option) | 16 Overflow hose |
| 4 Main contactor | 17 Drain valve |
| 5 Power board | 18 Inlet valve |
| 6 Terminals heating voltage (option) | 19 Water supply connector |
| 7 Remote operating and fault indication board (option) | 20 Drain connector |
| 8 Control board with Smart Card | 21 Cable openings, bottom side |
| 9 Power supply unit 24 V (option) | 22 Type plate |
| 10 Drain/info key | 23 Steam cylinder |
| 11 Operation status indicators | 24 Level sensor |
| 12 Unit switch | 25 Electrode plug |
| 13 Water cup | 26 Steam outlet |

3.4 Functional description

The steam generator Condair Sigma is a pressureless steam generator that utilizes an electrode heating. The steam generator Condair Sigma is designed for SPA applications.

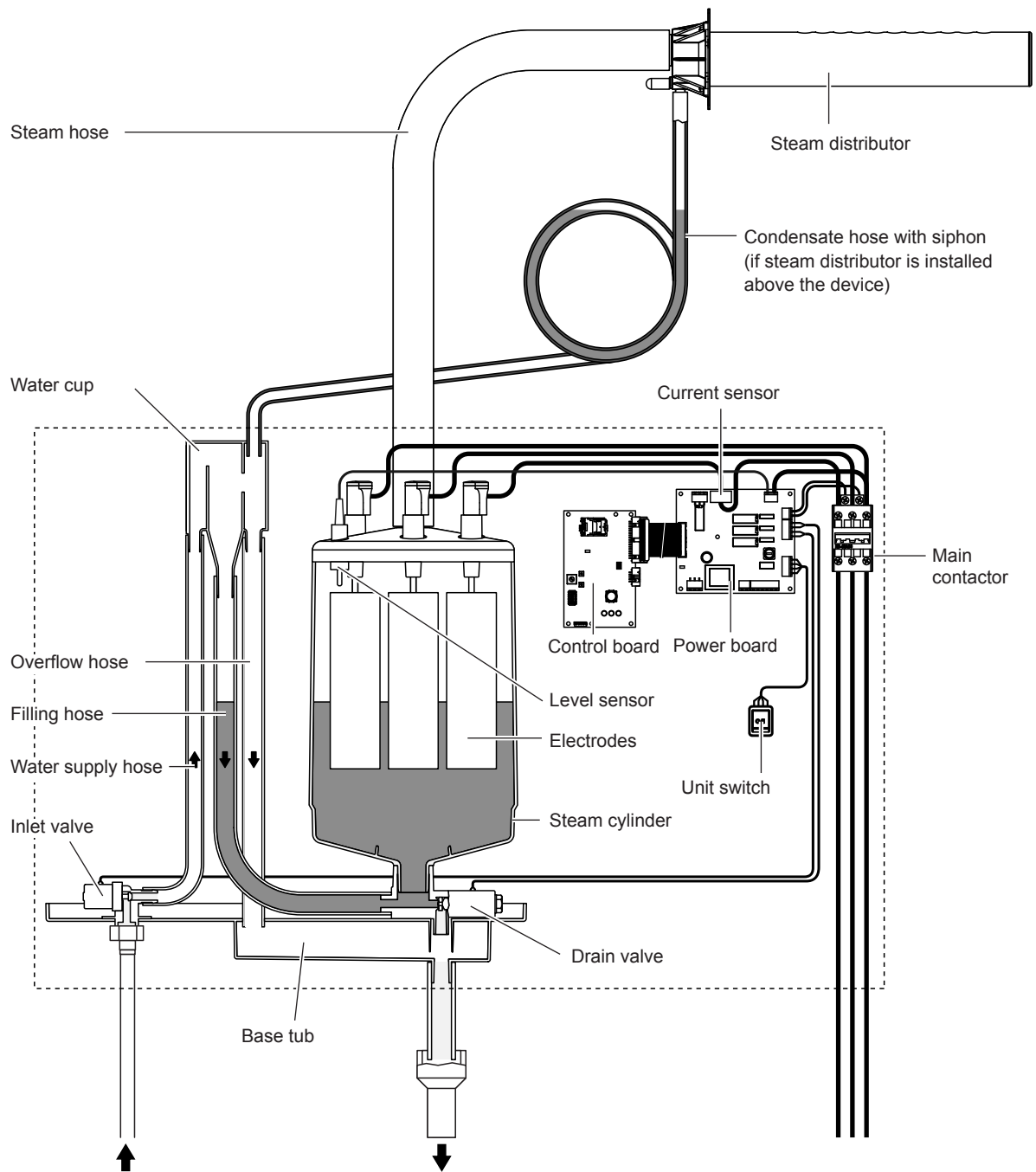


Abb. 3: Functional diagram

Steam generation

Any time steam is requested, the electrodes are supplied with voltage via main contactor. Simultaneously, the inlet valve opens and water enters the steam cylinder from the bottom via water cup and supply line. As soon as the electrodes come in contact with the water, current begins to flow between the electrodes, eventually heating and evaporating the water. The more the electrode surface is exposed to water, the higher is the current consumption and thus the steam capacity.

Upon reaching the requested steam capacity, the inlet valve closes. If the steam generation decreases below a certain percentage of the required capacity, due to lowering of the water level (e.g. because of the evaporation process or drainage), the inlet valve opens until the required capacity is available again. If the required steam capacity is lower than the actual output, the inlet valve is closed until the desired capacity is achieved by lowering of the water level (evaporation process).

Level monitoring

A sensor provided in the steam cylinder cover detects when the water level gets too high. The moment the sensor comes in contact with water, the inlet valve closes.

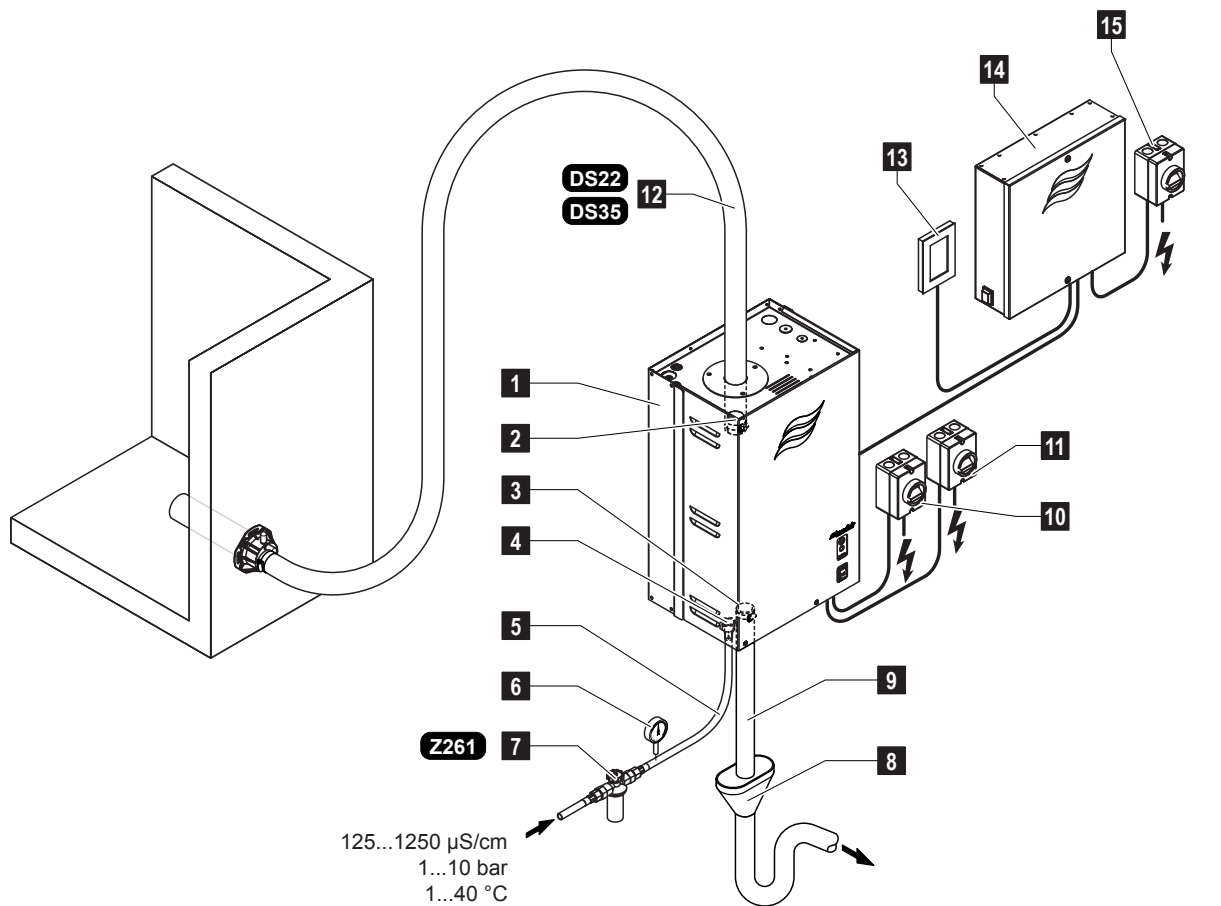
Drainage

As a result of the evaporation process, the conductivity of the water increases due to an escalating mineral concentration. Eventually, an inadmissibly high current consumption would take place if this concentration process were permitted to continue. To prevent this concentration from reaching a value, unsuitably high for the operation, a certain amount of water is periodically drained from the cylinder and replaced by fresh water.

Control

The steam production can be controlled with an external 0-10V continuous controller or an external humidistat (24 VDC On/Off control).

3.5 System overview



- | | |
|--|---|
| 1 Steam generator | 8 Funnel with siphon (building side) |
| 2 Steam connector | 9 Water drain hose (included in the delivery) |
| 3 Water drain connector | 10 Electrical isolator control voltage supply (building side) |
| 4 Water supply connector | 11 Electrical isolator heating voltage supply (building side) |
| 5 Water connection hose G 3/4"- G 3/8"
(included in the delivery) | 12 Steam hose (accessory "DS..") |
| 6 Manometer (installation recommended) | 13 SPA Display |
| 7 Filter valve (accessory "Z261") | 14 Condair Delta SPA Control Box |
| | 15 Electrical isolator Condair Delta SPA Control Box |

Abb. 4: System overview

3.6 Options

	422	Condair Sigma...						6564
		522 524 532 534	822 824 832 834	1532 1534	2362 2364	3262 3264	4564	
Remote operating and fault indication PCB with relay contacts for the connection of remote displays for "Operation", "Steam", "Fault" and "Service".	---	1xRFI						
Overpressure set Kit for mounting the water cup to the unit cover when operating the steam generator in systems with a duct air pressure of up to 10 kPa.	---	1xOPS						
Terminals heating voltage Separate terminals for systems where direct connection of heating voltage to main contactor (standard version) is not permitted by local regulations.	---	1x S-THV		1x M-THV		1x L-THV		
Steam hose connector with condensate trap	---	1xCT22		1xCT35		2xCT35		
Cable glands (with metric thread)	---	CG						
Terminal strip kit for internal control voltage supply Terminal strip kit to provide control voltage supply for sites with 3 phase single voltage supply with neutral conductor (400V/3~N/ 50..60 Hz).	---	1x S-CVI		1x M-CVI		1x L-CVI		
Transformer for internal control voltage supply Kit including terminal strip and transformer to provide control voltage supply for sites with 3 phase single voltage supply without neutral conductor (400V/3~/ 50..60 Hz).	---	1xM-Trafo		1xL-Trafo				
24 VDC power supply 24 VDC power supply for the external humidity sensor	---	1x24VDC						
SC pump (lime management system) The SC pump keeps the solved minerals in the water of the steam cylinder in motion, in order to discharge them with the automatic drain cycles.	---	1xSC						

	Condair Sigma... (400 V/3~/50...60 Hz)						
	534	834	1534	2364	3264	4564	6564
Steam cylinder for low water conductivity from 80 to 125 µS/cm	1x 534A-L	1x 834A-L	1x 1534A-L	1x 2364A-L	1x 3264A-L	1x 4564A-L	—

3.7 Accessories

3.7.1 Accessories overview

Accessories for water installation

	Condair Sigma ...							
	422	522 524 532 534	822 824 832 834	1532 1534	2362 2364	3262 3264	4564	6564
Filter valve	Z261 (1 pcs. per system)							

Accessories for steam installation

	Condair Sigma ...							
	422	522 524 532 534	822 824 832 834	1532 1534	2362 2364	3262 3264	4564	6564
Steam distributor (up to max.5 kg/h) (details see chapter 3.7.2.1)	1xDDS22		—	—	—	—	—	—
Steam distributor (15...32 kg/h) (details see chapter 3.7.2.2)	—			1xDDL35			—	—
Steam distributor (4...65 kg/h) (details see chapter 3.7.2.3)	1xW22			1xW35			2xW35	
Steam hose / meter	1xDS22			1xDS35			2xDS35	
EcoTherm insulation hose / meter	1xECT22			1xECT60			2xECT60	
Kondensatschlauch / Meter	1x KS10							
Condensate drain	1xCD22			1xCD35			2xCD35	
T-piece for fragrance injection	1xTSD22			1xTSD35			2xTSD35	
Fragrance pump	1xFP 240V							

Accessories for control

	Condair Sigma ...							
	422	522 524 532 534	822 824 832 834	1532 1534	2362 2364	3262 3264	4564	6564
SPA control	Condair Delta SPA Control Box							

3.7.2 Accessory details

3.7.2.1 Steam distributor DDS22

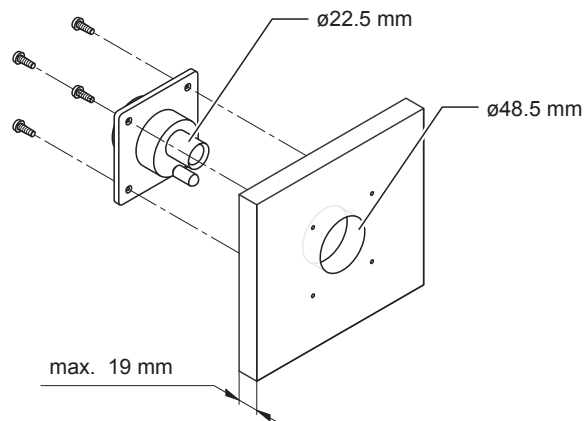


Abb. 5: Steam distributor DDS22 (up to max. 5 kg/h)

3.7.2.2 Steam distributor DDL35

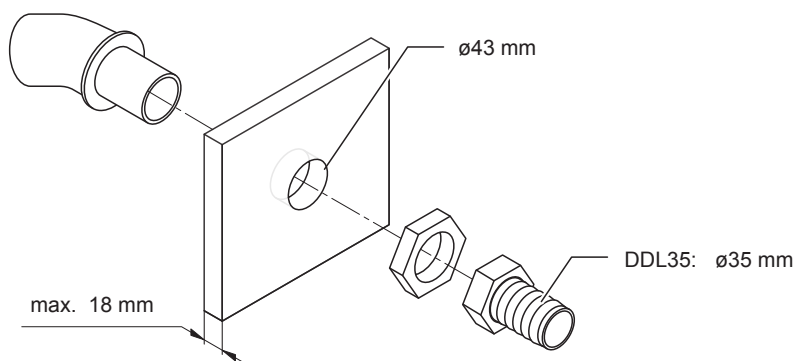


Abb. 6: Steam distributor DDL35 (15-32 kg/h)

3.7.2.3 Steam distributor W22/W35

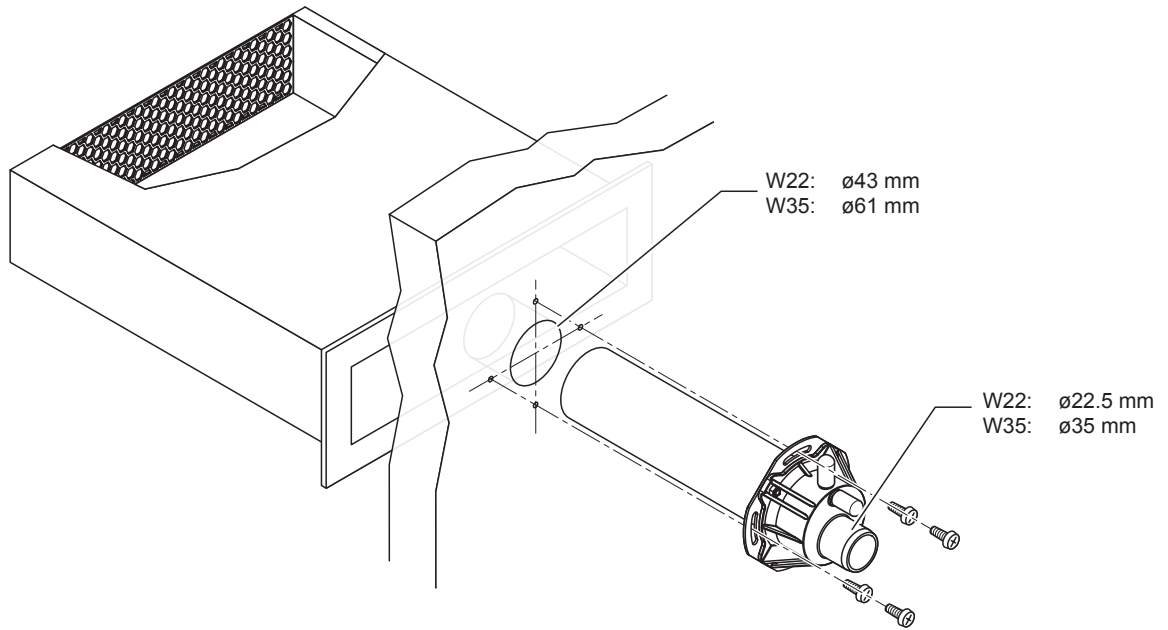


Abb. 7: Steam distributor W22 (4-8 kg/h) / W35 (15-65 kg/h)

3.8 Standard delivery

The standard delivery includes:

- Steam generator Condair Sigma with water drain hose and water connection hose G 3/4" - G 3/8" equipped with the options ordered according to [chapter 3.6](#), fixing set and installation and operating instructions (this document), packaged in cardboard box
 - Unit small (WxHxD): 360 mm x 550 mm x 360 mm, shipping weight: 8,7 kg
 - Unit medium (WxHxD): 445 mm x 755 mm x 360 mm, shipping weight: 26 kg
 - Unit large (WxHxD): 560 mm x 820 mm x 435 mm, shipping weight: 31 kg
- Ordered accessories with operating instructions according [chapter 3.7](#), packed separately
- Spare parts list

3.9 Storing/Transportation/Packaging

Storing

Store the unit in a protected area meeting the following requirements:

- Room temperature: 1 ... 40 °C
- Room humidity: 10 ... 75 %rh

Transportation

For optimum protection always transport the unit in the original packaging.

The weight of the medium and the large unit is more than 20 kg (weight without packaging: medium unit 23 kg, large unit 28 kg). Therefore, always transport the unit with the help of another person or use a forklift or a crane. Always place the unit on its back side.

Packaging

Keep the original packaging of the Condair Sigma for later use.

In case you wish to dispose of the packaging, observe the local regulations on waste disposal. Never dispose of the packaging to the environment.

4 Notes for the planning engineer

4.1 Selecting the unit version

To select the unit version the following planning steps are required:

1. Determinating the required maximum steam capacity according [chapter 4.1.1](#)
2. Selecting the unit version from the table in [chapter 4.1.2](#)

4.1.1 Determinating the maximum required steam capacity

The maximum required steam capacity for a steam bath is determined according to the table below:

Cabin size	Required steam capacity	
	Plastic cabin	brick lined cabin
4 m ³	4 kg/h	8 kg/h
8 m ³	8 kg/h	12 kg/h
12 m ³	10 kg/h	15 kg/h
16 m ³	12 kg/h	18 kg/h
20 m ³	13 kg/h	21 kg/h
24 m ³	15 kg/h	24 kg/h
28 m ³	17 kg/h	26 kg/h
32 m ³	18 kg/h	29 kg/h
36 m ³	20 kg/h	31 kg/h
40 m ³	21 kg/h	34 kg/h
44 m ³	23 kg/h	36 kg/h
48 m ³	24 kg/h	38 kg/h
52 m ³	26 kg/h	41 kg/h
56 m ³	27 kg/h	43 kg/h
60 m ³	29 kg/h	45 kg/h

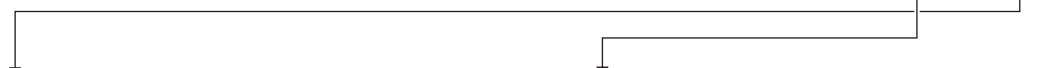
Important notes:

- The steam capacity determined based on the table above does not consider any steam loss (e.g. due to condensation in the steam hoses and the steam distributors), any heat loss of the unit as well as any absorption or release of humidity of materials located in the room being humidified. In addition, the calculated steam capacity does not consider any losses caused by the draining rate depending on the water quality as well as any losses occur if the steam generator is operated on a mains circuit with a ground fault circuit interrupter.

The total amount of losses depends on the entire system and must be taken into consideration when determining the required steam capacity. If you have any questions regarding the calculation of the steam capacity please contact your Condair supplier.

4.1.2 Selecting the unit

Condair Sigma 4564 400V3



Heating voltage **	Max. steam capacity in kg/h	Model Condair Sigma ..	Unit size		
			small	medium	large
400V3 (400 V/3~/50...60 Hz)	5	534		1	
	8	834		1	
	15	1534		1	
	23	2364			1
	32	3264			1
	45	4564			1
	65	6564			1
400V2 (400 V/2~/50...60 Hz)	5	524		1	
	8	824		1	
230V3 (230 V/3~/50...60 Hz)	5	532		1	
	8	832		1	
	15	1532		1	
	23	2362			1
	32	3262			1
230V1 (230 V/1~/50...60 Hz)	4	422	1		
	5	522		1	
	8	822		1	

** Other heating voltages on request

4.2 Selecting the options an accessories

For selecting the options and accessories see chapter 3.6 and 3.7.

