

INSTALLATION MANUAL

Steam humidifier
Condair **RM**

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 **Condair RM steam humidifier**.

The Condair RM steam humidifier incorporates the latest technical advances and meets all recognized safety standards. Nevertheless, improper use of the Condair RM steam humidifier may result in danger to the user or third parties and/or damage to property.

To ensure a safe, proper, and economical operation of the Condair RM steam humidifier, please observe and comply with all information and safety instructions contained in the present documentation as well as in the separate documentations of the components installed in the humidification system.

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 manual

Limitation

The subject of this installation manual is the Condair RM steam humidifier in its different versions.

The various options and accessories are only described insofar as is necessary for proper operation of the equipment. Further information on options and accessories can be obtained in their respective instructions.

This installation manual is restricted to the **installation** of the Condair RM steam humidifier and is meant for **well trained specialists being sufficiently qualified for their respective work**.

This installation manual is supplemented by various separate items of documentation (operation manual, spare parts list, etc.), which are included in the delivery as well. Where necessary, appropriate cross-references are made to these publications in the installation manual.

Symbols used in this manual



CAUTION!

The catchword "CAUTION" used in conjunction with the general caution symbol designates notes in this installation manual that, if neglected, may cause **damage and/or malfunction of the unit or damage to property**.



WARNING!

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



DANGER!

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

Safekeeping

Please safeguard this installation manual in a safe place, where it can be immediately accessed. If the equipment changes hands, the documentation must be passed on to the new operator.

If the documentation gets misplaced, please contact your Condair representative.

Language versions

This installation manual is available in other languages. Please contact your Condair representative for information.

2 For your safety

General

Every person, who is in charge of the installation work on the Condair RM must have read and understood this installation manual and the Condair RM operation manual before carrying out any work.

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

All icons, signs and markings applied to the Condair RM must be observed and kept in readable state.

Qualification of personnel

All installation work described in this installation manual **may only be carried out by specialists who are well trained and adequately qualified and are authorised by the customer.**

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

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

Intended use

The Condair RM steam humidifier is intended exclusively for air humidification in HVAC systems via a steam distributor approved by Condair within specified operating conditions. Any other type of application, without the written consent of Condair, is considered as not conforming with the intended purpose and may lead to the Condair RM becoming dangerous and will void any warranty.

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

Danger that may arise from the Condair RM



DANGER!

Danger of electric shock!

The Condair RM 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 RM 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.

Preventing unsafe operation

All persons working with the Condair RM are obliged to report any alterations to the unit that may affect safety to the owner without delay and to **secure the Condair RM against accidental power-up**.

Prohibited modifications to the unit

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

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

3 Product Overview

3.1 Models overview

Steam humidifiers Condair RM are available with **different heating voltages** and **steam capacities ranging from 2 kg/h up to a maximum of 8 kg/h**.

Model Condair RM	Max. steam capacity in kg/h	P _N max. in kW	Heating voltage
2	2	2.0	230 V/1~/50...60 Hz
4	4	3.5	
6	6	5.0	
8	8	6.5	
6	6	5.0	400 V/3~/50...60 Hz
8	8	6.5	

Key model designation



Example:
Condair RM 8

Product designation _____

Max. steam capacity in kg/h _____

3.2 Identification of the unit

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

	Type designation	Serial number (7 digits)	Month/Year
	Condair Group AG, Gwattstrasse 17, 8808 Pfäffikon SZ, Switzerland		
Heating voltage	Type: Condair RM 8	Serial No: XXXXXXX	01.20
Maximum steam capacity per unit	Heating voltage: 230 V/1~/50-60 Hz	Heating Power: 6.5 kW 28.3 A	
Admissible water supply pressure	Steam capacity: 8 kg/h		
Field with certification symbols	Water press.: 100..1000kPa (1..10 bar)		
Power consumption heating	 		
	Engineered in Switzerland, Made in Germany		