5 Mounting and installation work

5.1 Important notes for mounting and installation work

Qualification of personnel

All mounting and installation work must be carried out only by **well qualified personnel authorised by the owner**. It is the owner's responsibility to verify proper qualification of the personnel.

General note

Strictly observe and comply with all information given in the present installation and operating instructions regarding the location of the unit and the installation of water, steam and electricity.

Observe and comply with all local regulations dealing with water, steam and electrical installations.

Safety

Some installation work requires removal of the unit cover. Please note the following:



DANGER!
Danger of electric hazard!

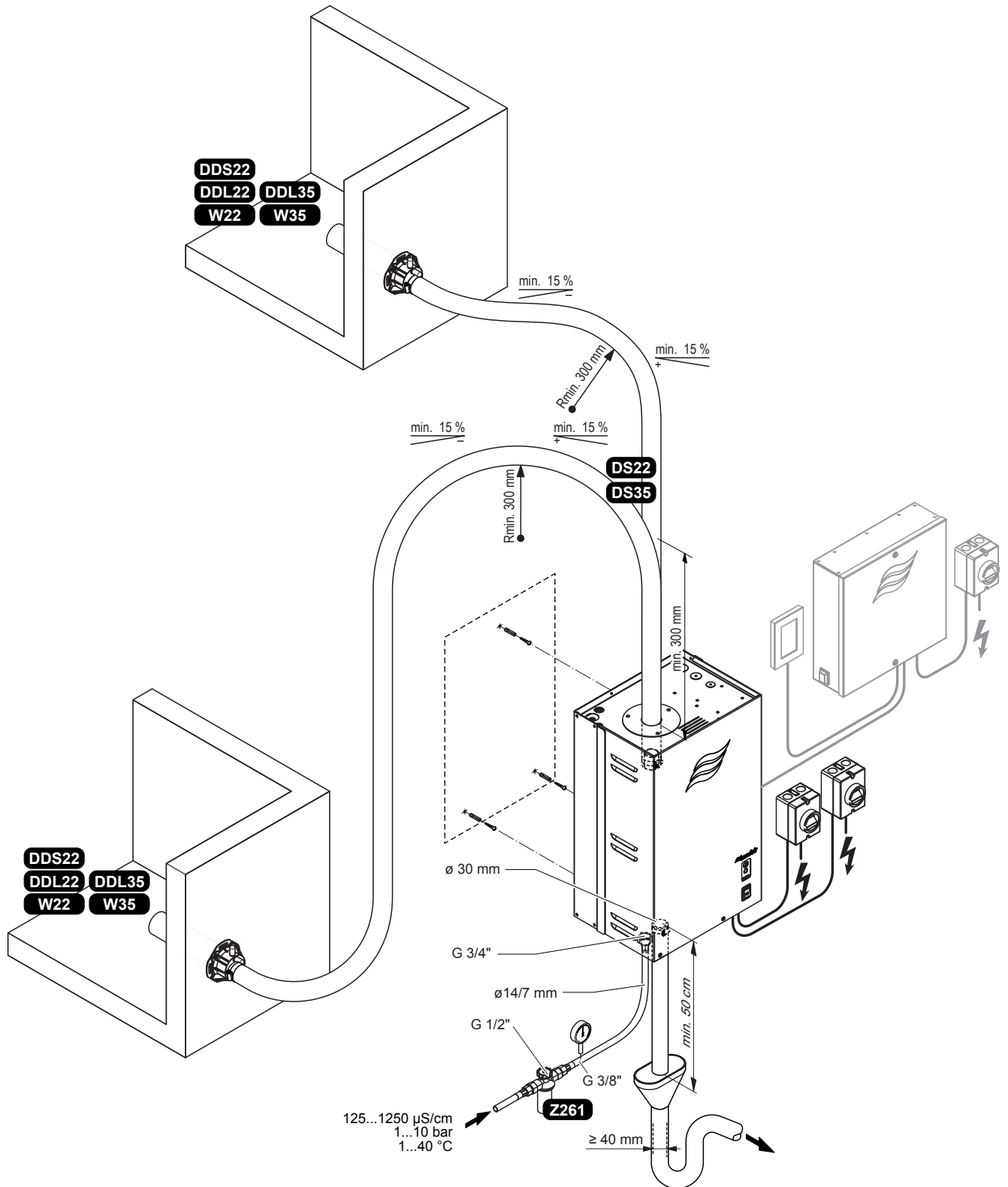
You may get in touch with live parts when the unit is open. The steam generator must be connected to the mains only after all mounting and installation work has been completed and the cover has been relocated properly.



CAUTION!

The electronic components inside the humidifier are very sensitive to electrostatic discharge. When the unit is open for installation work, appropriate measures must be taken to protect these components against damage caused by electrostatic discharge (ESD protection).

5.2 Installation overviews

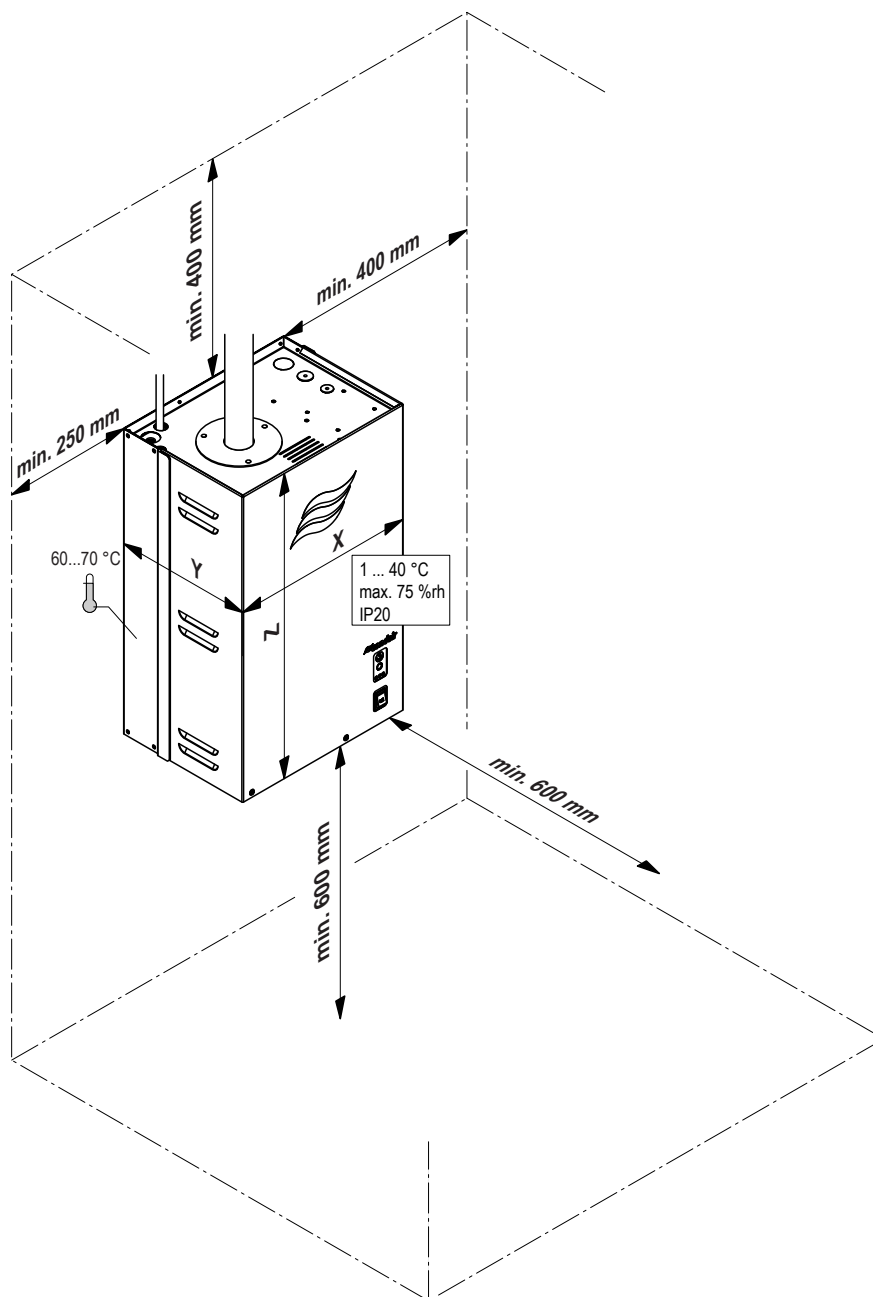


- Mounting the unit: see [chapter 5.3](#)
- Steam installation: see [chapter 5.4](#)
- Water installation: see [chapter 5.5](#)
- Electric installation: see [chapter 5.6](#)

Abb. 8: Installation overview

5.3 Mounting the unit

5.3.1 Notes on locating the unit



Condair Sigma ...	422	522	822	1532	2362	3262	4564	6564
		524	824	1534	2364	3264		
		532	832					
		534	834					

Dimensions								
Housing (XxYxZ) in mm	285x205x430	1						
	377x279x612		1	1	1			
	492x351x670					1	1	1
Weights								
Net weight in kg	8	19	19	19	28	28	28	28
Operating weight in kg	13	24	24	30	65	65	65	65

The installation site of the steam generator depends largely on the location of the steam distributor (see [chapter 5.4](#)). To **ensure proper functioning** of the steam generator and to **obtain an optimal efficiency**, the following points must be considered and observed when choosing the location for the steam generator:

- Install the steam generator so that the **length of the steam** hose is kept as short as possible (**max. 4 m**) and that the **minimum bend radius (R= 300 mm)** and **up-slope and/or down-slope of 15 %/8.5°** of the steam hose is observed (see [chapter 5.4.3](#)).
- The steam generators Condair Sigma are designed for wall-mounting. Make sure that the construction (wall, pillar, floor-mounted console, etc.) to which the humidifiers are to be mounted, offers a **sufficiently high load-bearing capacity** (take notice of the weight information found in the dimensions and weights table above), and is suitable for the installation.
- The back panel of the Condair Sigma is retaining heat during operation (max. surface temperature of the metal housing approx. 60 - 70 °C). Make sure, therefore, that the construction (wall, pillar, etc.) to which the units are to be mounted, does not consist of heat-sensitive material.
- Install the steam generator in such a manner that it is **freely accessible** with sufficient space available for maintenance purposes (refer to the above illustration for minimum distances).
- The Condair Sigma is protected according to **IP20**. Make sure the units are installed in a drip-proof location and the admissible ambient conditions are complied with.
- The steam generator Condair Sigma may only be installed in rooms with a floor drain.



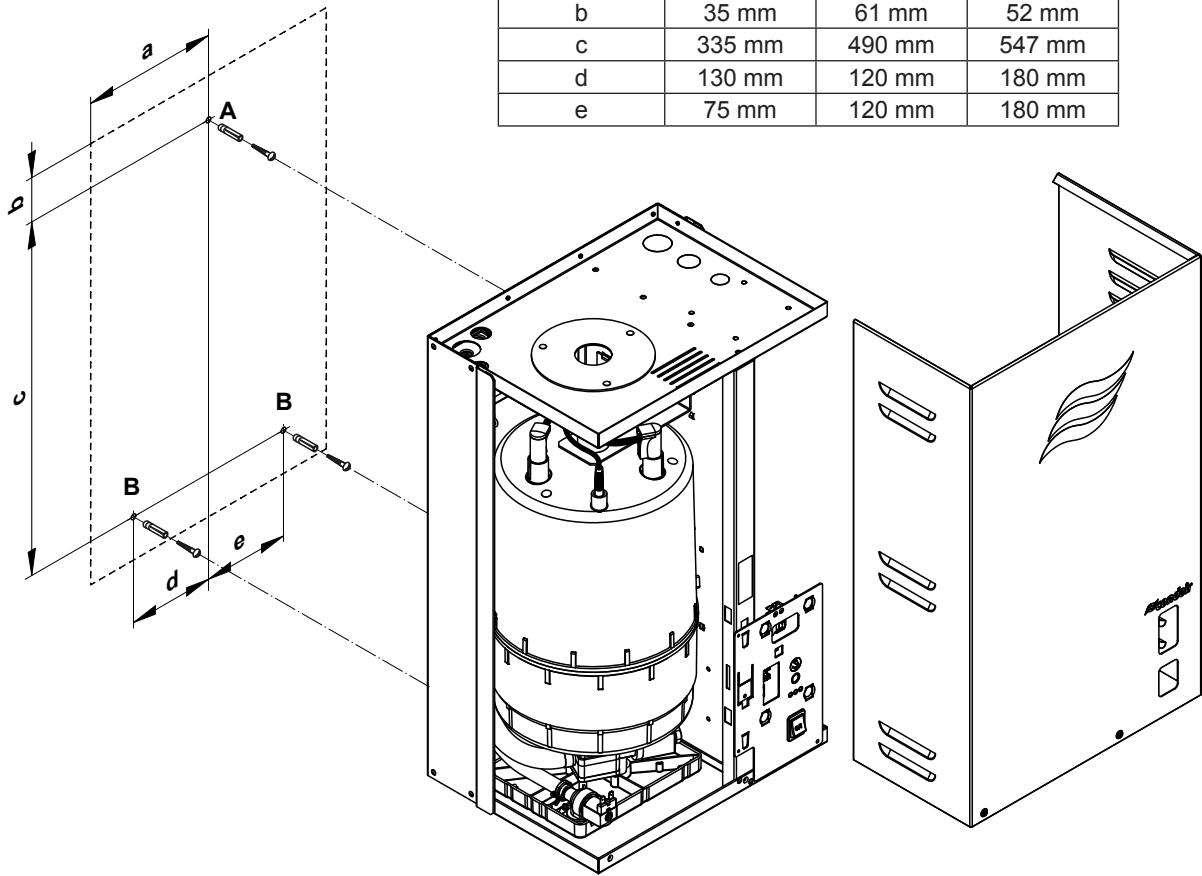
CAUTION!

If for some reason the Condair Sigma must be installed in a location without floor drain, it is mandatory to provide a leakage monitoring device to safely interrupt the water supply in case of leakage.

- When fixing the Condair Sigma use **only the fixing materials supplied with the unit**. If fixing with the materials supplied is not possible in your particular case, select a method of fixing that is of similar stability.
- The Condair Sigma is designed for installation and operation within buildings (admissible temperature range see [chapter 10.1](#)).

5.3.2 Mounting the humidifier

Dimension	Housing size		
	small	medium	large
a	175 mm	189 mm	246 mm
b	35 mm	61 mm	52 mm
c	335 mm	490 mm	547 mm
d	130 mm	120 mm	180 mm
e	75 mm	120 mm	180 mm



Procedure

1. Mark the attachment point "A" on the wall.
2. Drill hole for attachment point "A" (diameter: 8 mm, depth: 40 mm).
3. Insert the supplied plastic plug, and tighten the screw until the distance between the wall and the screw head is 4 mm.
4. Unlock the two screws fixing the front panel to the unit, then remove the front panel.
5. Hang up the unit onto the screw and adjust it horizontally and vertically using a spirit level. Then, mark the fixing points "B".
6. Drill the holes for the fixing points "B" (diameter: 8 mm, depth: 40 mm).
7. Insert the supplied plastic plugs, and tighten the screws until the distance between the wall and the screw head is 4 mm.
8. Hang the unit up onto the screws. Before tightening the screws, readjust the unit with the spirit level.
9. Reattach the front panel and secure it with the two screws.

5.3.3 Inspecting the installed unit

Check the following points:

- Is the unit installed in the correct place (see [chapter 5.3.1](#))?
- Is the supporting surface stable enough?
- Is the unit correctly aligned, vertically and horizontally?
- Is the unit properly secured (see [chapter 5.3.2](#))?
- Has the front panel of the unit been relocated and correctly fixed with the two screws?

5.4 Steam installation

5.4.1 Overview steam installation

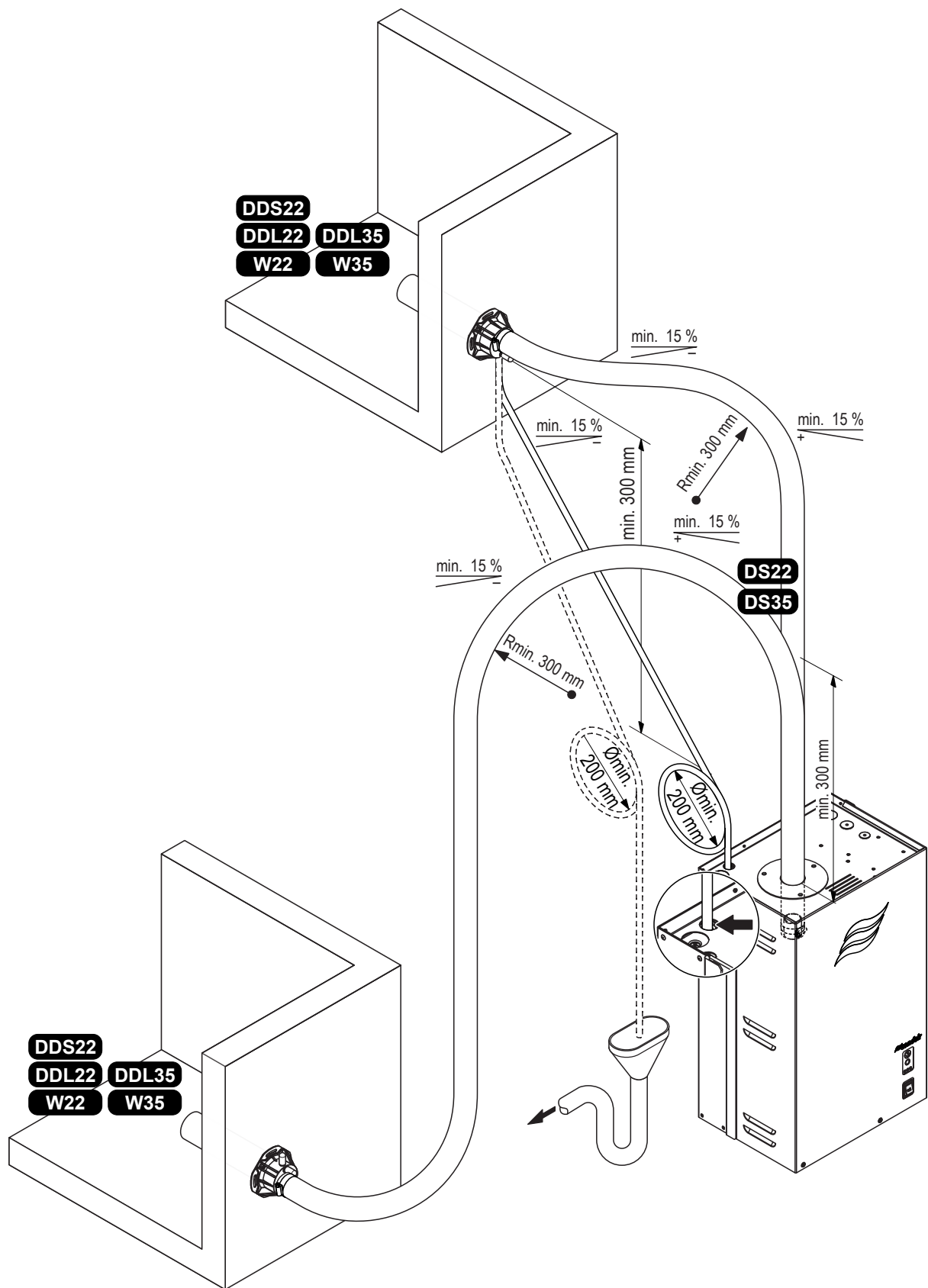


Abb. 9: Overview steam installation

5.4.2 Positioning/mounting the steam distributor

It's the responsibility of the customer to correctly position the steam distributor in the steam bath cabin.



WARNING!

Hot water vapour - Danger of scalding!

Shield the steam outlet of the steam distributor with corresponding measures to make sure steam bath users can not be burned by the steam flow.

Detailed information on the installation of steam distributors DDS..., DDL... and W... can be found in the separate mounting instructions for these products.

5.4.3 Installing the steam and condensate lines

5.4.3.1 Notes on installation

- Use **original steam and condensate hose** from your Condair representative or **solid steam pipes from copper or stainless steel (min. DIN 1.4301) exclusively**. Steam and condensate lines from other material may cause undesired operational malfunctions.
- Initially, lead the steam line **upright upwards min. 300 mm above the steam generator**. Then lead the steam line with a **minimum upslope/downslope of 15 %/8.5°** to the steam distributor.
Important: ensure the steam hose can be disconnected later on from steam outlet connector on steam tank for maintenance purpose. For that purpose the steam hose may be led more than 500 mm upright upwards.
- The condensate hose from the steam distributor is led down to the steam generator with a **minimum downslope of 15 %/8.5°**, via a condensate trap (**min. hose bend diameter Ø200 mm**) and there it is to be connected to the appropriate connector on top of the unit (left connector= condensate flows back into the steam tank (not recommended), right connector= condensate flows into the drain). Alternatively the condensate hose can be led also directly into an open funnel.
Important! Before putting the unit into operation, the condensate trap of the condensate hose must be filled with water.
- The steam line should be kept as short as possible (**max. 4 m** while observing the **minimum bend radius of 300 mm** (for steam hoses) or **5 x internal diameter** (with solid steam pipes), respectively).
Important! Allowance must be made for a **pressure loss of approx. 100 Pa** per meter steam line and per 90° elbow.
- **Important!** When deciding on the length and layout of steam hoses, it should be noted that steam hoses may become shorter and/or longer depending on temperature and age.
- The steam hose must be secured to the steam distributor and steam generator steam outlet by means of **hose clamps**. Solid steam pipes should be connected to the steam distributor and steam generator with short lengths of steam hose secured with hose clamps.
Caution! Do not overtighten the hose clamp on the steam connector of the steam generator.