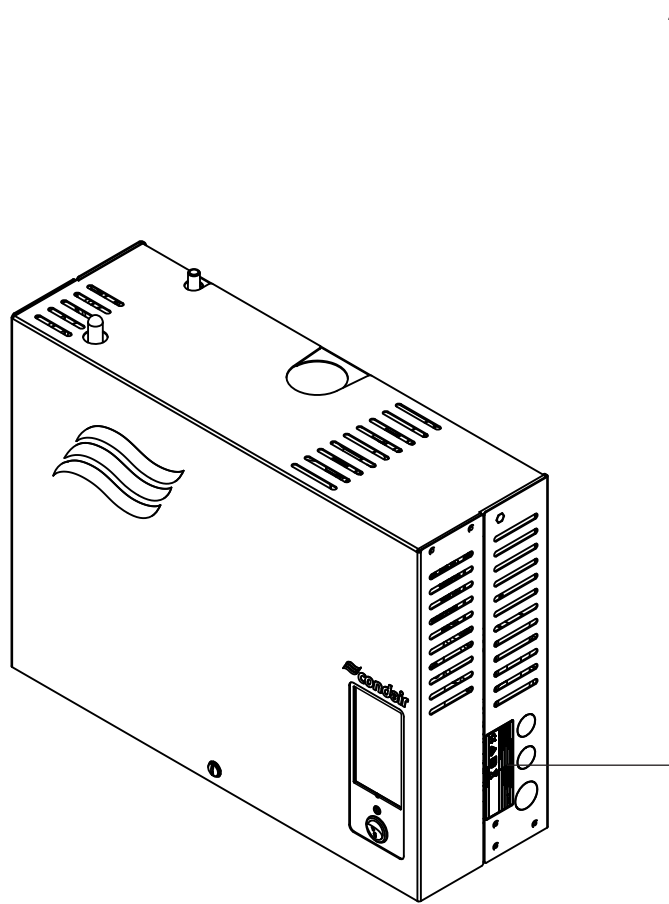


Fig. 1: Location of the specification label

3.3 Options Condair RM

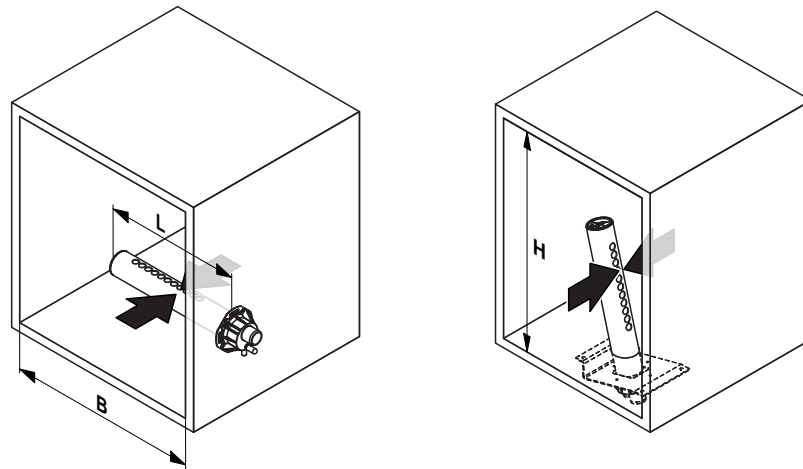
	Condair RM			
	2	4	6	8
Set of cable glands Set with cable glands for the control compartment of the Condair RM.	1x CG			
Floor brackets Floor brackets for floor mounting of the Condair RM.	1x FB			

3.4 Accessories Condair RM

	Condair RM			
	2	4	6	8
Steam distribution pipe Steam distribution pipe for steam distribution inside a air duct see details in chapter 3.4.1).	1x DV61			
Steam hose	Meter x DS60			
Condensate hose	Meter x KS10			
Filter valve	1x Z261			
Filter cartridge	1x Filter cartridge Size L			
Mounting station	1x MS			

3.4.1 Details steam distribution pipe DV61-...

The steam distribution pipes DV61-... are selected on the basis of the **duct width "B"** (for horizontal installation) or the **duct height "H"** (for vertical installation) and the **capacity of the steam humidifier**. **Important!** Always select the longest possible steam distribution pipe (optimum humidification distance).



Steam distribution pipe DV61-... made of CrNi steel		Duct width (B) / Duct height (H)
Type	Length in mm (L) *	in mm
DV61-200	200	250...400
DV61-350	350	400...600
DV61-500	500	550...750
DV61-650	650	700...900
DV61-800	800	900...1100

* Special length on request

Note: for further information regarding the DV61-... steam distribution pipe please refer to the separate installation and operating instructions of this product.

4 Inspecting the delivery / Storage and Transportation

4.1 Delivery

4.1.1 Standard delivery

The standard delivery includes:

- Steam humidifier Condair RM including fixing set, installation manual (this document) and operation manual (this document) and spare parts list, packaged in cardboard box.