Make sure that there is no tension on the steam hose since this could result in lifting the steam tank out of the coupling sleeve. If necessary fix steam hose right before the steam generator with a strain relief device.

- Steam lines made of solid pipes (copper or stainless steel) must be insulated over the entire length to minimize condensate formation (=loss).



Reducing the cross section or the complete closure of the steam line will cause an excessive increase in pressure in the steam tank when the unit is operating and could lead to the risk of scalding accidents. All installations must comply with the following instructions.

- When installing make sure the steam line is open over the entire length and through the whole cross section. Any sealing plugs, adhesive sealing sheets etc. must be removed before connecting the steam pipe. Reductions in cross section by kinking or crushing must be avoided.

- Steam hoses must be prevented from sagging (condensate pockets); if necessary, support steam hose with pipe clamps, trough, or wall brackets, and install a condensate drain at any low points in the steam line.
- It is **not permitted to install a stop valve** (e.g. a manually controlled stop valve, solenoid valve, etc.) in the steam line, due to an inadmissible increase of pressure in the steam tank if the valve is closed during the operation.

5.4.3.2 Installation examples

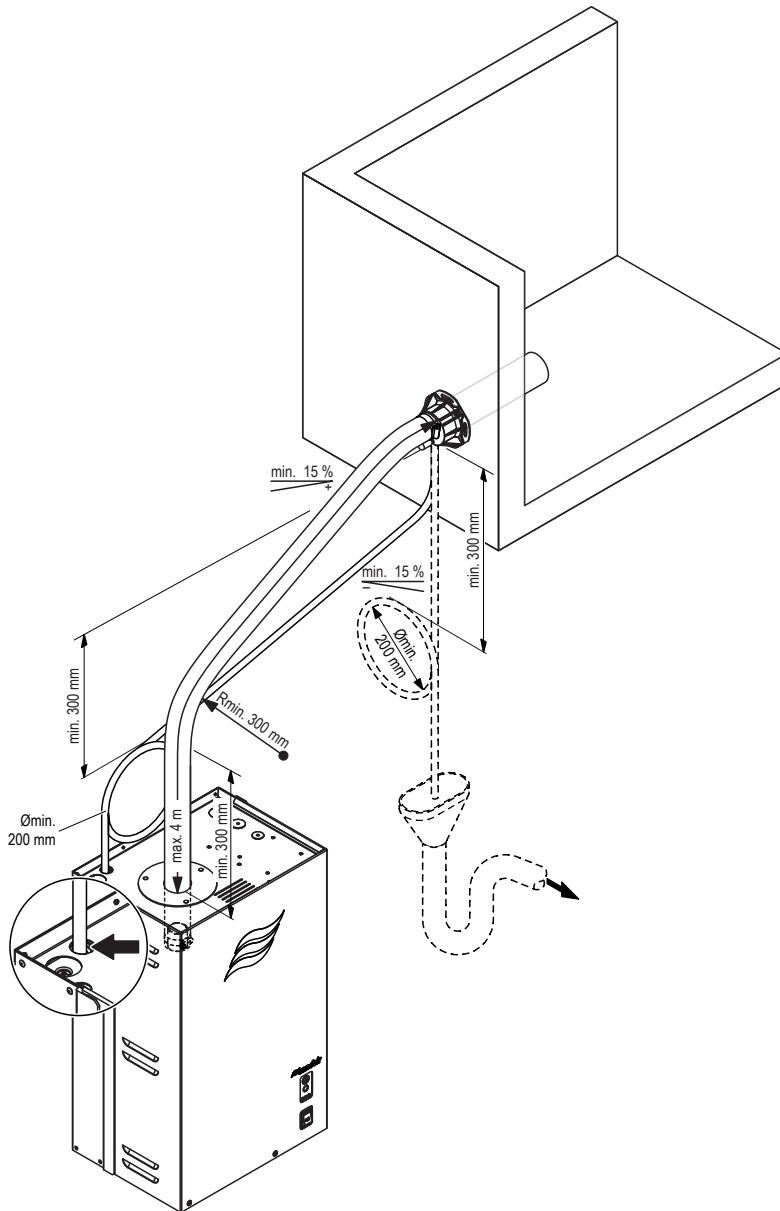


Abb. 10: Steam distributor is mounted more than 500 mm above the top edge of the steam generator

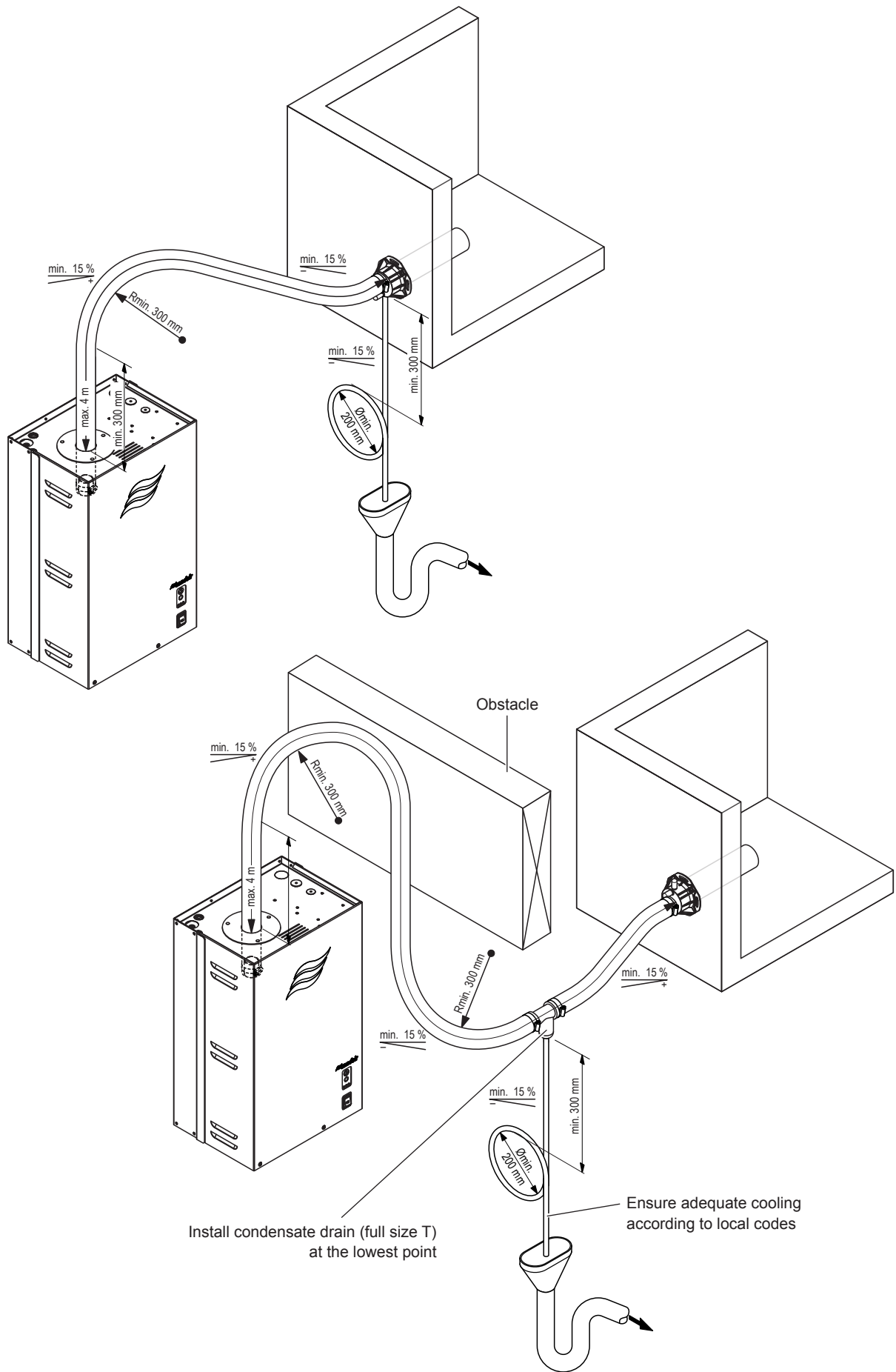


Abb. 11: Steam distributor is mounted less than 500 mm above the top edge of the steam generator

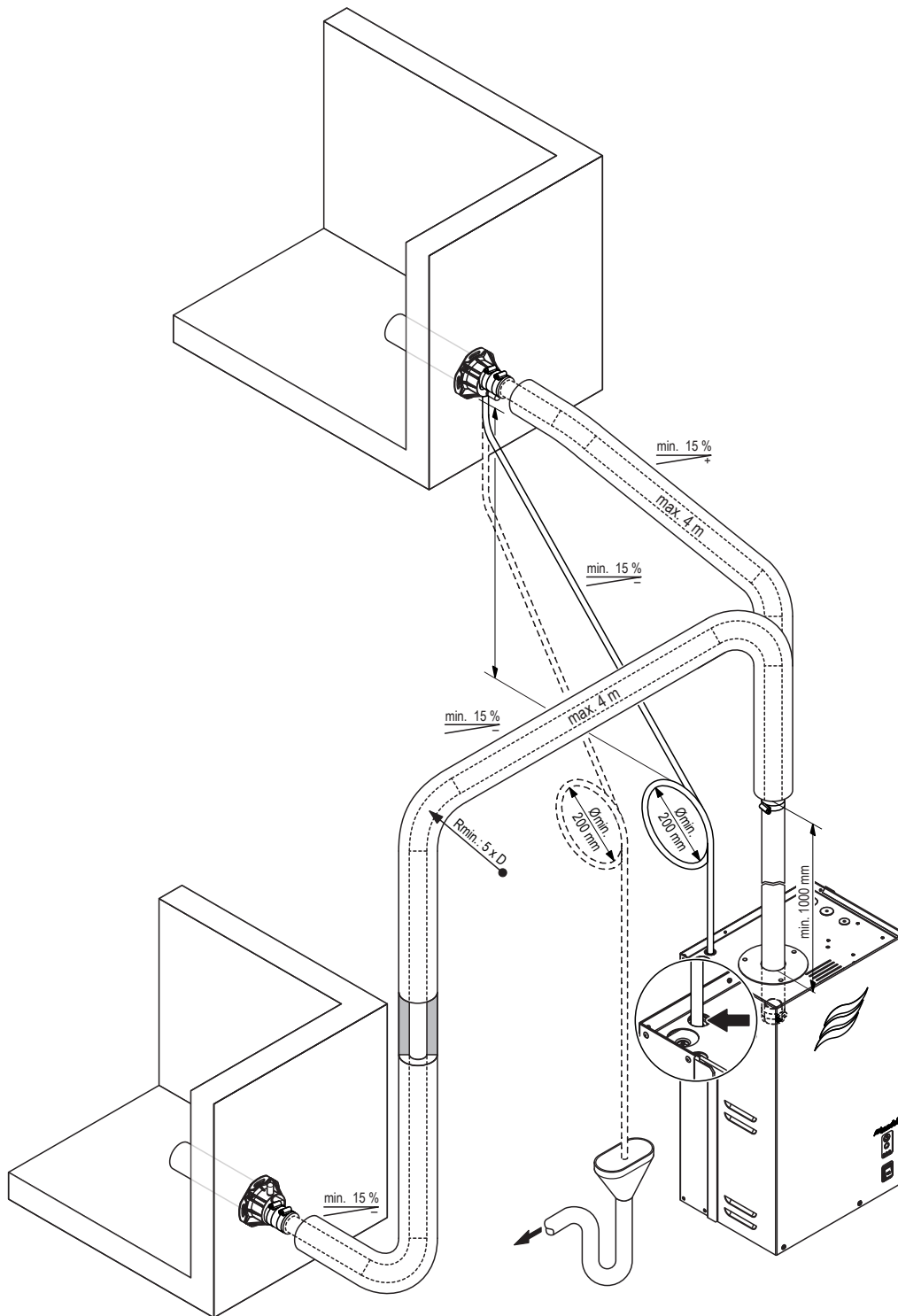


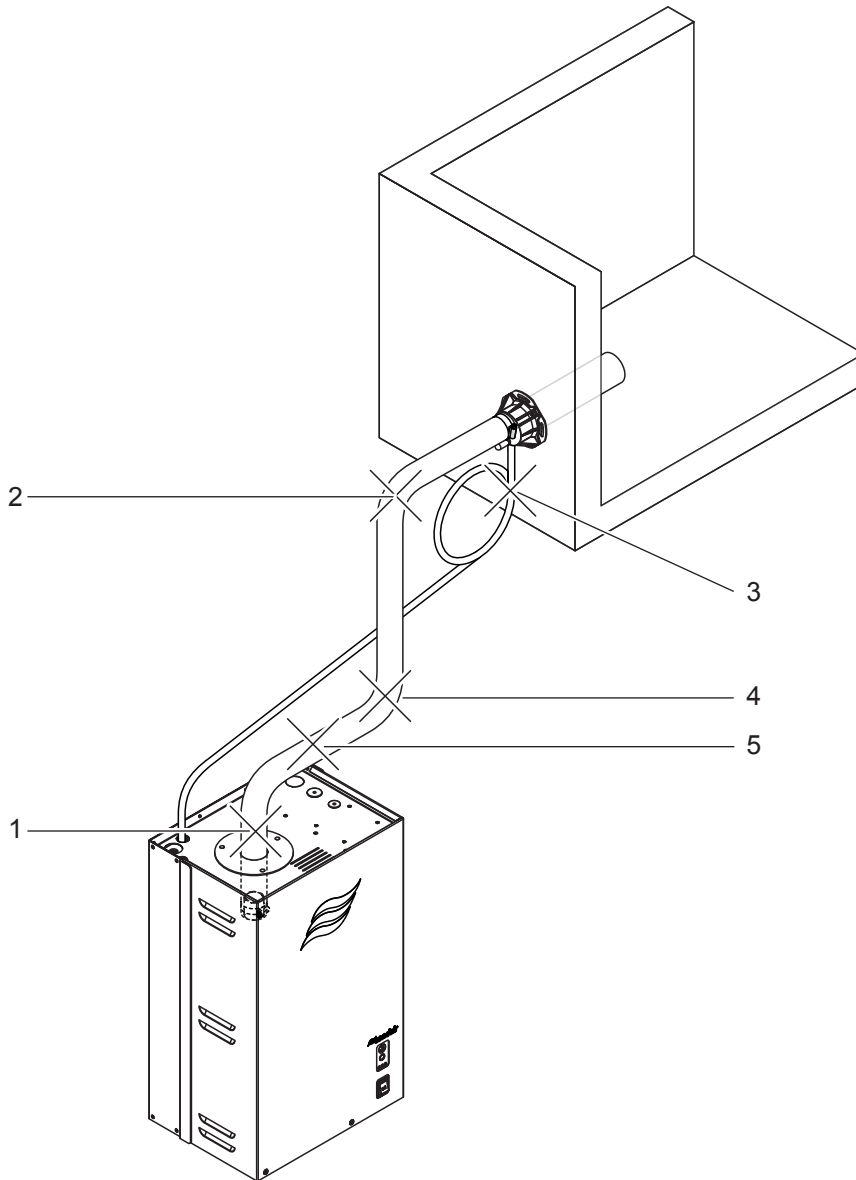
Abb. 12: Steam line with solid piping and insulation

The following notes should be observed:

- The **minimum internal diameter of the steam line** (diameter dependent on the steam generator) should be applied over the entire length of the piping.
- Use exclusively stainless steel (recommended, min. DIN 1.4301) or copper pipe.
- To minimize the condensate formation (=loss), the steam pipes must be insulated.

- The minimum bend radius for fixed piping is 5 x steam pipe inside diameter.
- Connection of the steam pipes to the steam distributor and the steam outlet connector on the steam tank is effected with pieces of steam hose with an appropriate length (the length of the steam hose connected to the steam outlet of the steam generator must be min. 1,000 mm) secured with hose clamps.
- **Important!** Allowance must be made for a **pressure loss of approx. 100 Pa** per meter length or per 90° bend.

5.4.4 Common steam and condensate line errors



	Wrong	Correct
1	Steam hose/steam hose piece not led at least 300 mm perpendicularly upwards before first bend (forming of condensate).	Lead steam hose/steam hose piece at least 300 mm (for steam hose installations) or 1,000 mm (for solid pipe installation) perpendicularly upwards before first bend.
2	Minimum bend radius of steam hose/solid steam line not maintained (forming of condensate).	The minimum bend radius of 300 mm for steam hoses or 5 times steam line internal diameter for solid steam lines must be maintained.
3	Condensate trap not sufficiently high and installed too near at the steam distributor.	The condensate trap must be at least 300 mm below the connector on the steam distributor and it must have a minimum height of 200 mm (ø200 mm).
4	No condensate trap installed at vertical transition.	Install condensate trap at all low points and before vertical transitions.
5	Steam line and condensate hose not sloped.	Install steam line always with constant up or downslope of min. 15 % (8.5°) and condensate hose with constant downslope of min. 15 % (8.5°).

Abb. 13: Common steam and condensate line errors

5.4.5 Inspecting the steam installation

Use the following check list to ascertain that the steam installation was performed correctly:

- Steam distributor
 - Is the steam distributor correctly positioned and fastened in the SPA cabin?
 - Is the steam outlet of the steam distributor shielded by appropriate measures so that the steam bath users cannot burn themselves on the escaping steam?
- Steam hose
 - Maximum length of 4 m?
 - Is minimum steam hose length of 500 mm (for steam hose installations) or 1,000 mm (for solid pipe installation) maintained before first bend and led perpendicularly upwards?
 - Minimum upslope/downslope of 15%/8.5° maintained?
 - Minimum bend radius of 300 mm (5 x internal diameter with fixed piping)?
 - Have the instructions for hose layout been followed?
 - Steam hose: no sagging (condensate pocket) or condensate drain with siphon (hose bend with a minimum diameter of 200 mm) installed at the lowest point?
 - Rigid steam lines: properly insulated? Correct installation material used? Minimum internal diameter maintained?
 - Steam hose(s) securely attached with clamps?
 - Heat expansion during operation and shortening of the hose with ageing taken into consideration?
- Condensate hose
 - Downslope of at least 15 %/8.5°?
 - Siphon (min. ø200 mm) existing and filled with water?
 - Condensate hose correctly fixed and not kinked?

5.5 Water installation

5.5.1 Overview water installation

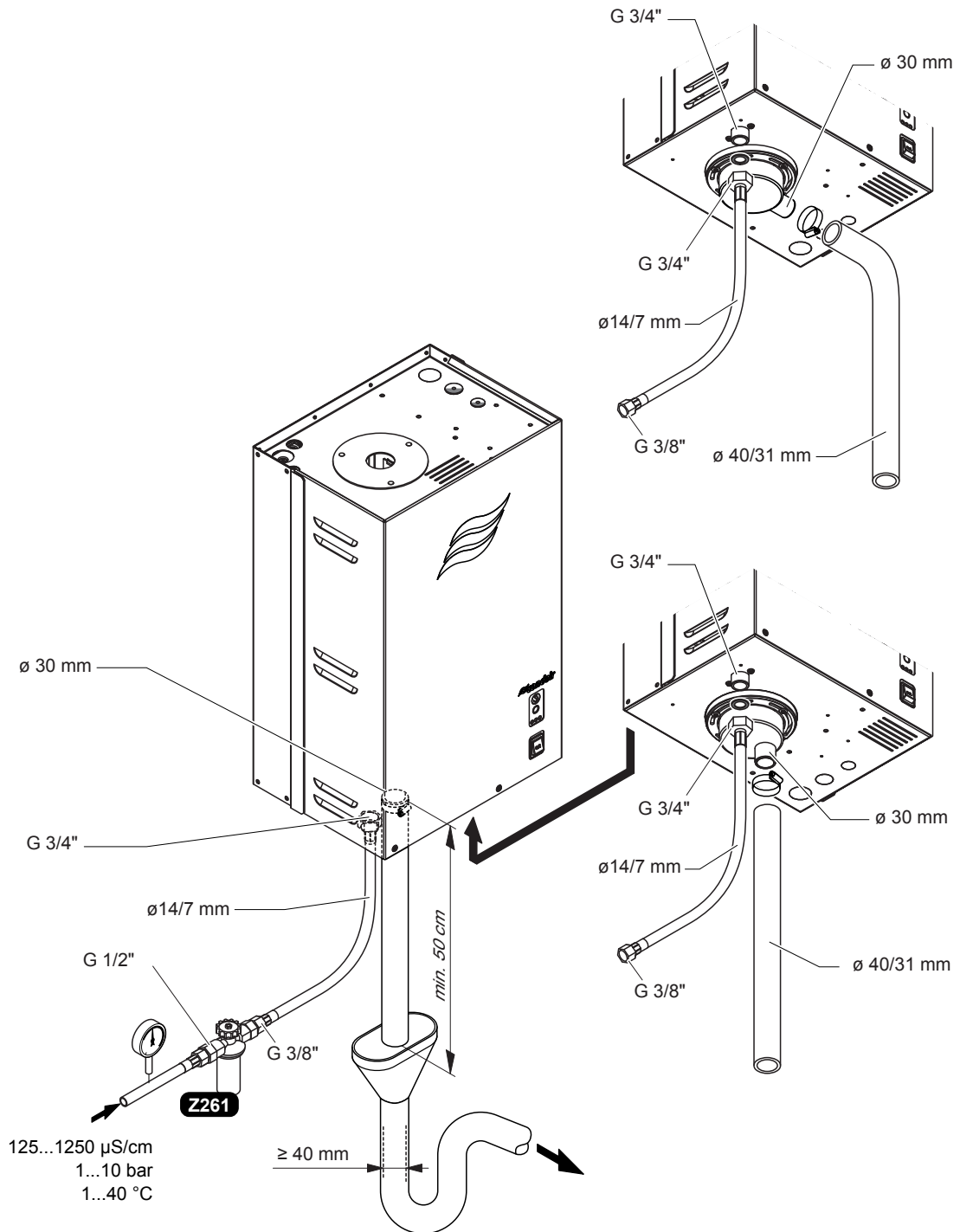


Abb. 14: Overview water installation

5.5.2 Notes on water installation

Water supply

The water supply is to be carried out according to the figure found in [chapter 5.5.1](#) and the applicable local regulations for water installations. The indicated connection specifications must be observed.

- The installation of the **filter valve** (accessory "Z261", alternatively a shut-off valve and a 5 µm water filter can be used) should be made as close as possible to the steam generator.
- Admissible mains pressure **1.0 to 10.0 bar (hammer-free system)**
For mains pressures >10 bar, the connection must be made via a pressure reducing valve (adjusted to 1.0 bar). For mains pressures <1.0 bar please contact your Condair supplier.
- **Notes on water quality:**
 - For the water supply of the Condair Sigma, use exclusively **untreated drinking water**.
 - The use of **additives** such as corrosion inhibitors, disinfectants, etc. is **not allowed**, since these additives may endanger health and affect proper operation.
 - If the Condair Sigma shall be operated with softened or partly softened water, please contact your Condair supplier.
- The connection material must be **pressure-proof** and **certified for use in drinking water systems**.
- The water supply line must be fastened with suitable means.
- **Important!** Before connecting the water line, **the line should be well flushed out**.



CAUTION!

The thread at the humidifier connection is made of plastic. To avoid overtightening, the union nut of the water pipe must be **tightened by hand** only.

Water drain

The water drain is to be carried out according to the figure found in [chapter 5.5.1](#) and the applicable local regulations for water installations. The indicated connection specifications must be observed.

- Make sure that the drain pipe, the funnel and the siphon are correctly fixed and easily accessible for inspections and cleaning purposes.
- The draining temperature is: **80...90 °C**. Use temperature-resistant installation materials only!
- Make sure that the drain pipe has a constant downslope of min. 10% over its entire length.
- Attach drain line in such a way, that it cannot slip out of the funnel.
- The open end of the drain line must not touch the funnel (min. air gap 2 cm).

5.5.3 Inspecting the water installation

Check the following topics:

- Water supply
 - Has filter valve (accessory "Z261") or shut-off valve and 5 µm water filter respectively been installed in supply line?
 - Have admissible water pressure (1 – 10 bar) and admissible temperature (1 – 40 °C) been observed?
 - Does the supply capacity match the steam generator and is the minimum internal diameter of 8 mm of the supply pipe maintained throughout the entire length?
 - Are all components and pipes properly secured and are all threaded connections securely tightened?
 - Is the water system properly sealed?
 - Does the water supply installation meet the requirements of the local regulations for water installations?
- Water drain
 - Is the minimum inside diameter of the drain pipe of 30 mm maintained throughout the entire length?
 - Has drain pipe been installed with a downslope of at least 10 %?
 - Has the heat resistance of the material used been verified to be at least 100 °C?
 - Is the drain hose properly secured (hose clamps at unit connection tightened)?
 - Is there an air gap (min 2 cm) between the open end of the drain line and the funnel?
 - Does the water drain installation meet the requirements of the local regulations for water installations?

5.6 Electric installation

5.6.1 Hinweise zur Elektroinstallation



DANGER!
Danger of electric shock

The Condair Sigma is mains powered. Live parts may be exposed when the unit is open. Touching live parts may cause severe injury or danger to life.

Prevention: The Condair Sigma unit must be connected to the mains only after all mounting and installation work has been completed, all installations have been checked for correct workmanship and the unit is closed and properly locked.

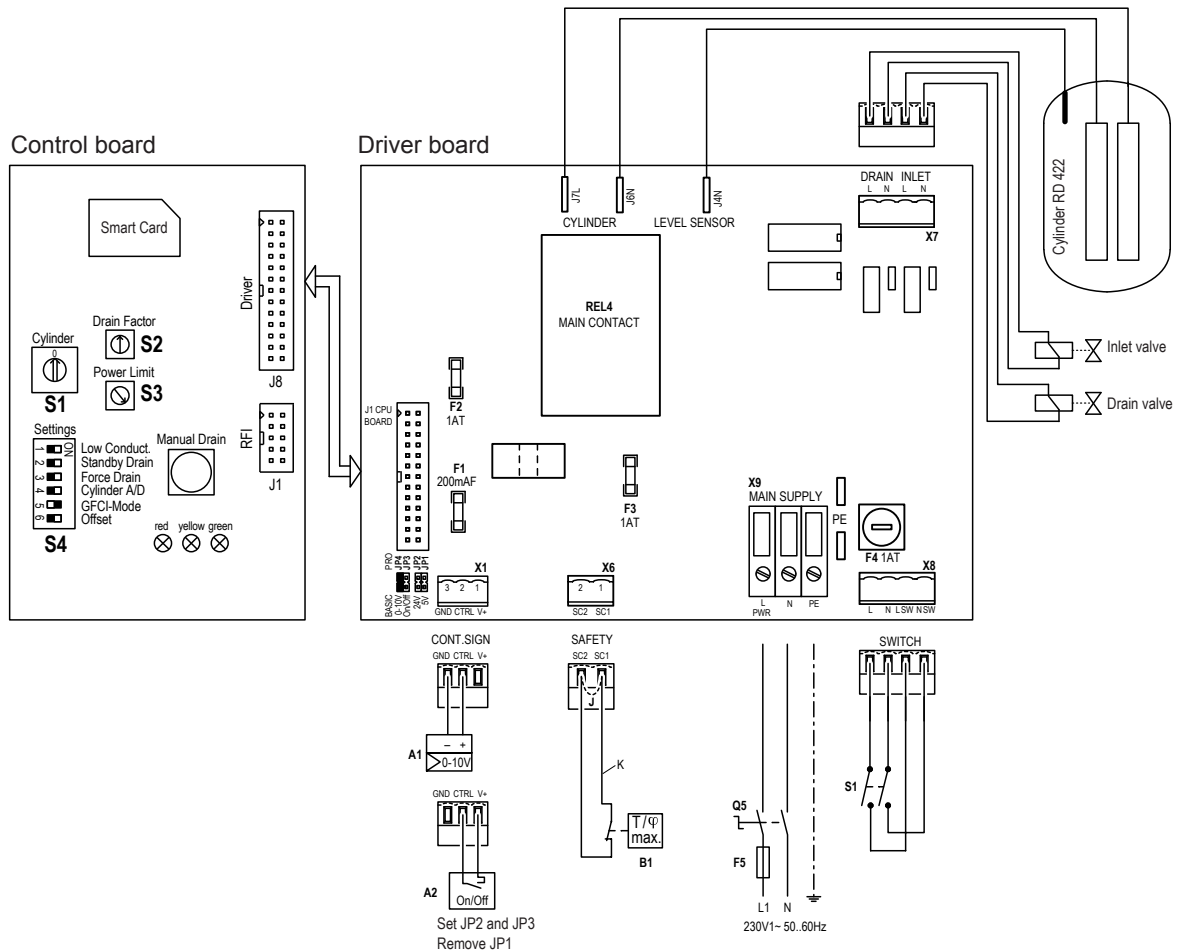


CAUTION!

The electronic components inside the unit are very sensitive to electrostatic discharge. Before carrying out installations work inside the unit, appropriate measures must be taken to protect the electronic components against damage caused by electrostatic discharge (ESD protection).

- All work concerning the electrical installation must be performed only by **skilled and qualified technical personnel (e.g. electrician with appropriate training) authorised by the owner**. It is the owner's responsibility to verify proper qualification of the personnel.
- The electrical installation must be carried out according to the appropriate wiring diagram (see [chapter 5.6.2](#) or [chapter 5.6.3](#)), the notes on electrical installation as well as the applicable local regulations. All information given in the wiring diagram and additional notes must be followed and observed.
- All cables must be lead into the unit, via appropriate cable strain relief or grommets (supplied by others).
- Make sure the cables are adequately clamped, do not rub on any components or become a tripping hazard.
- Observe and maintain maximum cable length and required cross section per wire according to local regulations.
- The mains supply voltages must match the respective voltages (heating and control voltage) on the type plate.

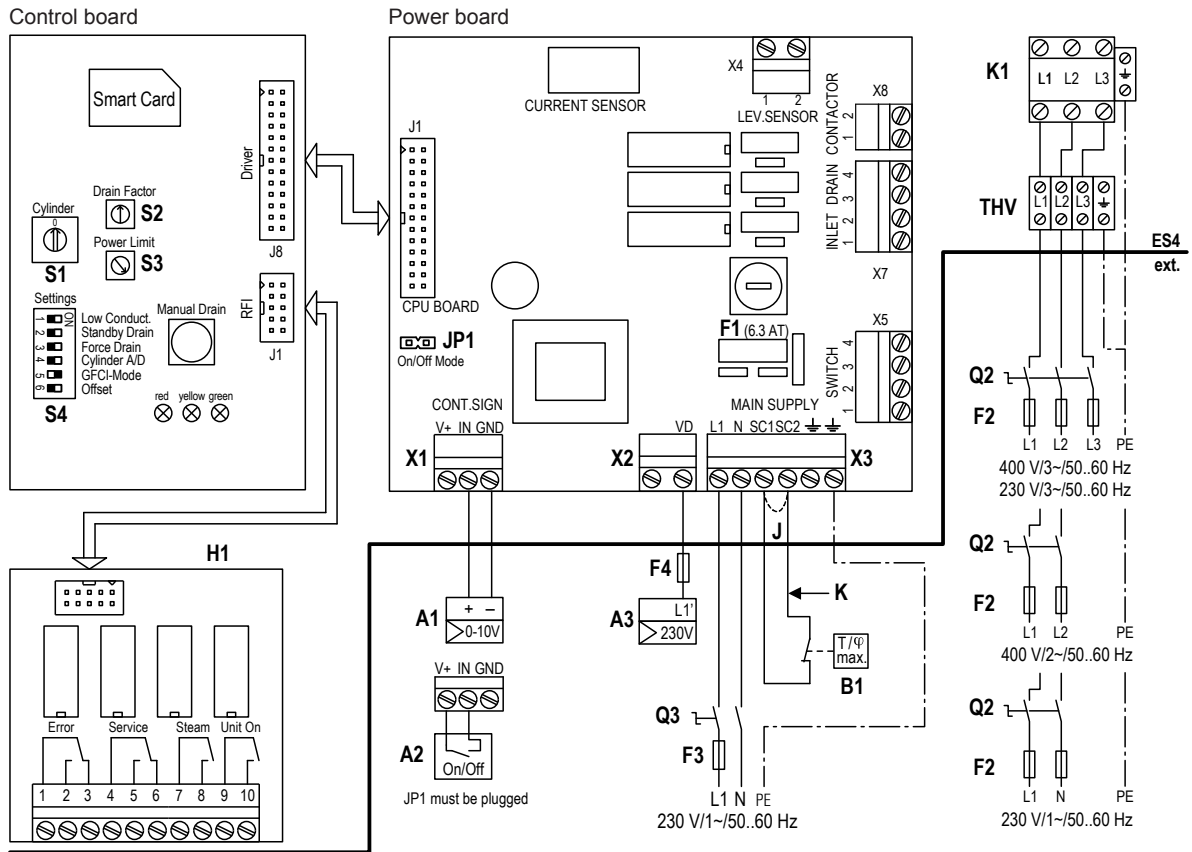
5.6.2 Wiring diagram Condair Sigma 4 kg/h



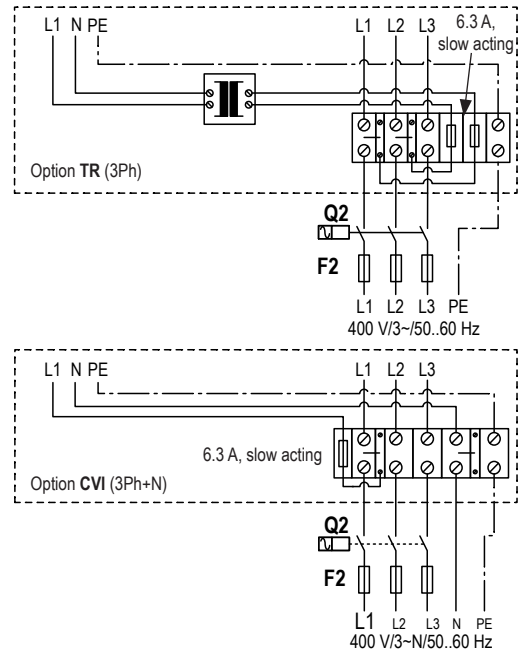
A1	Continuous controller (active 0-10V) or control signal input from Condair Delta SPA Control Box	JP2	Set jumper for voltage output on X1, V+ = 24 V (remove jumper JP2)
A2	On/Off controller (passive 24VDC), set jumper on JP1	JP3	Jumper must be removed
B1	Safety humidistat / Safety thermostat	JP4	Jumper must be set
F1	Internal fuse power board: control signal (200 mA, fast acting)	K	External safety chain (24 VDC)
F2	Internal fuse power board: control 5 V (1 A, slow acting)	Q5	External service switch voltage supply
F3	Internal fuse power board: control 24 V (1 A, slow acting)	S1	Unit switch
F4	Internal fuse power board: control voltage (1 A, slow acting)	REL4	Relay heating
F5	External fuse supply voltage (fuse values see table in chapter 5.6.4.8)	S1	Rotary switch "Cylinder type"
J	Short circuited, if no external monitoring devices are connected	S2	Potentiometer "Drain factor"
JP1	Set jumper for voltage output on X1, V+ = 5 V (remove jumper JP1)	S3	Potentiometer "Power limitation"
		S4	DIP switch "General unit settings"
		X1	Connection terminal control signal
		X6	Connection terminal safety chain
		X7	Connection terminal inlet and outlet valve
		X8	Connection terminal unit switch
		X9	Connection terminal voltage supply

Abb. 15: Wiring diagram Condair Sigma 4 kg/h

5.6.3 Wiring diagram Condair Sigma 5-65 kg/h



- A1 Continuous controller (active 0-10V) or control signal input from Condair Delta SPA Control Box
- A2 On/Off controller (passive 24VDC), set jumper on JP1
- A3 On/Off control (active 230VAC)
- B1 Ventilation interlock
- B2 Airflow monitor
- B3 Safety humidistat / Safety thermostat
- F1 Internal fuse power board (6.3 A, slow acting)
- F2 External fuse heating voltage supply (fuse values see table in [chapter 5.6.4.5](#))
- F3 External fuse control voltage supply
- F4 External fuse 230V On/Off control
- H1 Remote operating and fault indication (option "RFI")
- J Short circuited, if no external monitoring devices are connected
- JP1 Jumper On/Off mode
- K External safety chain (230V/5A)
- K1 Main contactor (for connecting the heating voltage supply to the unit)
- Q2 External electrical isolator heating voltage supply
- Q3 External electrical isolator control voltage supply
- S1 Rotary switch "Cylinder type"
- S2 Potentiometer "Drain factor"
- S3 Potentiometer "Power limitation"
- S4 DIP switch "General unit settings"
- THV Connection terminal heating voltage (option THV)
- X1 Connection terminal control signal
- X2 Connection terminal On/Off control active
- X3 Connection terminal control voltage



5.6.4 Installation work external connections

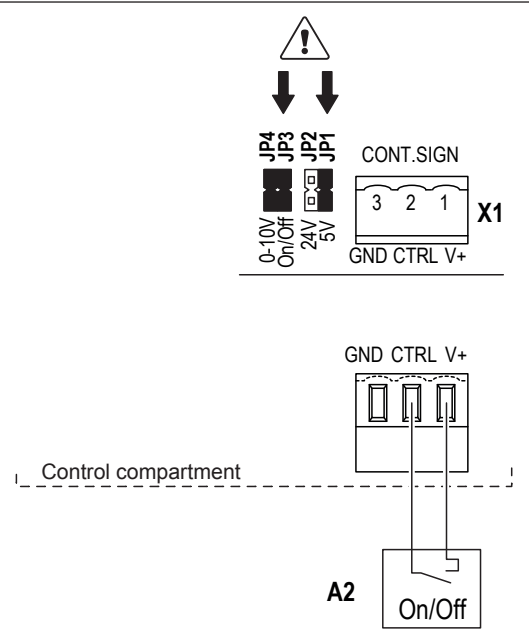
5.6.4.1 Connecting the external safety chain

<p>Condair Sigma 4 kg/h</p>	
<p>SAFETY X6</p> <p>SC2 SC1</p> <p>Control compartment</p> <p>Do not apply external voltage via K!</p> <p>24 VDC</p> <p>B1</p>	<p>The potential-free contacts of external monitoring devices (e.g. safety humidistat "B1") are connected in series (safety chain "K") to the terminals "SC1" and "SC2" of the terminal block "X6" on the driver board in accordance with the wiring diagram.</p> <p>The connecting cable must be led through a cable gland into the control compartment.</p> <p>Note: If, for whatever reason, no external monitoring devices are connected, a jumper wire "J" must be installed on the contacts "SC1" and "SC2" of the terminal block.</p> <p>CAUTION! Do not apply any external voltage to contacts "SC1" and "SC2" via the contacts of the external monitoring devices.</p>
<p>Condair Sigma 5-65 kg/h</p>	
<p>MAIN SUPPLY</p> <p>L1 N SC1 SC2</p> <p>Control compartment</p> <p>Do not apply external voltage via K!</p> <p>DANGER: 240 V</p> <p>B1</p>	<p>The potential-free contacts (max. contact load 250V/5A) of external monitoring devices (e.g. safety humidistat "B1") are connected in series (safety chain "K") to the terminals "SC1" and "SC2" of the terminal block "X3" on the driver board in accordance with the wiring diagram.</p> <p>The connecting cable must be led through a cable gland into the control compartment.</p> <p>Note: If, for whatever reason, no external monitoring devices are connected, a jumper wire "J" must be installed on the contacts "SC1" and "SC2" of the terminal block.</p> <p>CAUTION! Do not apply any external voltage to contacts "SC1" and "SC2" via the contacts of the external monitoring devices.</p> <p>DANGER! There is mains voltage (up to 240 V) at the connection terminal "X3". Therefore, disconnect the steam generator from the power supply before you start the connection work.</p>

5.6.4.2 Humidity control wiring

Connecting a demand signal 0-10 V to the Condair Sigma 4 kg/h	
	<p>The demand signal cable of an external controller is to be connected according to the wiring diagram to the terminals "CTRL" and "GND" of the terminal strip "X1" on the driver board in the control compartment. The connecting cable must be led through a cable gland into the control compartment.</p> <p>If a shielded signal cable is used, connect the shielding to terminal "GND".</p> <p>Caution! If the shielding of the control signal is already connected to a potential or a grounded conductor, do not connect it to terminal "GND"</p>
Connecting a demand signal 0-10 V to the Condair Sigma 5-65 kg/h	
	<p>The demand signal cable of an external controller is to be connected according to the wiring diagram to the terminals "IN" and "GND" of the terminal strip "X1" on the driver board in the control compartment. The connecting cable must be led through a cable gland into the control compartment.</p> <p>If a shielded signal cable is used, connect the shielding to terminal "GND".</p> <p>Caution! If the shielding of the control signal is already connected to a potential or a grounded conductor, do not connect it to terminal "GND"</p>

Connecting a 24V On/Off humidistat/thermostat to the Condair Sigma 4 kg/h

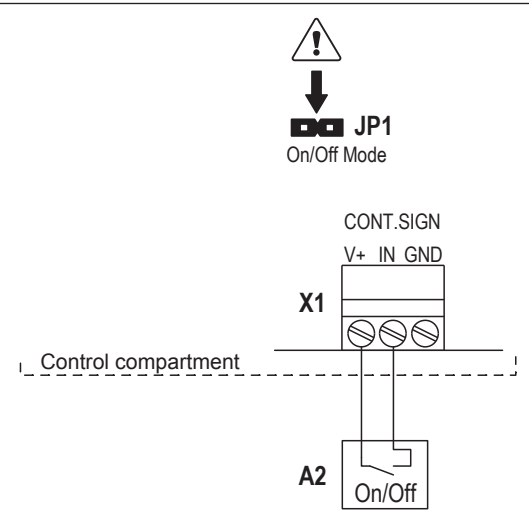


The signal cable of 24V On/Off humidistat/thermostat is to be connected according to the wiring diagram to the terminals "V+" and "CTRL" of the terminal strip "X1" on the driver board in the control compartment.

The connecting cable must be led through a cable gland into the control compartment.

Note: when connecting a 24V On/Off humidistat/thermostat Jumper "JP2" and Jumper "JP3" must be connected.