Unit type	Dimensions packaging (L x W x D)	Transport weight
Condair RM 2...8	555 mm x 465 mm x 250 mm	11.8 kg

- Ordered options with operating instructions according [chapter 3.3](#), packed separately.
- Ordered accessories with operating instructions according [chapter 3.4](#), packed separately.

4.1.2 Inspecting the delivery

After receiving:

- Inspect shipping boxes for damage.
Any damages of the shipping boxes must be reported to the shipping company without delay.
- Check packing slip to ensure all parts has been delivered.
All material shortages are to be reported to your Condair supplier within 48 hours after receipt of the goods. Condair Group AG assumes no responsibility for any material shortages beyond this period.
- Unpack the parts/components and check for any damage.
If parts/components are damaged, notify the shipping company immediately.
- Check whether the components are suitable for installation on your site according to the unit data stated on the rating plate.

4.2 Storage and Transportation

Storing

Until installation store the Condair RM in its original packaging in a protected area meeting the following requirements:

- Room temperature: 5 ... 40 °C
- Room humidity: 10 ... 75 %rh

Transportation

For optimum protection always transport the unit and components in their original packaging and use appropriate lifting/transporting devices.



WARNING!

It is the customer's responsibility to ensure that operators are trained in handling heavy goods and that the operators comply with the appropriate regulations on work safety and the prevention of accidents.

Packaging

Keep the original packaging of the components for later use.

In case you wish to dispose of the packaging, observe the local regulations on waste disposal. Please recycle packaging where possible.

5 Mounting and installation work

5.1 Safety notes on mounting and installation work

Qualification of personnel

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

General notes

Strictly observe and comply with all information given in the present installation manual regarding the mounting 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 covers. Please note the following:



DANGER!
Danger of electric shock!

The Condair RM 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 RM 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 steam humidifier are very sensitive to electrostatic discharge.

Prevention: To protect these components against damage caused by electrostatic discharge (ESD protection) appropriate measures must be taken when the unit is open for installation work.



VORSICHT!

The Condair RM with SPA control is not splash-proof (IPX4).

Prevention: The Condair RM with SPA control must therefore not be used for prefabricated sauna cabins.

5.2 Installation overview

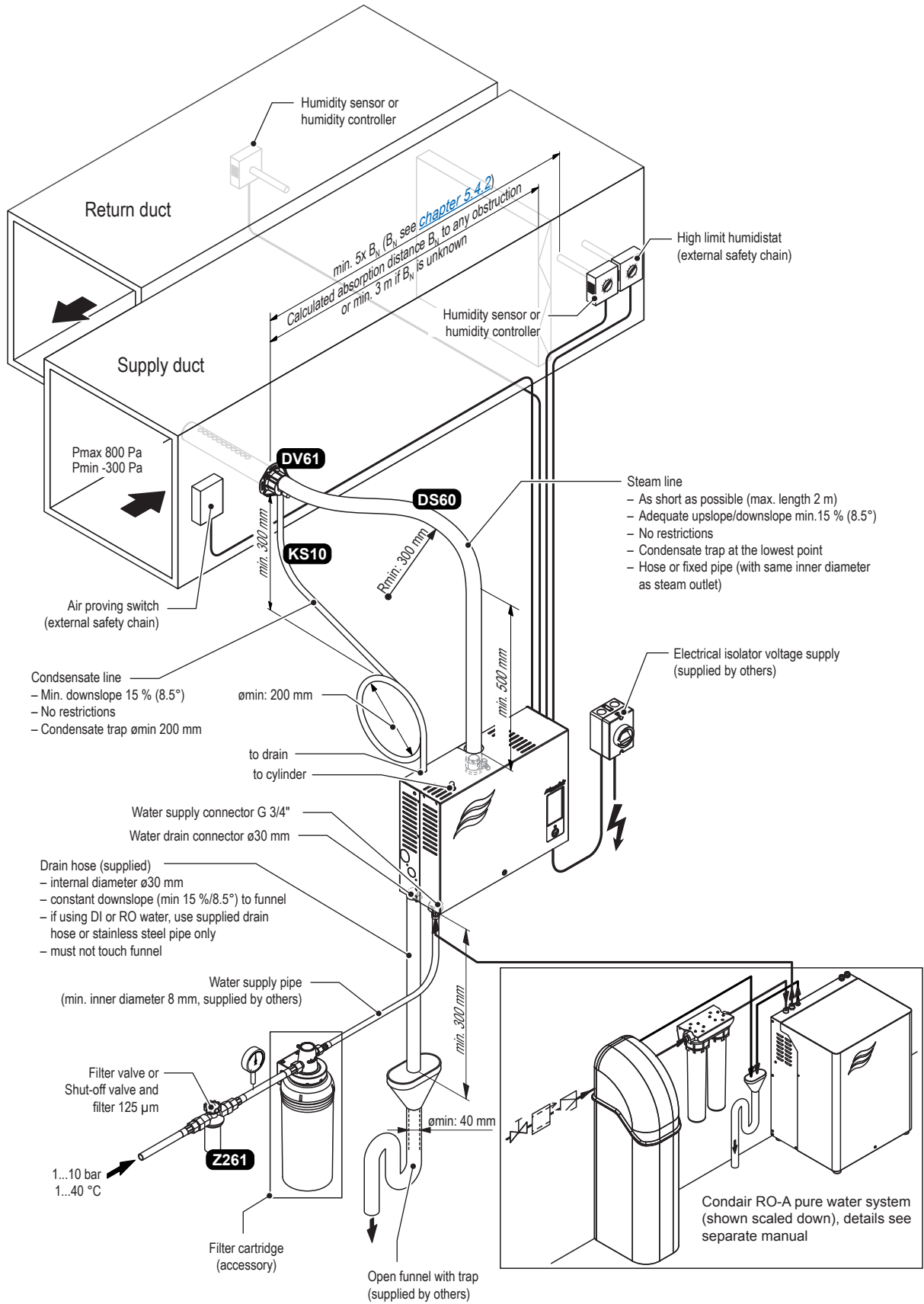


Fig. 2: Installation overview

5.3 Mounting the unit

5.3.1 Notes on locating the unit

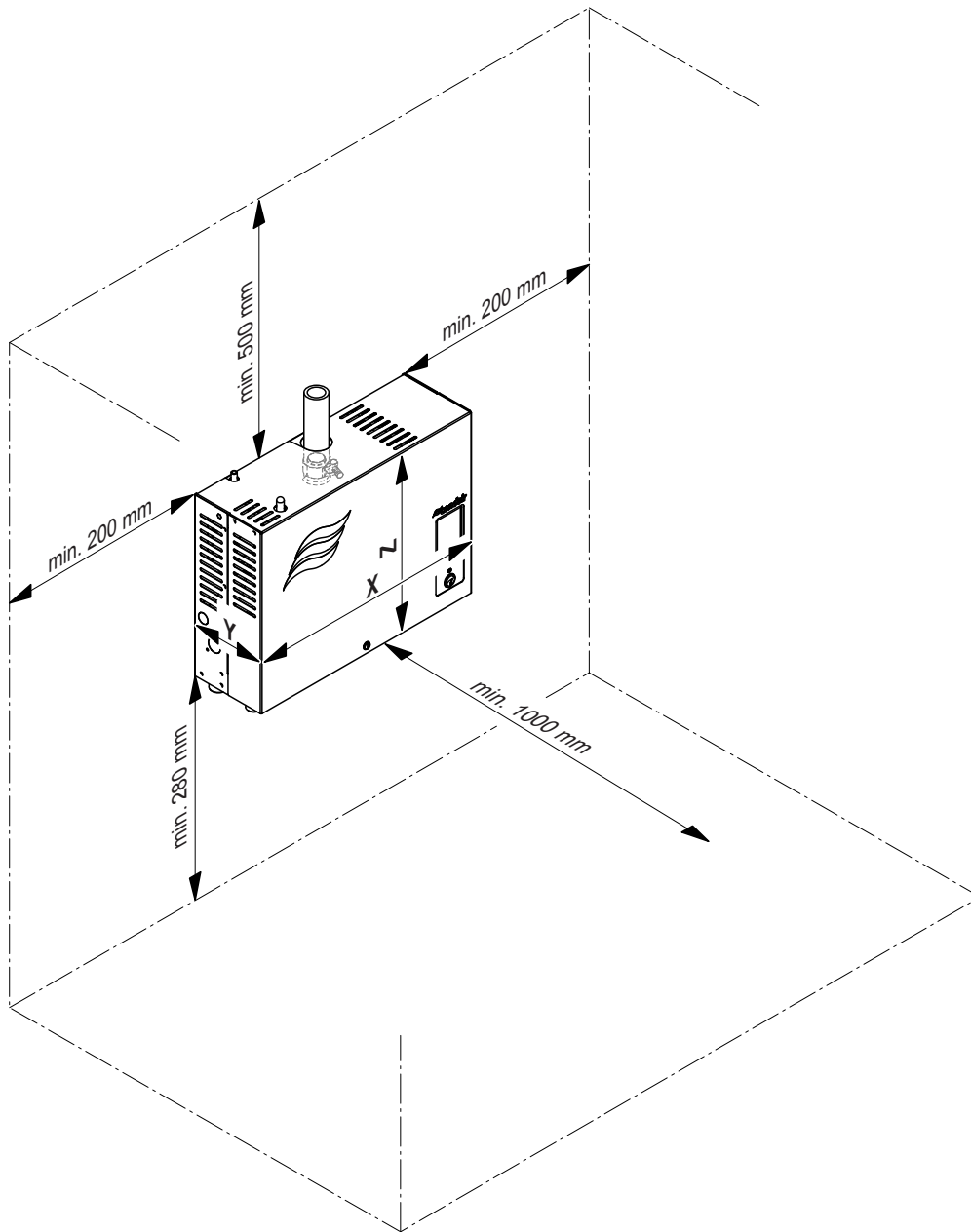


Fig. 3: Distances to be observed

Condair RM		2...8
Housing dimensions in mm	X	470
	Y	150
	Z	350
Net weight in kg		10.6
Operation weight in kg		12.9

The installation site of the Condair RM depends largely on the location of the steam distributor. To **ensure proper functioning** of the steam humidifier and to **obtain an optimal efficiency**, the following points must be considered and observed when choosing the location for the steam humidifier:

- Install the steam humidifier so that:
 - the **length of the steam** line is kept as short as possible (**max. 2 m**),
 - the **minimum bend radius for steam hoses (R= 300 mm)** and for **solid steam pipes (5 x internal diameter)** and the minimum **upslope/downslope of 15 % (8.5°)** of the steam hose is maintained (see [chapter 5.4.4](#)).
- The Condair RM is designed for wall-mounting or floor mounting (with the optional floor supports) in protected interiors. Make sure that the construction (wall, pillar, floor-mounted console, etc.) to which or on which the steam humidifier is to be mounted, offers a **sufficiently high load-bearing capacity** (take notice of the weight information found in the dimensions and weights table after [Fig. 3](#)), and is suitable for the installation.
- The back panel of the Condair RM retains 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 or on which the unit is to be mounted, does not consist of heat-sensitive material.
- Install the Condair RM in such a manner that it is **freely accessible** with sufficient space available for maintenance purposes. The **minimum distances** shown in [Fig. 3](#) **must be maintained**.
- The Condair RM must be installed in a room with normal ambient conditions (see admissible ambient conditions in the Condair RM operation manual), where the unit is protected against wetness and condensing humidity.
- Do **not** mount the Condair RM to hot or very cold walls or near vibrating components.
- The steam humidifier Condair RM must only be installed in rooms with a floor drain.



CAUTION!

If for some reason the Condair RM 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 mounting the Condair RM use **only the mounting materials supplied with the unit**. If mounting with the materials supplied is not possible in your particular case, select a method of mounting that is of similar stability.
- The Condair RM is designed for installation and operation within buildings (admissible temperature range 5...40 °C). For outdoor operation the Condair RM must be placed in a weather protective housing. If ambient temperatures near or below the freezing point have to be expected, the protective housing must be equipped with a thermostat controlled heating of sufficient capacity. The water supply pipe must be equipped with a trace-heating and must be insulated up to the protective housing. The installation of a normally open valve inside the building envelope that will drain water in case of power failure is highly recommended.