Connecting a 24V On/Off humidistat/thermostat to the Condair Sigma 5-65 kg/h

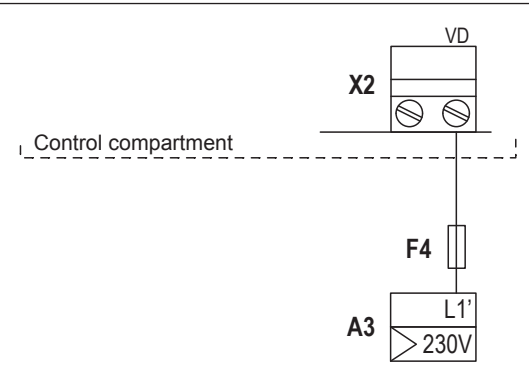


The signal cable of 24V On/Off humidistat/thermostat is to be connected according to the wiring diagram to the terminals "V+" and "IN" of the terminal strip "X1" on the driver board in the control compartment.

The connecting cable must be led through a cable gland into the control compartment.

Note: when connecting a 24V On/Off humidistat/thermostat Jumper "JP1" must be connected.

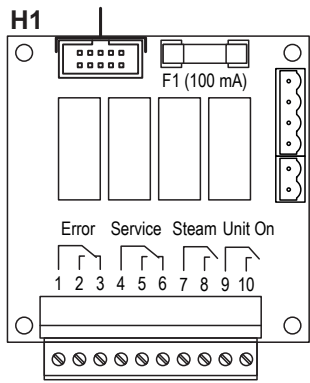
Connecting 230V On/Off control (active) to the Condair Sigma 5-65 kg/h



The signal cable of a 230V On/Off control is connected via an external fuse "F4" (max. 10A, slow acting) to terminal "VD" of the terminal strip "X2" on the driver board in the control compartment.

The connecting cable must be led through a cable gland into the control compartment.

5.6.4.3 Connecting the optional remote operating and fault indication to the Condair Sigma 5-65 kg/h (Option)



Control compartment

The optional remote operating and fault indication board contains four potential-free relay contacts for the connection of the following operating and fault indications:

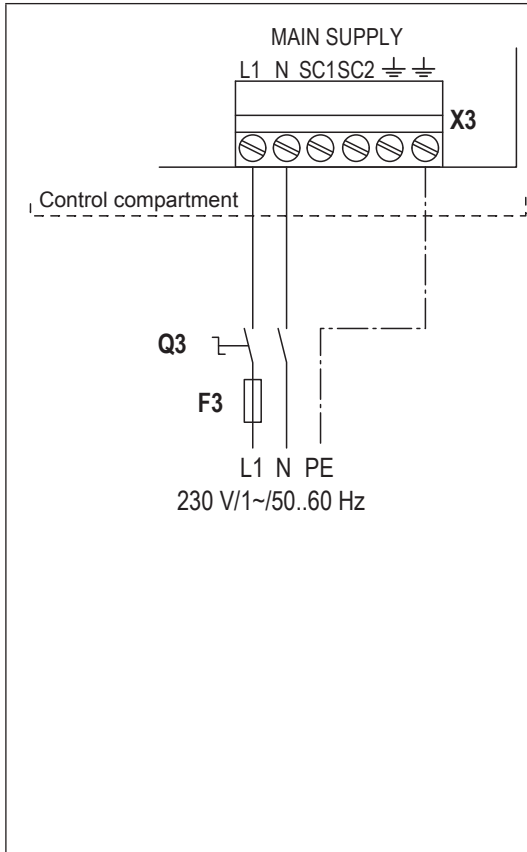
- "Error" (Terminal 1 and 2):
This relay is activated if an error is present.
- "Service" (Terminal 4 and 5):
This relay is activated when the set maintenance interval has elapsed.
- "Steam" (Terminal 7 and 8):
This relay closes as soon as the Condair Sigma produces steam.
- "Unit on" (Terminal 9 and 10):
This relay closes as soon as the voltage supply to the Control compartment of the Condair Sigma is switched on.

The connecting cable must be led through a cable gland or grommet into the control compartment.

The **maximum contact loading** is **250V/8A**.

Appropriate suppressor modules are to be used for the switching of relays and miniature contactors.

5.6.4.4 Connecting the control voltage to the Condair Sigma 5-65 kg/h



The control voltage supply (L1, N, PE) is to be connected in accordance with the wiring diagram to the corresponding terminals on the driver board in the control compartment.

The connecting cable must be led through a cable gland into the control compartment.

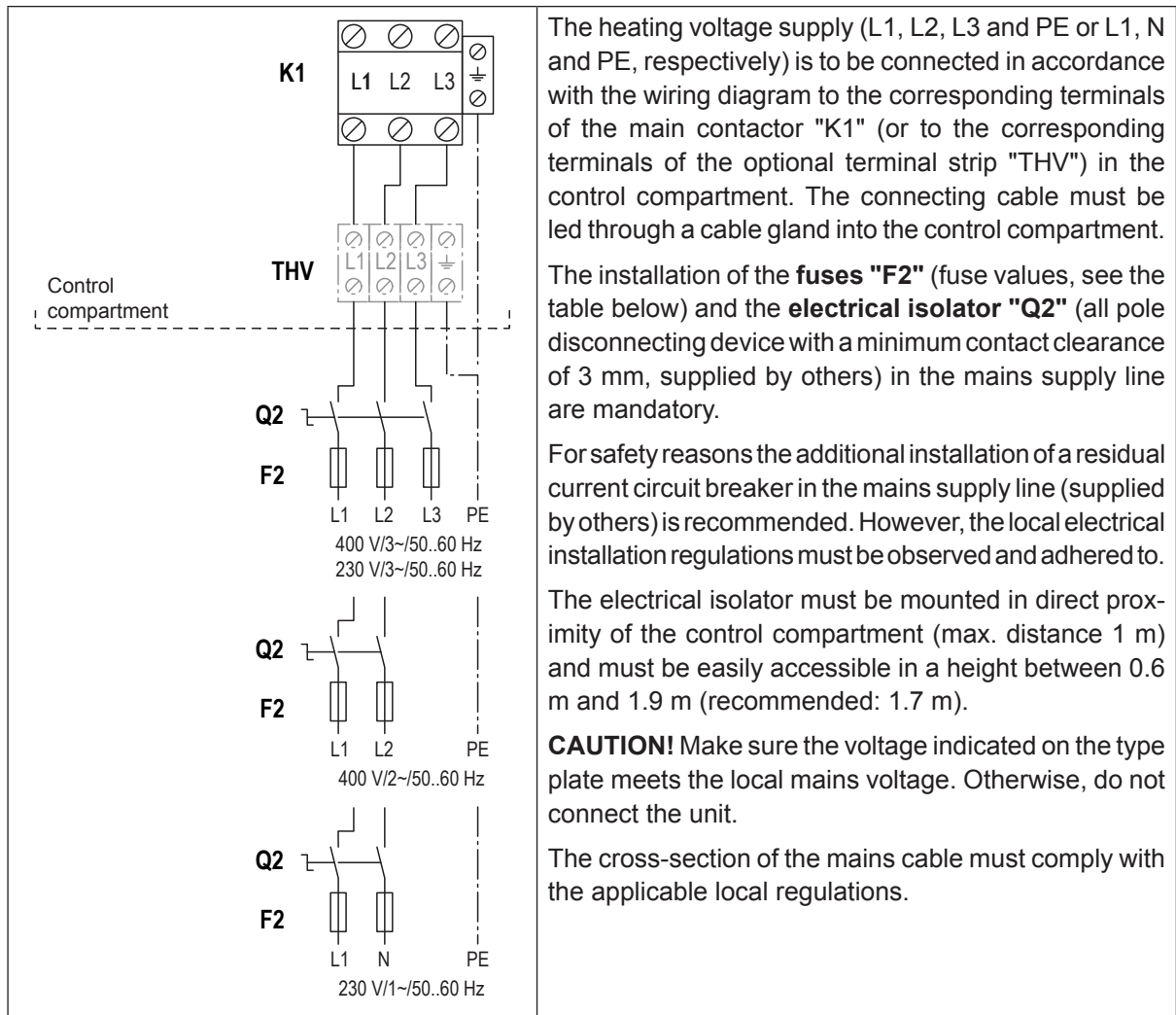
The installation of the **fuse "F3"** (10A, slow acting) and the **electrical isolator "Q3"** (all pole disconnecting device with a minimum contact clearance of 3 mm, supplied by others) in the mains supply line are mandatory. For safety reasons the additional installation of a residual current circuit breaker in the mains supply line (supplied by others) is recommended. However, the local electrical installation regulations must be observed and adhered to.

The electrical isolator must be mounted in direct proximity of the control compartment (max. distance 1 m) and must be easily accessible in a height between 0.6 m and 1.9 m (recommended: 1.7 m).

CAUTION! Make sure the voltage indicated on the type plate meets the local mains voltage. Otherwise, do not connect the unit.

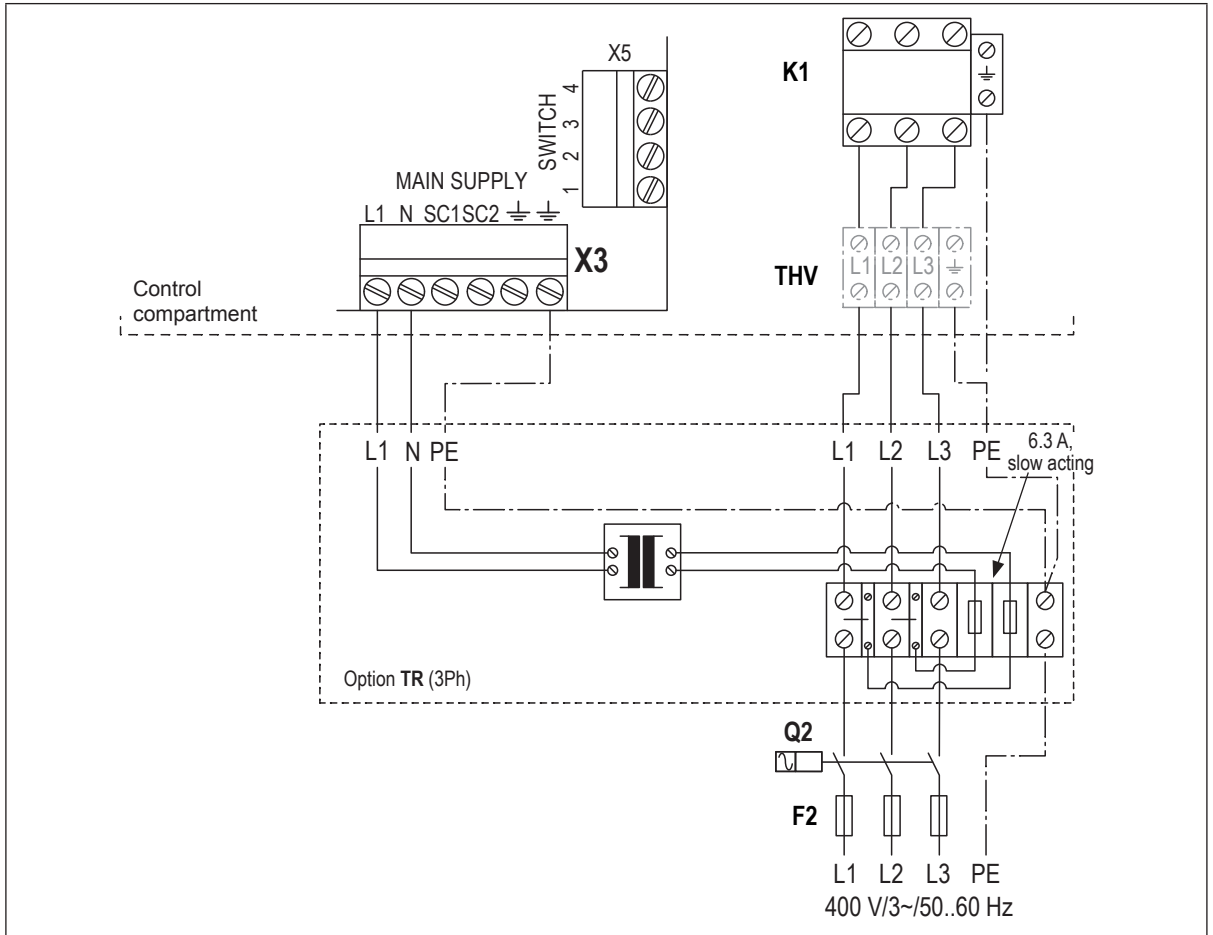
The cross-section of the cable must comply with the applicable local regulations (minimum of 1.5 mm²).

5.6.4.5 Connecting the heating voltage to the Condair Sigma 5-65 kg/h



Heating voltage	Max. steam capacity [kg/h]	Condair Sigma	Nominal power [kW]	Nominal current [A]	Main fuse F2 [A]
400V3 (400 V/3~/50...60 Hz)	5	534	3.8	5.4	3x 10
	8	834	6.0	8.7	3x 16
	15	1534	11.3	16.2	3x 20
	23	2364	17.3	24.9	3x 35
	32	3264	24.0	34.6	3x 50
	45	4564	33.8	48.7	3x 63
	65	6564	48.8	70.4	3x 100
400V2 (400 V/2~/50...60 Hz)	5	524	3.8	9.4	2x 16
	8	824	6.0	15.1	2x 20
230V3 (230 V/3~/50...60 Hz)	5	532	3.8	9.4	3x 16
	8	832	6.0	15.1	3x 20
	15	1532	11.3	28.2	3x 35
	23	2362	17.3	43.3	3x 63
	32	3262	24.0	60.2	3x 80
230V1 (230V/1~/50...60Hz)	5	522	3.8	16.3	25
	8	822	6.0	26.1	35

5.6.4.6 Connecting the voltage supply to the Condair Sigma 5-65 kg/h via Option TR



The voltage supply (L1, L2, L3 and PE) is to be connected in accordance with the wiring diagram to the corresponding terminals of option "TR". The connecting cable must be led through a cable gland into the control compartment.

The installation of the fuses "F2" and the electrical isolator "Q2" (all pole disconnecting device with a minimum contact clearance of 3 mm, supplied by others) in the mains supply line are mandatory. Note: The table with the fuse values for fuses "F3" can be found in [chapter 5.6.4.5](#).

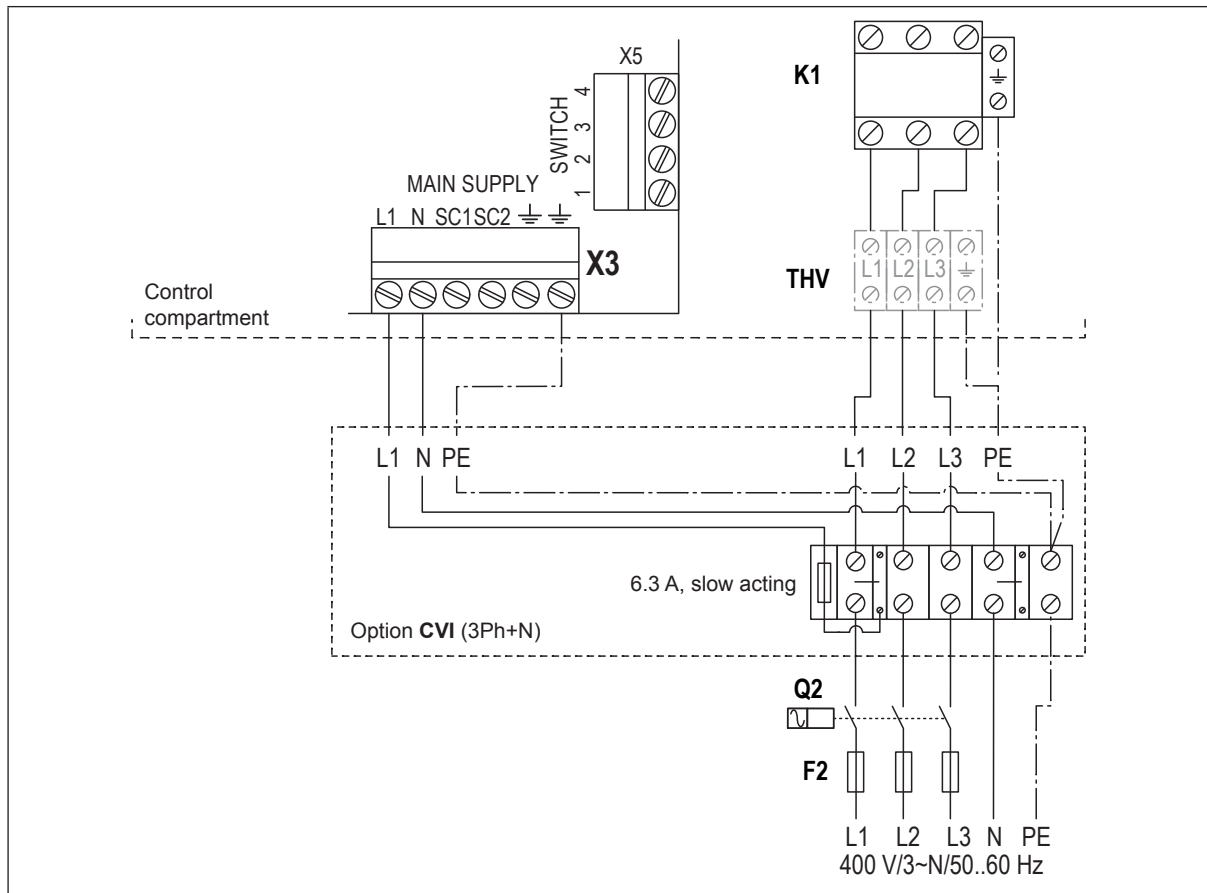
For safety reasons the additional installation of a residual current circuit breaker in the mains supply line (supplied by others) is recommended. However, the local electrical installation regulations must be observed and adhered to..

The electrical isolator must be mounted in direct proximity of the control compartment (max. distance 1 m) and must be easily accessible in a height between 0.6 m and 1.9 m (recommended: 1.7 m).

CAUTION! Make sure the voltage indicated on the type plate meets the local mains voltage. Otherwise, do not connect the unit.

The cross-section of the mains cable must comply with the applicable local regulations.

5.6.4.7 Connecting the voltage supply to the Condair Sigma 5-65 kg/h via Option CVI



The voltage supply (L1, L2, L3, N and PE) is to be connected in accordance with the wiring diagram to the corresponding terminals of option "CVI". The connecting cable must be led through a cable gland into the control compartment.

The installation of the **fuses "F2"** and the **electrical isolator "Q2"** (all pole disconnecting device with a minimum contact clearance of 3 mm, supplied by others) in the mains supply line are mandatory. Note: The table with the fuse values for fuses "F2" can be found in [chapter 5.6.4.5](#).

For safety reasons the additional installation of a residual current circuit breaker in the mains supply line (supplied by others) is recommended. However, the local electrical installation regulations must be observed and adhered to..

The electrical isolator must be mounted in direct proximity of the control compartment (max. distance 1 m) and must be easily accessible in a height between 0.6 m and 1.9 m (recommended: 1.7 m).

CAUTION! Make sure the voltage indicated on the type plate meets the local mains voltage. Otherwise, do not connect the unit.

The cross-section of the mains cable must comply with the applicable local regulations.

5.6.4.8 Connecting the voltage supply to the Condair Sigma 4 kg/h

The diagram shows a terminal strip labeled 'X9 MAIN SUPPLY' with three terminals: L, N, and PE. Wires from these terminals pass through an electrical isolator 'Q3' and a fuse 'F5' before entering the control compartment. The supply is labeled '230V1~ 50..60Hz'.

The voltage supply (L1, N and PE) is to be connected in accordance with the wiring diagram to the corresponding terminals of terminal strip "X9". The connecting cable must be led through a cable gland into the control compartment.

The installation of the fuses "F5" (fuse values, see the table below) and the electrical isolator "Q5" (all pole disconnecting device with a minimum contact clearance of 3 mm, supplied by others) in the mains supply line are mandatory.

For safety reasons the additional installation of a residual current circuit breaker in the mains supply line (supplied by others) is recommended. However, the local electrical installation regulations must be observed and adhered to..

The electrical isolator must be mounted in direct proximity of the control compartment (max. distance 1 m) and must be easily accessible in a height between 0.6 m and 1.9 m (recommended: 1.7 m).

CAUTION! Make sure the voltage indicated on the type plate meets the local mains voltage. Otherwise, do not connect the unit.

The cross-section of the mains cable must comply with the applicable local regulations.

Heating voltage	Max. steam capacity [kg/h]	Condair Sigma	Nominal power [kW]	Nominal current [A]	Main fuse F5 [A]
230V1 (230V/1~/50...60Hz)	4	422	3.1	13.5	16

5.6.5 Unit configuration

All setting components for the unit configuration are located on the control board:

- Rotary switch "Cylinder": cylinder type
- Potentiometer "Drain Factor": drain factor
- Potentiometer "Power Limit": power limitation
- DIP switch "Settings": general settings

Setting the steam cylinder type ("Cylinder")

Use the rotary switch "Cylinder" to select the type of steam cylinder used:

Voltage/ Phase	200/1 230/1	400/2	200/3 230/3	400/3	200/3 230/3	400/3	200/3 230/3	400/3	200/3 230/3	400/3	400/3	400/3
Position	0	1	2	3	4	5	6	7	8	9	A	B
Cylinder type	RD 422 522A 822A	524A 824A	532A 832A	534A 534A-L 834A 834A-L	1532A	1534A 1534A-L	2362A	2364A 2364A-L	3262A	3264A 3264A-L	4564A 4564A-L	6564A

Setting the drain factor

Use the potentiometer "Drain Factor" to set the drain factor (setting range: 0.5...2.0, factory setting: 1.0).

Setting the power limitation

Use the potentiometer "Power Limit" to set the power limitation in % of the maximum capacity (setting range: 30...100%, factory setting: 100%).

General settings ("Settings")

With the DIP switches "Settings" you can set different unit parameters. The unit parameters are preset in the factory and may only be modified by the client after consulting the Condair representative.

Switch	Factory setting	Description
1	OFF	ON: low water conductivity <125 µS/cm OFF: normal water conductivity ≥125 µS/cm
2	OFF	ON: standby draining (72 hours) activated OFF: standby draining (72 hours) deactivated
3	OFF	ON: forced draining (72 hours) activated OFF: forced draining (72 hours) deactivated
4	OFF	ON: steam cylinder replacement interval 2500 h. OFF: steam cylinder replacement interval 1500 h.
5	ON	ON: the heating voltage is interrupted during draining of the steam cylinder OFF: the heating voltage is interrupted during draining and refilling of the steam cylinder
6	OFF	ON: Offset control signal activated (2-10V) OFF: Offset control signal deactivated (0-10V)

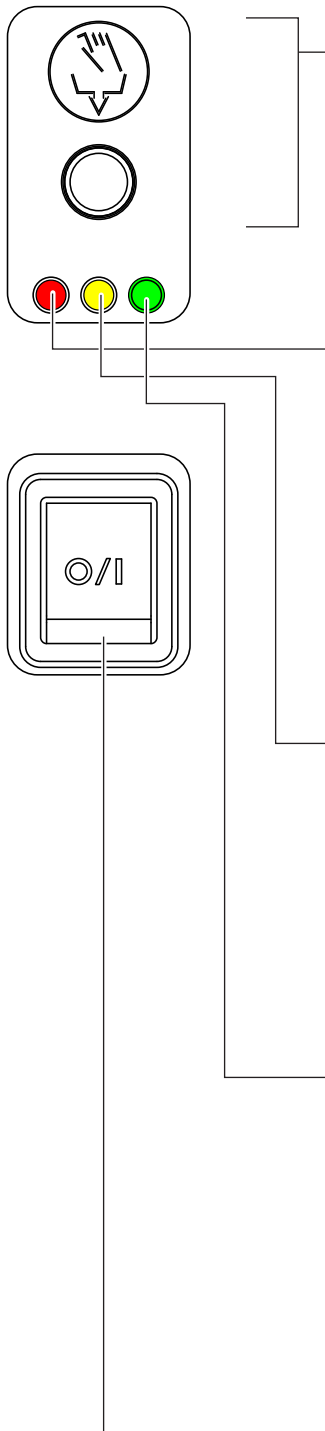
5.6.6 Inspecting the electrical installation

Check the following points:

- Do the supply voltages for heating and control voltage comply with the relevant voltages given in the wiring diagram?
- Is the correct Smart Card inserted?
- Are the voltage supplies (heating and control voltage) correctly fused?
- Are the electrical isolators "Q.." installed in the supply line for to the heating and control voltage?
- Are all components correctly connected according to the wiring diagram?
- Are all connecting cables fastened?
- Are the connecting cables free of tension (passed through cable glands?)
- Does the electric installation meet the applicable local regulations for electric installations?
- Is the front panel mounted and correctly fixed with the two screws?

6 Operation

6.1 Function of the display and operating elements



Drain/Info key

- press key **shortly**: Opens and closes the drain valve (manual draining).
Note: the drain valve is automatically closed after 10 minutes.
- press key for a **extended period of time (>3 sec.)**: activating the info mode

red LED "Error"

- in normal operating mode
 - The LED lights in case of a malfunction of the unit. Further **operation is no longer possible**, the heating voltage is interrupted.
 - The LED flashes alternately with the green LED if the external safety chain (ventilation interlock, safety humidistat, etc.) is open.
- in info mode
LED flashes in intervals if a malfunction is present. The number of "flashes" per interval indicates the left digit of the error code.

yellow LED "Warning and info indication"

- in normal operating mode
The LED lights if the cylinder maintenance is due (see [chapter 7](#)) or the maintenance indication is not reset after the maintenance (see [chapter 7.6](#)).
- in info mode
LED flashes in intervals if a malfunction is present. The number of "flashes" per interval indicates the right digit of the error code.

green LED "Steam"

- in normal operating mode
 - The LED lights if the unit produces steam.
 - The LED flashes alternately with the red LED if the external safety chain (ventilation interlock, safety humidistat, etc.) is open.
- in info mode
LED flashes in intervals. The number of "flashes" per interval multiplied by 10 indicates the current steam output in %.

Unit switch

Switches the unit on and off. The switch is illuminated when the unit is switched on.

6.2 Commissioning

Proceed as follows when putting the unit into operation:

1. **Examine the steam generator and installation for possible damage.**



DANGER!

Damaged devices or devices with damaged installation may present danger to human life or cause severe damage to material assets.

Damaged units and/or units with damaged or faulty installation must not be operated.

2. Check whether the front panel is mounted and fixed with the two screws.
3. Open the shut-off valve in the water supply line.
4. Verify the set humidity value at the humidity controller or at the humidistat, and readjust as required.
5. **Switch on the electrical isolator(s)** for mains supply/supplies (heating and control voltage).
6. **Actuate the unit switch** of the steam generator.

The steam generator carries out a **system test**, during which all the LED's light up.

If, after the system test:

- **the yellow LED lights permanently**, the steam cylinder maintenance is due (see [chapter 7](#)) or the maintenance indication has not been reset (see [chapter 7.6](#)).
- **the red LED lights permanently**, a fatal malfunction has occurred (see [chapter 8](#)).

After the system test the unit is in normal operation mode.

As soon as the humidity controller or the humidistat requires humidity, power is switched on for heating. The inlet valve opens (slight delay) and the steam cylinder fills with water. As soon as the submerged electrodes heat the water up the green LED lights up and after a few minutes (approx. 5–10 minutes, depending on the conductivity of the water) steam is produced.

Note: If the Condair Sigma is operated with water of low conductivity it may happen that the maximum steam capacity is not reached in the first few hours of operation. This is normal. As soon as the conductivity has reached a sufficient level (due to the vaporisation process) the humidifier will reach the maximum steam capacity.

6.3 Notes on operation

6.3.1 Function of the LED's in info mode

The info mode is activated by pressing the drain/info key for an extended period of time (> 3 seconds). After activating the info mode:

- first, the green LED flashes. The number of flashes indicates the current steam output in % of the maximum steam capacity.

	Green LED flashing ...									
	1x	2x	3x	4x	5x	6x	7x	8x	9x	10x
Steam output in %	10	20	30	40	50	60	70	80	90	100

Note: if no steam production is in progress when the info mode is activated the green LED lights for 3 seconds, then it turns off again.

- then, if a malfunction is present (warning or error) the red and the yellow LED flash successively. The number of flashes of the red LED indicates the left digit of the error code while the number of flashes of the yellow LED indicates the right digit of the error code.

Note: If the red LED lights when the info mode is activated the malfunction indicated is an error (E..) otherwise a warning (W..).

This indication procedure is repeated until the info mode is exited automatically after 5 minutes or the info mode is exited by pressing the drain/Info key again.

Examples:

Indication in normal operating mode	green LED lights	no	yes	yes	no
	red LED lights	no	no	no	yes
Indication in info mode	green LED flashes ..	—	5x	5x	—
	red LED flashes ..	—	—	3x	2x
	yellow LED flashes ..	—	—	6x	1x
Steam output		0 %	50 %	50%	0 %
Error code		—	—	W36	E21

6.3.2 Remote operating and fault indication

If your unit is equipped with the optional operating and fault indication "RFI" the following operating status are shown remotely:

Activated remote indication relay	When?	Display on unit
"Error"	A malfunction is present, further operation is not possible, the heating voltage is interrupted	Red LED lights
"Service"	Steam cylinder must be replaced. The unit remains operational for a certain time	Yellow LED lights
"Steam demand"	Steam demand/Steam production	Green LED lights
"Unit on"	Unit switched on	Unit switch lights

6.3.3 Inspections during operation

During operation the Condair Sigma and the humidification system have to be inspected weekly. On this occasion check the following:

- the water and steam installation for any leakage.
- the steam generator and the other system components for correct fixing and any damage.
- the electric installation for any damage.

If the inspection reveals any irregularities (e.g. leakage, error indication) or any damaged components take the Condair Sigma out of operation as described in [chapter 6.5](#). Then, contact your Condair representative.

6.4 Carrying out manual draining

Proceed as follows to drain the unit manually:



1. **Briefly press the drain/info key.** The heating voltage is interrupted and the drain valve opens. The **yellow LED flashes**.

Note: the drain valve closes after 10 minutes automatically



2. To stop the drain cycle **briefly press the drain/info key again.**

6.5 Taking the unit out of operation

In order to take the steam generator out of operation, perform the following steps:

1. If the unit has to be switched off because of a malfunction, please note the error code (number of flashes of the red and yellow LED) of the actual error.
2. Close the shut-off valve in the water supply line.
3. Start manual draining (see [chapter 6.4](#)) and wait until the steam cylinder is empty.
4. **Actuate the unit switch.**
5. **Disconnect steam generator from the mains:** Switch off all electrical isolators to mains supplies (heating and control voltage) and secure switches in "off" position against accidentally being switched on, or clearly mark the switches.



WARNING!
Danger of burning!

If steam was produced just before the unit is taken out of operation, wait before opening the unit and let the steam cylinder cool down to prevent danger of burning.

7 Maintenance

7.1 Important notes on maintenance

Qualification of personnel

All maintenance work must be carried out only by **well qualified and trained personnel authorised by the owner**. It is the owner's responsibility to verify proper qualification of the personnel.

General note


The instructions and details for maintenance work must be followed and upheld.

Only the maintenance work described in this documentation may be carried out.

Only use original Condair spare parts to replace faulty parts.


Safety

Some maintenance work requires removal of the unit cover. Please note the following:

 **DANGER!**
Danger of electric hazard!

You may get in touch with live parts when the unit is open. Touching live parts may cause severe injury or even lethal violation.

Prevention: Before carrying out any maintenance work set the Condair Sigma out of operation as described in [chapter 6.5](#) (switch off the unit, disconnect it from the mains and stop the water supply) and secure the unit against inadvertent power-up.

 **CAUTION!**

The electronic components inside the humidifier are very sensitive to electrostatic discharge.

Prevention: Before carrying out any maintenance work to the electrical or electronic equipment of the humidifier, appropriate measures must be taken to protect the respective components against damage caused by electrostatic discharge (ESD protection).

7.2 Maintenance list

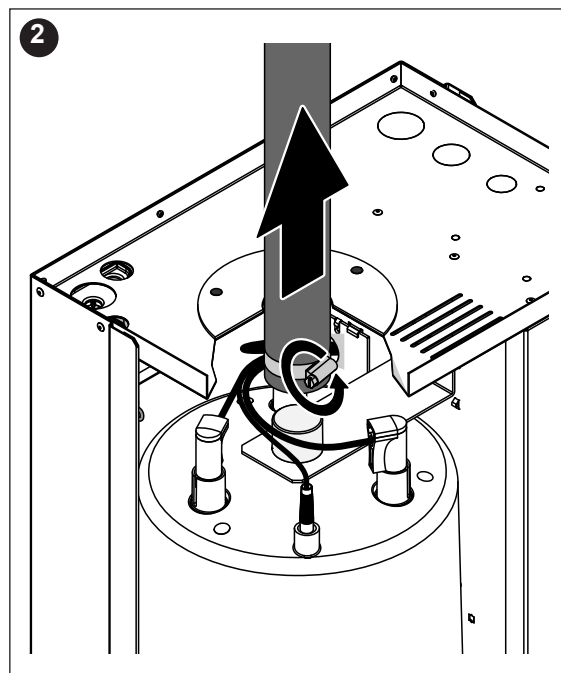
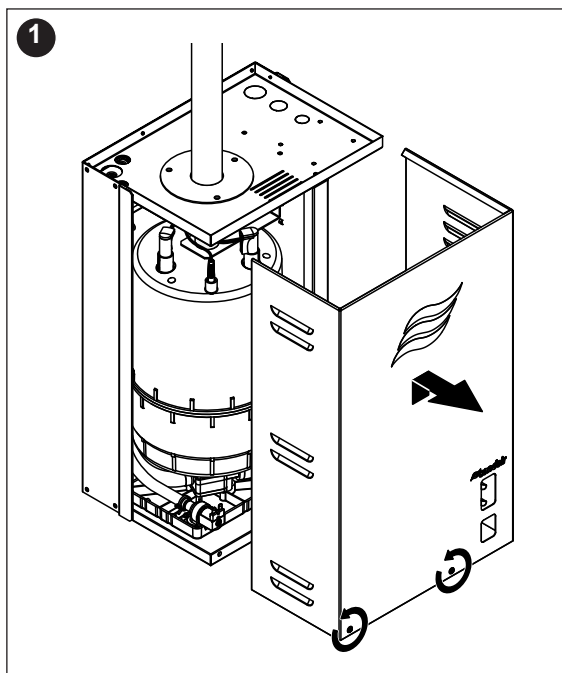
To maintain operational safety the Condair Sigma steam generator must be maintained at regular intervals. This is differentiated between the **first maintenance after approx. 500 operating hours (I)**, **steam cylinder replacement after the yellow LED lights (II)** and **annual maintenance (III)**.

Below you will find a summary of the work to be carried out for each of the three maintenance stages.

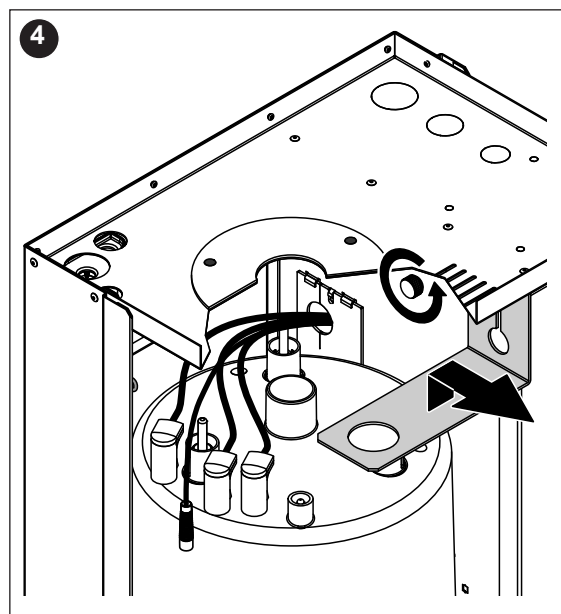
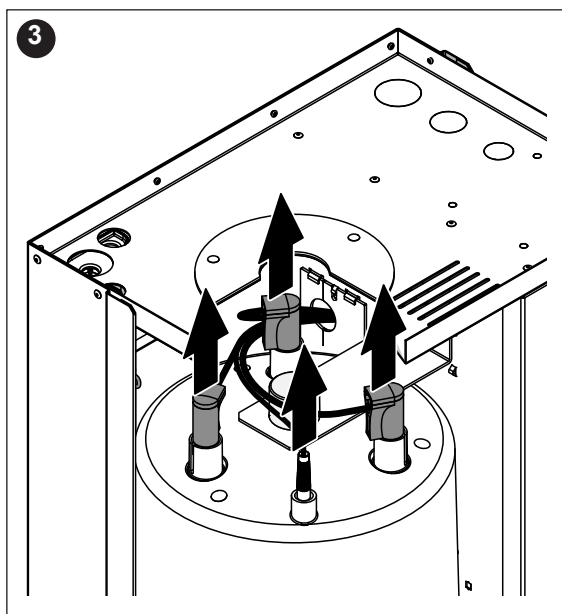
Components	Interval			Work to be done
	I	II	III	
Replacement steam cylinder		X		Remove and replace.
Drain valve			X	Remove, disassemble and clean, replace if necessary.
Steam cylinder receptacle			X	Inspect, clean if necessary.
Inlet valve			X	Remove and clean filter insert, replace if necessary.
Drain cup			X	Remove and clean if necessary
Drain pipe and siphon			X	Inspect, clean if necessary (decalcify and rinse out).
Steam installation	X		X	Inspect steam and condensate hoses for cracks and to see that they are correctly attached, replace faulty hoses.
Water installation	X		X	Inspect water hoses in the unit for cracks and to see that they are correctly attached, replace faulty hoses Check supply pipe is tight, make tight if necessary. Clean water filter, if available.
Electrical installation	X		X	Check all cables in the unit are firmly positioned and examine status of insulation.

7.3 Removing and installing parts for maintenance

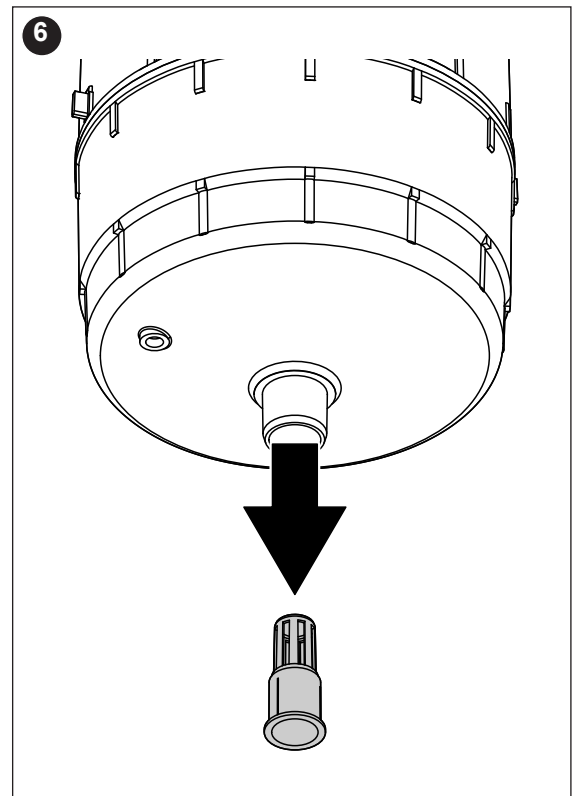
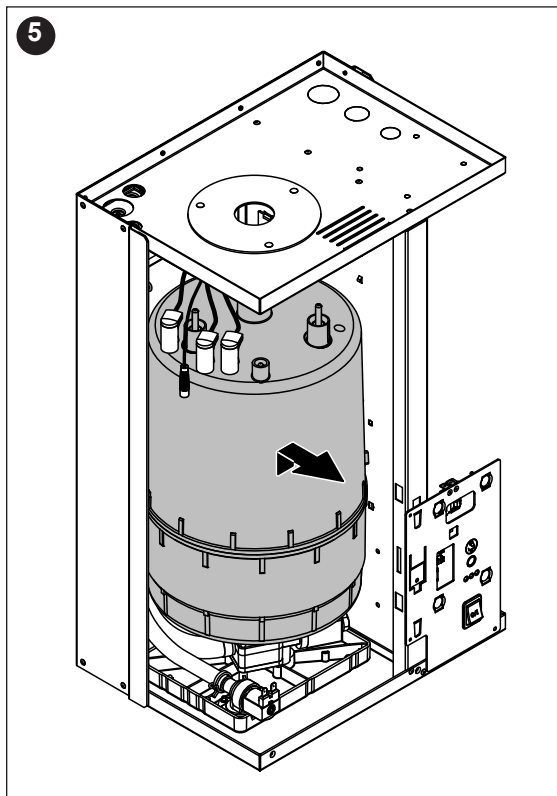
7.3.1 Removal and installation of the steam cylinder



1. Undo the two screws fixing the front panel to the unit using a screwdriver, then remove the front panel.
2. Release the hose clamp on the steam hose using a screwdriver, then detach the steam hose from the steam outlet connection of the steam cylinder.



3. Remove all plugs from the electrodes and from the level sensor.
4. Loosen the screw of the steam cylinder fixing device by a few turns, then push the fixing device upwards until it comes loose and remove it.



5. Carefully lift steam cylinder away from the cylinder receptacle, then remove it to the front.



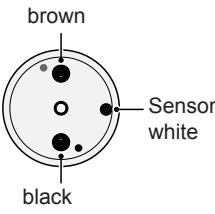
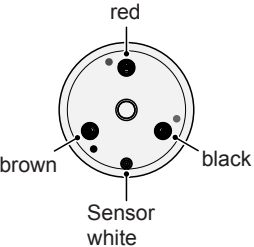
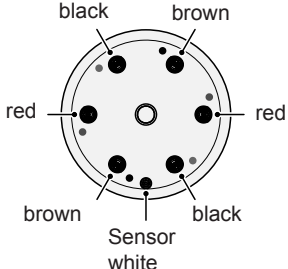
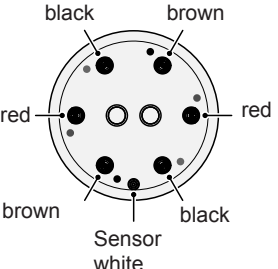
CAUTION!

Put steam cylinder down carefully to avoid damage to the lower connection piece!

6. Carefully pull the drain screen out of the drain outlet of the steam cylinder.
Note: this step must only be carried out if the drain screen is clogged (see [chapter 8.2.2](#)) and the steam cylinder can still be used.

Installation of the steam cylinder follows the reverse sequence. **Observe the following:**

- Before installing the steam cylinder in the unit, check the O-ring of the cylinder receptacle for damage and replace if necessary.
- Moisten the O-ring of the cylinder receptacle with water (do not use grease or oil), then insert steam cylinder into the receptacle and push it down to the stop.
- Attach the electrode plugs and the level sensor plug to the respective electrode and sensor connections according to the following table.

Steam cylinder type			
RD 422 / 522A / 524A 822A / 824A	532A / 534A 832A / 834A 1532A / 1534A	2362A / 2364A 3262A / 3264A	4564A / 6564A
			

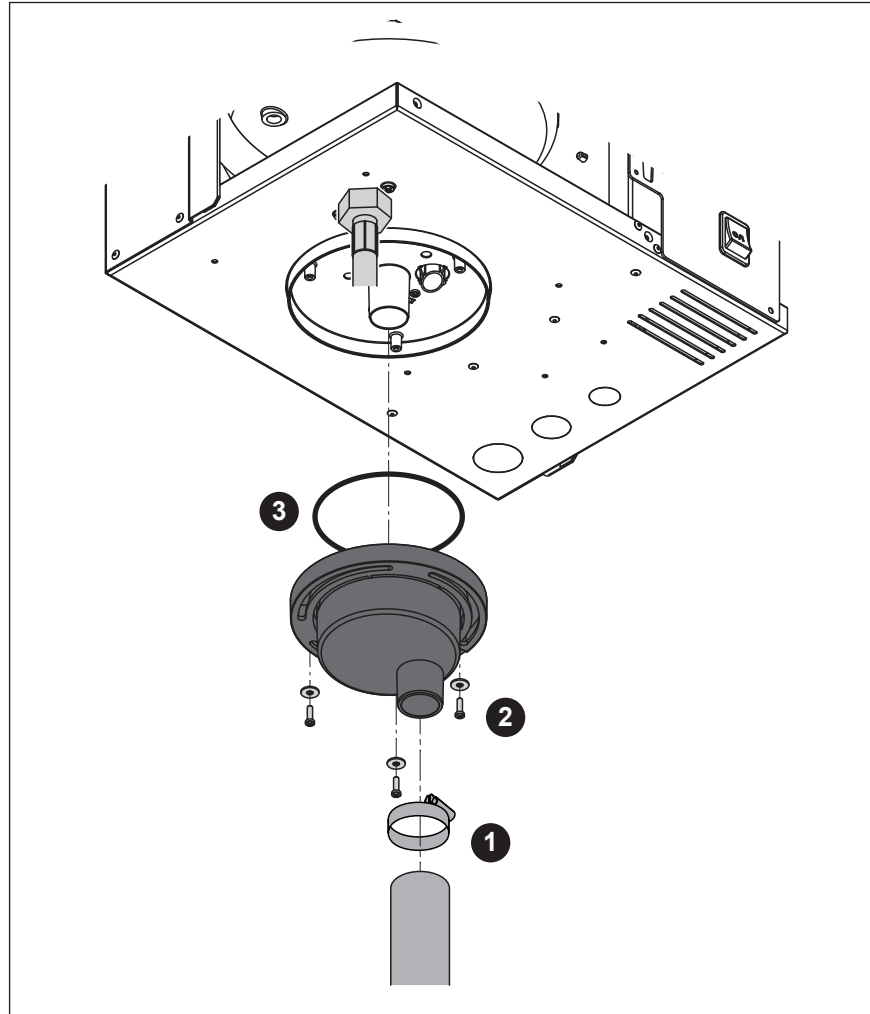
- Fasten steam hose on the connector of the steam cylinder with hose clamps.



CAUTION!

- A leaky steam hose can cause damage due to moisture inside the unit.
- The outlet connector of the steam cylinder is made of plastic. **Do not overtighten** the hose clamp on the steam connector of the steam cylinder.

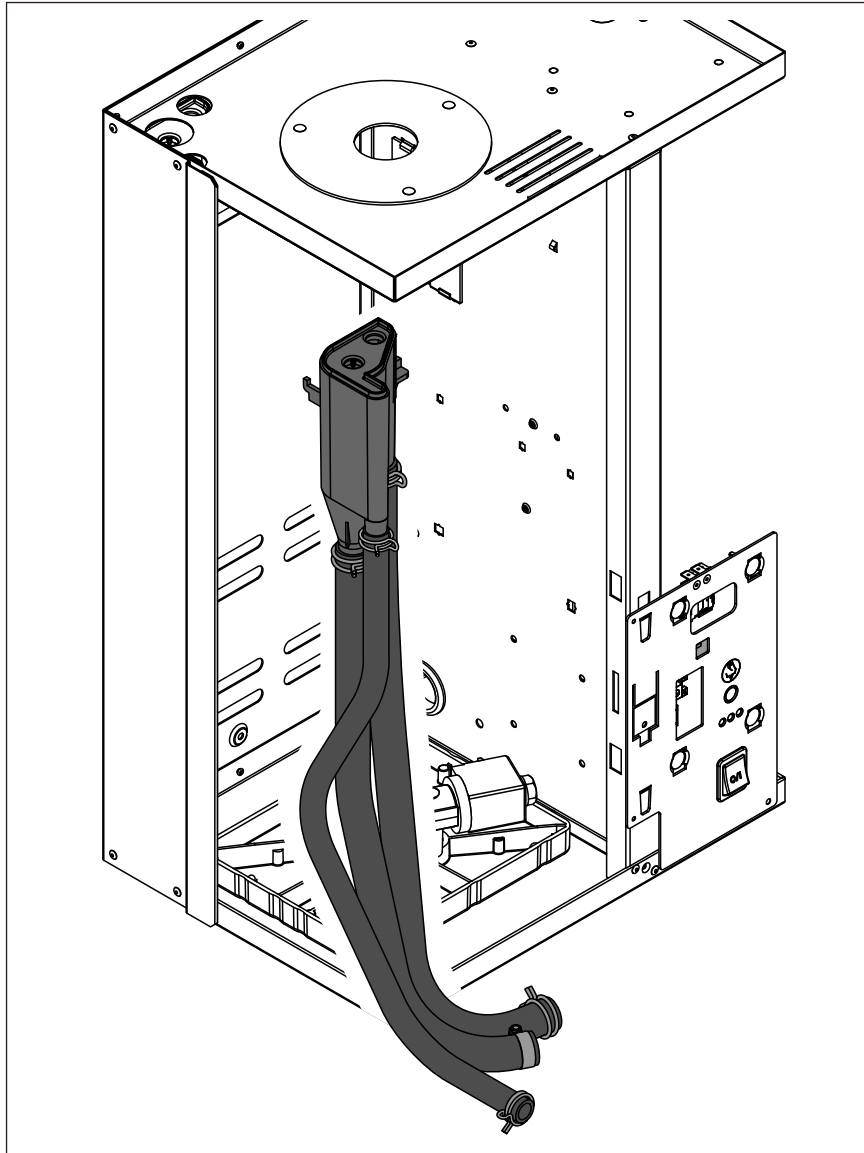
7.3.2 Removal and installation of the drain cup



1. Release the hose clamp, then remove water drain hose from the connector on the water cup.
2. Undo the three screws fixing the drain cup to the unit using a screwdriver, then remove the drain cup downwards.
3. Remove O-ring from the annular groove of the drain cup.

Installation of the drain cup follows the reverse sequence. Before assembling check O-ring of the drain cup for damage and replace if necessary.

7.3.3 Removal and installation of the water cup and the water hoses



For removing the water cup and the water hoses the steam cylinder must be removed first (see [chapter 7.3.1](#)).

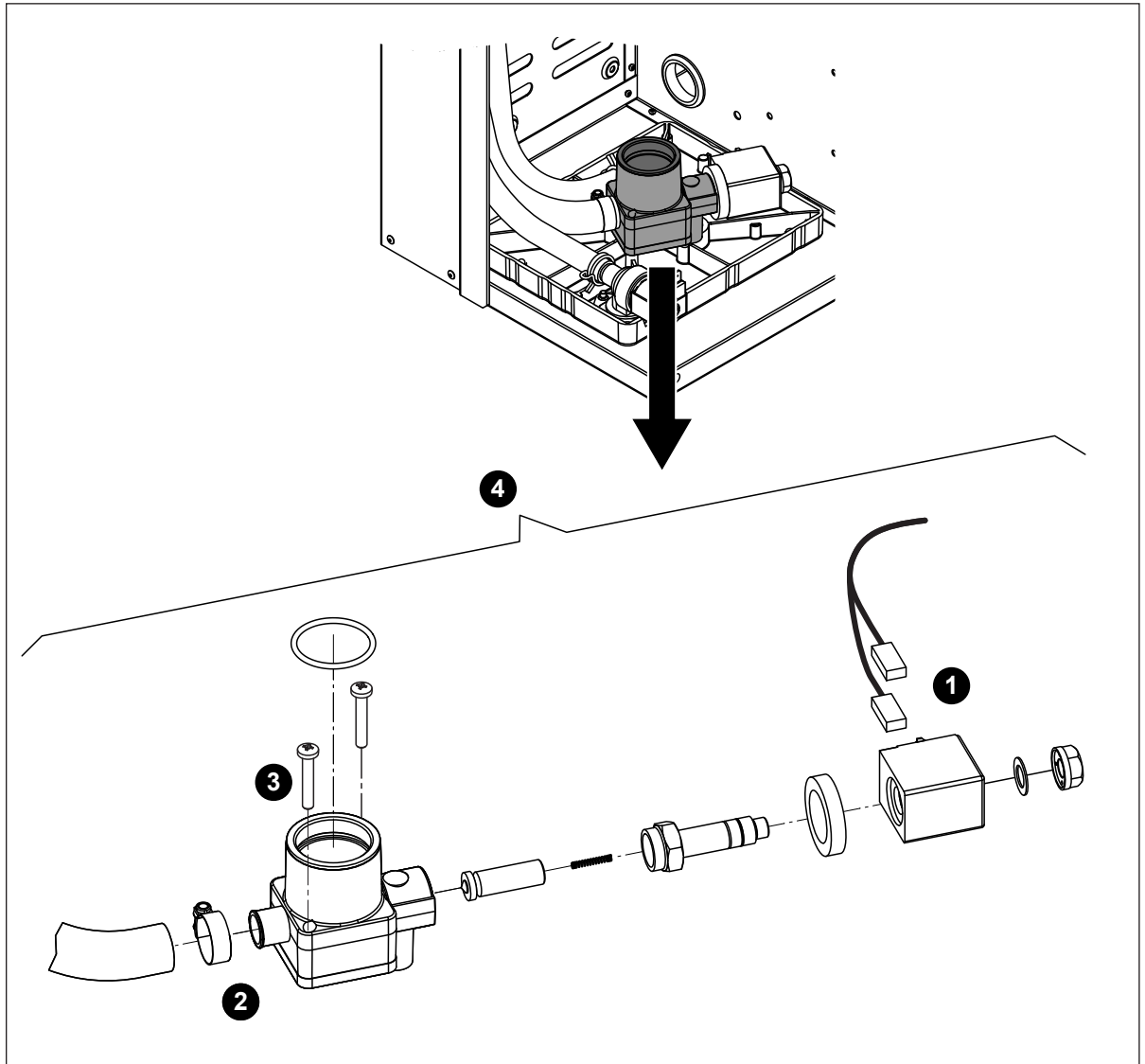
1. Release hose clamps using pliers, then disconnect all hoses from the corresponding connectors and remove the hoses.

Note: The hoses connected to the water cup may also be removed together with the water cup (see illustration) and then disconnected from the connectors of the water cup outside the unit.

2. **Carefully** pull fixing clip of the water cup to the front, then push water cup down from the holding device and remove it to the front.

The **installation** of the water cup and the water hoses follows the reverse sequence. Before fixing the water hoses to the connector using the hose clamps, align the hoses in a way that they are not twisted.

7.3.4 Removal and installation of the drain valve

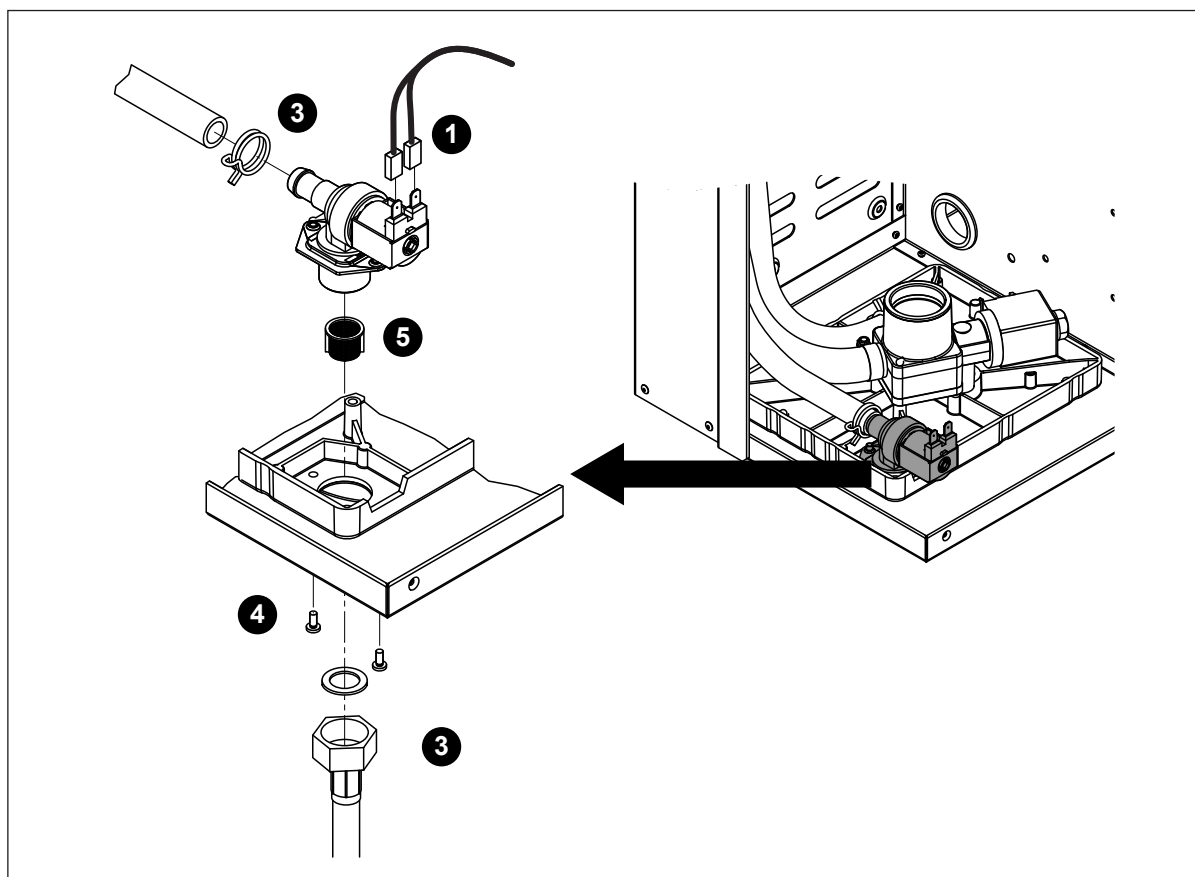


For removing the drain valve the steam cylinder must be removed first (see [chapter 7.3.1](#)).

1. Detach electric cables (polarity of the cables must not be observed).
2. Release hose clamp and remove the hose from the connector.
3. Loosen the two screws with Phillips screwdriver, then remove the drain valve.
4. Disassemble the drain valve.

The **assembly** and the **installation** of the drain valve follows the reverse sequence. Before assembling the valve, check all O-rings and gaskets for damage and replace if necessary.

7.3.5 Removal and installation of the inlet valve

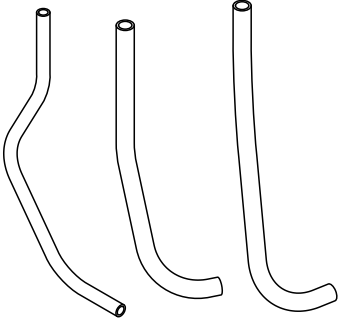
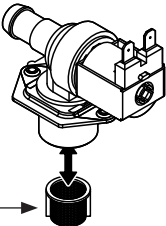
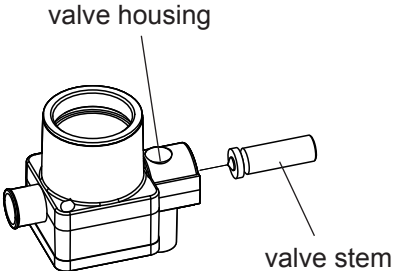
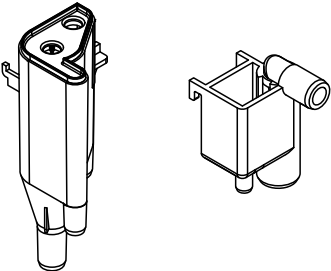


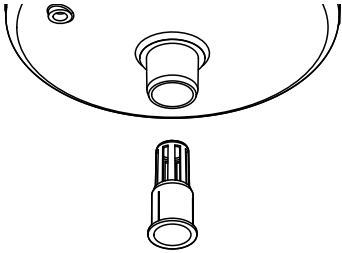
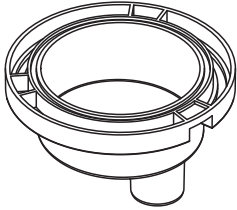
For removing the inlet valve the steam cylinder must be removed first (see [chapter 7.3.1](#)).

1. Detach electric cables (polarity of the cables must not be observed).
2. Release hose clamp and remove the hose from the connector.
3. Unlock union nut of the water pipe and remove water pipe.
4. Loosen the two screws with Phillips screwdriver, then remove inlet valve.
5. Remove strainer insert with pointed pliers

The **installation** of the inlet valve follows the reverse sequence. The union nut of the water pipe must be tightened by hand only.

7.4 Notes on cleaning the unit components

Unit component	What to clean and how to clean
<p>Water hoses</p> 	<ul style="list-style-type: none"> Loosen any limescale in the hoses by carefully twisting and flexing the hoses, then flush out the hoses thoroughly with hot water.
<p>Inlet valve</p>  <p>strainer insert →</p>	<ul style="list-style-type: none"> Carefully remove any limescale inside the inlet valve and on the strainer using a brush (do not use a wire brush). Wash inlet valve and strainer insert with a lukewarm soap solution, then rinse well with tap water. Let the inlet valve dry before reinstallation!
<p>Drain valve</p>  <p>valve housing</p> <p>valve stem</p>	<ul style="list-style-type: none"> Carefully remove any limescale from the valve housing, the bores and the valve seat on the valve stem using a brush (do not use a wire brush). Wash the valve housing and the valve stem with a lukewarm soap solution, rinse the parts well with tap water and let them dry.
<p>Water cup</p> 	<ul style="list-style-type: none"> Carefully remove any limescale from the water cup and its connectors using a brush (do not use a wire brush). If the water cup is heavily calcified, place it in an 8% formic acid solution (observe safety notes in chapter 7.5), until the limescale comes off. Wash the water cup with a lukewarm soap solution and rinse well with tap water.

Unit component	What to clean and how to clean
<p data-bbox="252 212 699 241">Drain screen of the steam cylinder</p> 	<ul data-bbox="743 212 1433 528" style="list-style-type: none"> • Carefully remove any limescale from the drain screen using a brush (do not use a wire brush) and remove loose limescale inside the drain connector of the steam cylinder. If the drain screen is heavily calcified, place it in an 8% formic acid solution (observe safety notes in chapter 7.5), until the limescale comes off. • Wash the drain screen with a lukewarm soap solution and rinse well with tap water.
<p data-bbox="252 577 379 607">Drain cup</p> 	<ul data-bbox="743 577 1433 891" style="list-style-type: none"> • Carefully remove any limescale from the drain cup and the receptacle on the bottom side of the unit using a brush (do not use a wire brush). If the drain cup is heavily calcified, place it in an 8% formic acid solution (observe safety notes in chapter 7.5), until the limescale comes off. • Wash the drain cup and the receptacle on the bottom side of the unit with a lukewarm soap solution, rinse the parts well with tap water.
<p data-bbox="252 913 488 976">Interior of the unit (water side only)</p>	<p data-bbox="743 913 1433 976">Wipe the interior of the unit with a damp cloth without using any cleaning agent.</p> <p data-bbox="743 992 1433 1055">CAUTION: Take care that the electrical connections and the electronic components remain dry!</p>

7.5 Notes on cleaning agents

Only use cleaning agents stated in the table above. The use of disinfectants is only permitted if they do not leave any toxic residues. In any case the parts must be thoroughly rinsed with water after cleaning.

WARNING!

Formic acid is indeed harmless to the skin, but it attacks the mucous membranes. Therefore prevent your eyes and respiratory tracts from getting in touch with the acid and its vapours (wear goggles and work in a well ventilated room or outside).

CAUTION!

Do not use any solvents, aromatized or halogenized hydrocarbons or other aggressive substances as they may cause damage to the components of the unit.

It is mandatory to observe and comply with the information and instructions regarding cleaning agents. Observe in particular: all information relating to the protection of personnel, environmental protection and restrictions regarding usage.

7.6 Resetting the maintenance indication

After completing maintenance work, the **maintenance indication** (yellow LED lights) must be reset as follows:

- Press drain key **with the unit switched off** and hold down.
- Switch on steam generator via the unit switch.
- Hold drain key down until the system test is completed (approx. 10 seconds).

8 Fault elimination

Important! Most operational malfunctions are not caused by faulty equipment but rather by improper installation or disregarding of planning guidelines. Therefore, a complete fault diagnosis always involves a thorough examination of the entire system. Often, the steam hose connection has not been properly executed, or the fault lies with the humidity control system.

8.1 Fault indication

In case of malfunction during operation, the unit control checks whether there is a temporary problem or whether it can resolve the problem by taking necessary measures. Such malfunctions are not indicated in the normal operation mode. However an appropriate **error code with the status "Warning"** is generated. Note: If the cause of the malfunction disappears of its own accord or if the controls can repair the malfunction, the alarm will automatically reset.

If the control, after several attempts, fails to solve the problem (number of attempts depends on the type of malfunction) or if the problem obstructs further operation, the heating voltage is interrupted via the main contactor. The **red LED lights in normal operation mode** and an appropriate **error code with the status "Error"** is generated.

The error code can be queried in the info mode. Press drain/info key at least 3 seconds to enter the info mode. In the info mode the number of flashes of the red LED indicates the decade of the error code while the number of flashes of the yellow LED indicates the digit of the error code (refer to [chapter 6.3.1](#) for further information regarding the info mode).

Examples:

Normal operation mode	red LED lights	yes	no	yes	yes
Info mode	red LED flashes ..	—	2x	2x	3x
	yellow LED flashes ..	2x	1x	1x	7x
Error code		E2	W21	E21	E37

8.2 Malfunction lists

8.2.1 System faults

Warning		Error		Cause	Remedy
Code	Malfunction	Code	Malfunction		
		E1	Smart Card missing	No Smart Card installed on the control board.	Install Smart Card or start test run.
—	—	E2	Smart Card is empty	No data stored on the Smart Card.	Install new Smart Card.
—	—	E3	Smart Card is defective	Invalid data stored on the Smart Card.	Install new Smart Card.
—	—	E4	Smart Card is incompatible	The installed Smart Card is not compatible with the hardware of the unit or with the basic settings of the control electronics.	Install correct Smart Card. Let your Condair service technician adjust the basic settings.
—	—	E10	Hardware fault	Control board defective.	Replace control board.

8.2.2 Unit faults

Warning		Error		Cause	Remedy
Code	Malfunction	Code	Malfunction		
W20	External safety chain is open	—	—	One or more monitoring devices (e.g. safety thermostat) of the external safety loop have responded.	Check monitoring devices.
				No cable bridge connected to terminals "SC1" and "SC2" if no monitoring devices are connected.	Connect the cable bridge to terminals "SC1" and "SC2".
W21	Max. filling level of steam cylinder reached	E21	Max. filling level of steam cylinder reached but no heating current	Water conductivity too low (after initial operation).	Wait until the mineral content of the cylinder has increased
				Water conductivity too low for type of steam cylinder.	Select correct steam cylinder type.
				Phase failure heating voltage.	Check electrical isolator in the mains supply line(s) and switch on if applicable. Check mains fuse(s) and replace if applicable.
W22	Permissible filling time exceeded (20 minutes)	E22	Permissible filling time exceeded (more than 4 hours)	Water supply obstructed/shut-off valve closed/water pressure too low.	Inspect water supply (filter, water piping, etc.), check/open shut-off valve, check water pressure.
				Inlet valve blocked or defective.	Inspect strainer insert in the inlet valve, if applicable clean strainer insert or replace inlet valve.
				Excessive back pressure in the steam line (duct pressure too high, steam line too long or kinked), causing water loss via filling cup.	Check duct pressure, inspect steam installation. If applicable install pressure compensation kit (see options).
				Leakage in the water system.	Inspect water system and seal if necessary.

Warning		Error		Cause	Remedy
Code	Malfunction	Code	Malfunction		
W23	No electrode current for more than 20 minutes	E23	No electrode current for more than 4 hours	Phase failure heating voltage.	Inspect/turn on electrical isolator of the mains supply line. Inspect the fuses of the mains supply, replace if necessary.
				Water supply obstructed/shut-off valve closed/water pressure too low.	Inspect water supply (filter, water piping, etc.), check/open shut-off valve, check water pressure.
				Inlet valve blocked or defective.	Inspect strainer insert of the inlet valve, if applicable clean strainer insert or replace inlet valve.
				Excessive back pressure in the steam line (duct pressure too high, steam line too long or kinked), causing water loss via filling cup.	Check duct pressure, inspect steam installation. If applicable install pressure compensation kit (see options).
				Leakage in the water system.	Inspect water system and seal if necessary.
W24	Electrode current in relation to the steam demand too high	E24	Electrode current in relation to the steam demand too high	Humidity demand has decreased too fast.	Automatic adaptation of the operating point.
				Drain valve defective.	Inspect drain valve, replace if necessary.
				Drain screen in the drain outlet of the steam cylinder clogged.	Clean drain screen (see chapter 7.3.1 and chapter 7.4) or replace steam cylinder.
				Water conductivity too high for this type of steam cylinder.	Select correct steam cylinder type.
W25	Max. admissible electrode current exceeded	E25	Max. admissible electrode current exceeded	Drain valve defective.	Inspect drain valve, replace if necessary.
				Drain screen in the drain outlet of the steam cylinder clogged.	Clean drain screen (see chapter 7.3.1 and chapter 7.4) or replace steam cylinder.
				Water conductivity too high for this type of steam cylinder.	Select correct steam cylinder type.
—	—	E26	Main contactor jammed	Main contactor jammed in activated position.	Inspect main contactor, replace if necessary.
W27	Foam detection	E27	Foam detection (4 automatic drainings within 24 hours)	Foaming in steam cylinder.	Drain steam cylinder via drain key (several times, if necessary). Check quality of the supply water.
W28	Steam cylinder needs service	E28	Service interval for steam cylinder exceeded	Mineral deposits and/or electrodes spent.	Replace steam cylinder. Important: After the replacement of the steam cylinder, reset the maintenance counter (see chapter 7.6).
W29	Steam cylinder needs service	E29	Max. operating hours of the steam cylinder reached	Maximum operating hours of the steam cylinder reached.	Replace steam cylinder. Important: After the replacement of the steam cylinder, reset the maintenance counter (see chapter 7.6).
W36	Standby draining of steam cylinder active	—	—	Automatic standby draining of steam cylinder active.	No measures must be taken.
W37	Forced draining of steam cylinder active	—	—	Forced draining of steam cylinder active.	No measures must be taken.

8.3 Notes on fault elimination



DANGER!
Danger of electric hazard!

For the elimination of faults **set the steam generator out of operation** as described in [chapter 6.5](#), **separate the unit from the mains** and **secure it against inadvertent power-up**.

The elimination of faults must be carried out by qualified and well trained professionals only. Malfunctions relating to the electrical installation (e.g. replacement of fuses) must be repaired by authorized personnel or by your Condair representative's service technician only.

Repair work and the replacement of faulty components must be carried out by your Condair representative's service technician only!

8.4 Resetting the error indication (red LED lights)

To reset the error indication:

Disconnect the steam generator from the mains. Wait approx. 5 seconds, then reconnect the unit to the mains.

Note: If the fault has not been eliminated, the error indication reappears after a short while.

9 Taking out of service/Disposal

9.1 Taking out of service

If the Condair Sigma must be replaced or is not needed any more, proceed as follows:

1. Take the unit out of operation as described in [chapter 6.5](#).
2. Have the unit (and all other system components, if necessary) unmounted by a qualified service technician.

9.2 Disposal/Recycling

Components that are no longer used must not be disposed of with household waste. Please dispose of the device or individual components in an authorized collection point in accordance with local regulations.

If you have any questions, please contact the responsible authority or your Condair representative.

Thank you for your contribution to protecting the environment.

10 Product specifications

10.1 Technical data

Steam capacity in kg/h	4	5	8	15	23	32	45	65
Capacity range in kg/h	1...4	1...5	1.6...8	3...15	4,6...23	6,4...32	9...45	13...65
Nominal power in kW	3,1	3,8	6,0	11,3	17,3	24,0	33,8	48,8
Heating voltage 230V/1~/50..60Hz *								
Unit model	422	522	822					
Nominal current in A	13,5	16,3	26,1					
Steam cylinder type **	RD 422	522A	822A					
Heating voltage 400V/2~/50..60Hz *								
Unit model	---	524	824					
Nominal current in A	---	9,4	15,0					
Steam cylinder type **	---	524A	824A					
Heating voltage 230V/3~/50..60Hz *								
Unit model	---	532	832	1532	2362	3262		
Nominal current in A	---	9,4	15,1	28,2	43,3	60,2		
Steam cylinder type **	---	532A	832A	1532A	2362A	3262A		
Heating voltage 400V/3~/50..60Hz *								
Unit model	---	534	834	1534	2364	3264	4564	6564
Nominal current in A	---	5,4	8,7	16,2	24,9	34,6	48,7	70,4
Nominal current in A	---	534A	834A	1534A	2364A	3264A	4564A	6564A
Steam cylinder type **	---	534A-L	834A-L	1534A-L	2364A-L	3264A-L	4564A-L	---
Steam cylinder type ***	1 x 230V / 50-60 Hz							
Operating conditions								
Admissible water pressure	1...10 bar							
Water quality	Untreated drinking water with a conductivity of 125...1250 µS/cm							
Admissible water temperature	1...40 °C							
Admissible ambient temperature	1...40 °C							
Admissible ambient humidity	max. 75% rh (non condensing)							
Admissible air pressure in the steam cabin	-0.8 kPa...1.5 kPa							
Type of protection	IP 20							
Conformity	CE, VDE, GOST							
Dimensions/Weights								
Housing (WxHxD) in mm	285x430x205	1						
	377x612x279		1	1	1			
	492x670x351					1	1	1 1
Water supply connector	G 3/4" (outside thread)							
Water drain connector	ø 30 mm							
Steam connector	1 x ø 22 mm		1 x ø 35 mm			2 x ø 35 mm		
Net weight in kg	8	19	19	28	28	28	28	28
Operating weight in kg	13	24	30	65	65	65	65	65
Options								
Cable glands	1xCG							
Overpressure set	1xOPS							
Remote operating and fault indication	1xRFI							
Steam hose connector with condensate trap	1xCT22		1xCT35			2xCT35		
Internal control voltage supply	1xS-CVI		1xM-CVI			1xL-CVI		
Transformer (400 V/230 V)	1xM-Trafo		1xL-Trafo					
Terminals heating voltage	1xS-THV		1xM-THV			1xL-THV		
SC pump	1xSC							
24 VDC power supply	1x24VDC							
Accessories								
Filter valve	Z261							
Steam distributor (bis max. 5 kg/h)	1xDDS22		---					
Steam distributor (1...32 kg/h)	---		1xDDL35			---		
Steam distributor (4...65 kg/h)	1xW22		1xW35			1xW35		
Steam hose / meter	1xDS22		1xDS35			2xDS35		
EcoTherm insulation hose	1xECT22		1xECT60			2xECT60		
Condensate hose / meter	KS10							
SPA control	1xCondair Delta SPA Control Box							

* Other heating voltages on request

** Steam cylinder for water conductivity from 125 to 1250 µS/cm (standard version)

*** Steam cylinder for low water conductivity from 80 to 125 µS/cm

10.2 Unit dimensions

Unit dimensions Condair Sigma 4 (Dimensions in mm)

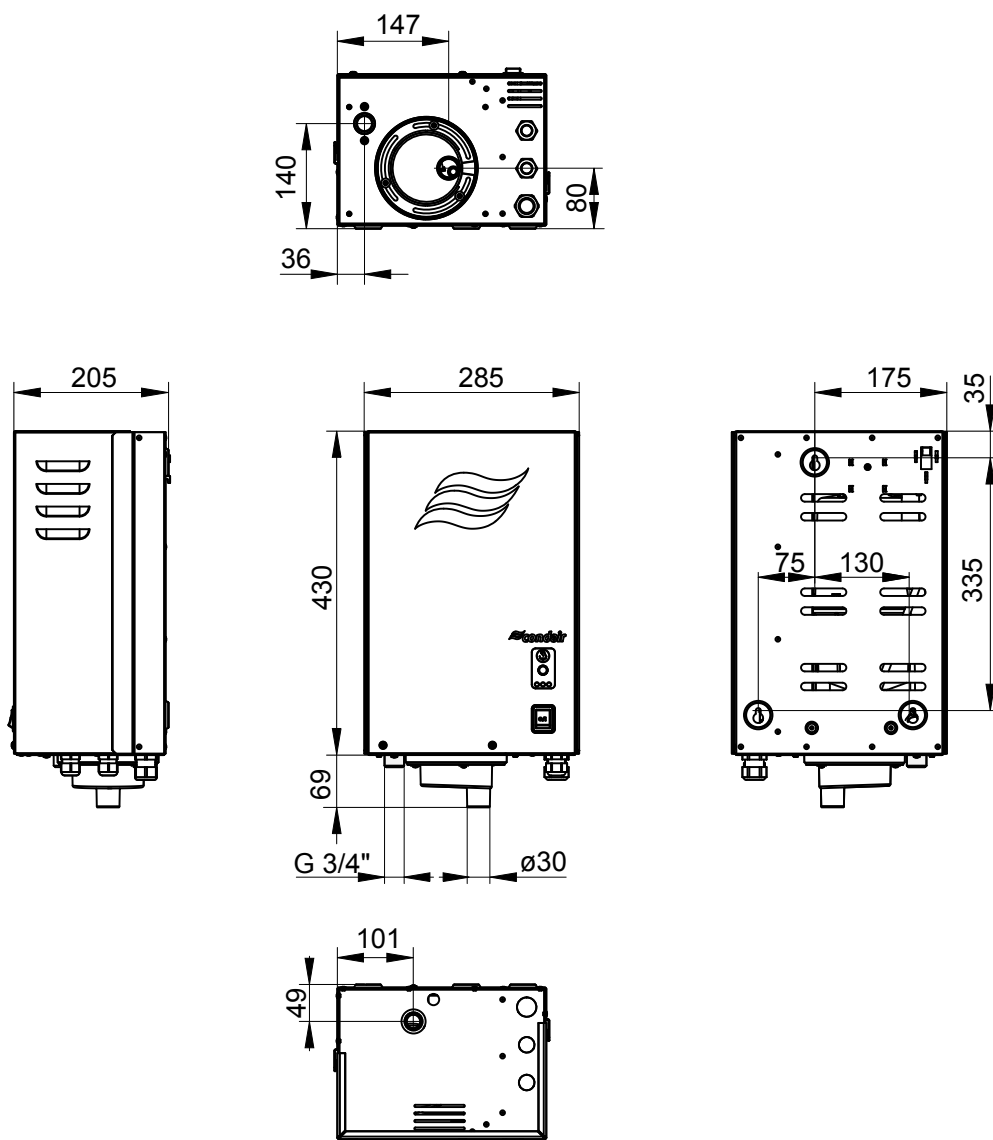


Abb. 16: Geräteabmessungen Condair Sigma 4

Unit dimensions Condair Sigma 5-15 (Dimensions in mm)

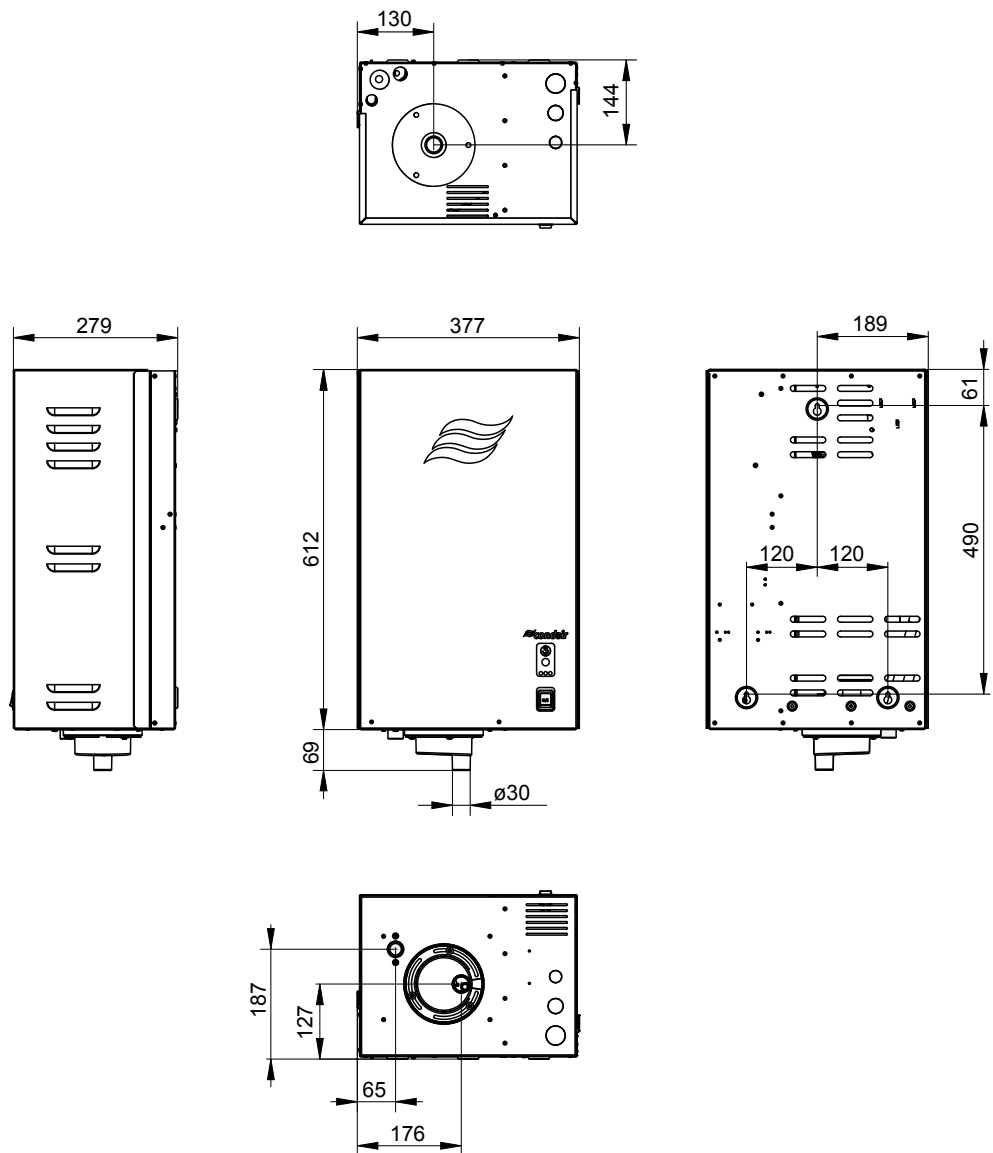


Abb. 17: Unit dimensions Condair Sigma 5-15

Unit dimensions Condair Sigma 23-65 (Masse in mm)

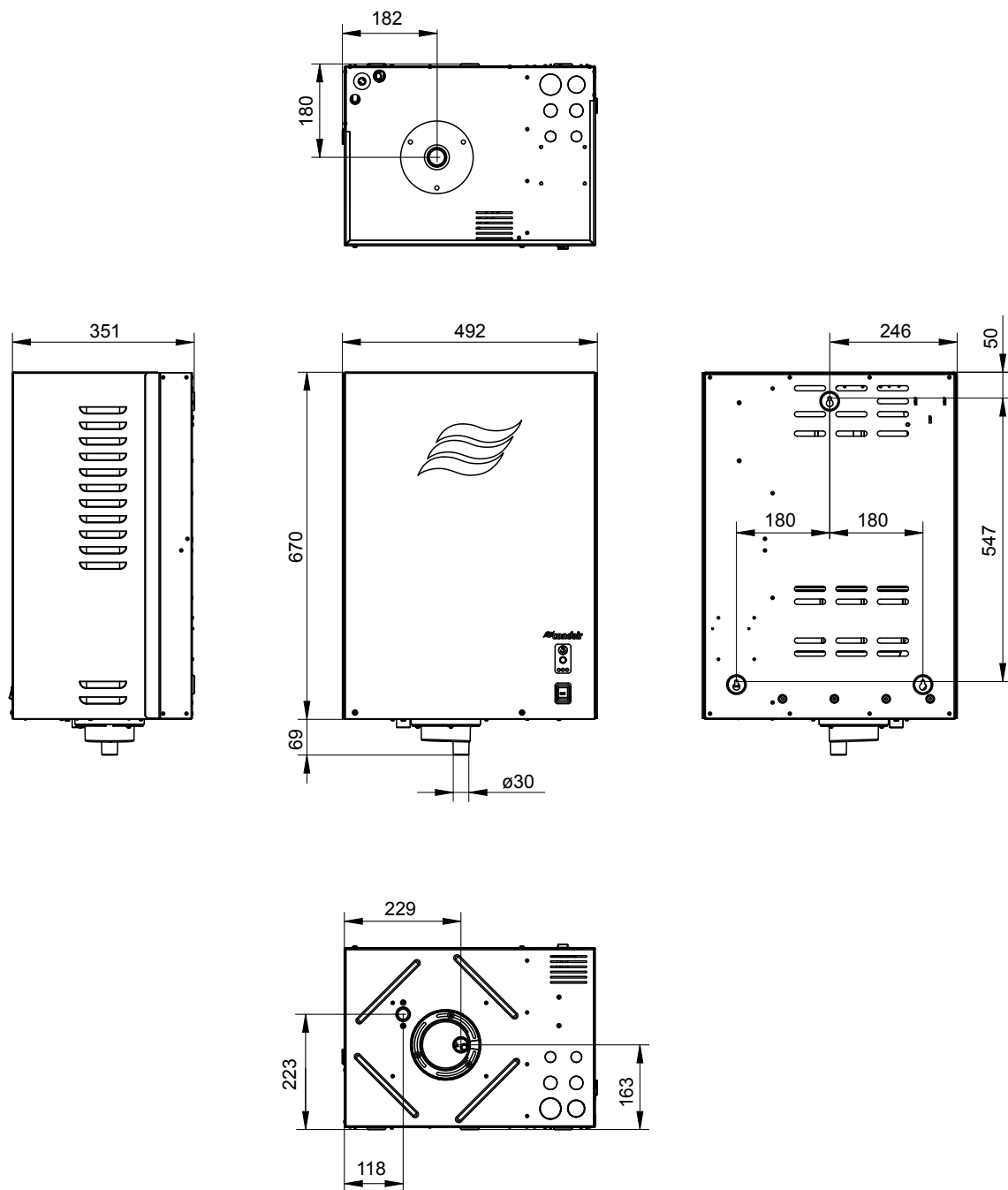


Abb. 18: Unit dimensions Condair Sigma 23-65

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The Condair logo, consisting of a stylized wave symbol followed by the word 'condair' in a bold, lowercase, sans-serif font.