5.3.2 Wall mounting

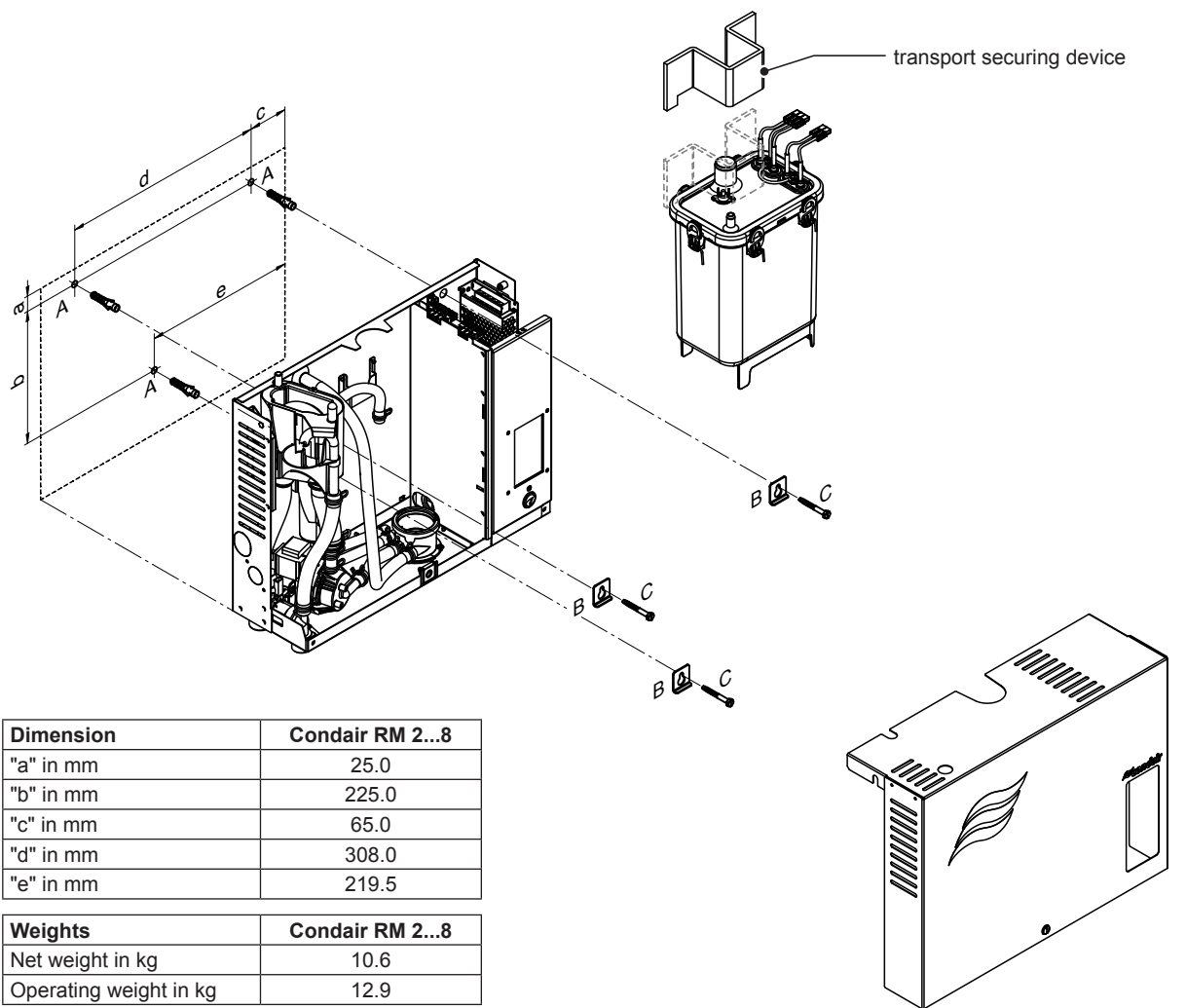


Fig. 4: Mounting the steam humidifier to a wall

Procedure

1. Mark the attachment points "A" at the desired position with the help of a spirit level. Then, drill holes diameter: 8 mm, depth: 40 mm.
2. Insert the supplied plastic plugs. Then, screw in the supplied screws 5 x 40 mm into the plastic plug in such a way that the distance between screw head and unit rear wall is 10 mm.
3. Unlock the retaining screw of the unit cover, then remove the unit cover.
4. Remove transport securing device located on top of the steam tank , disconnect all heating cables and the connecting cables to the over temperature switch(es). Then, pull steam tank out of the coupling sleeve and remove.
5. Carefully pull the fixing clip of the filling cup out of the support, then push filling cup down and pull it to the front out of the support.
6. Hang the steam humidifier onto the screws. Insert the supplied locking plates "B" between screw head and unit rear wall. Align the steam humidifier horizontally using a spirit level, then fasten the screws.
7. Moisten the O-ring in the steam tank receptacle with water (do not use grease or oil). Then, insert the stirrup on the backside of the steam tank into the retaining bracket on the back wall of the unit housing. Insert the connector on the bottom side of the steam tank into steam tank receptacle and push steam tank downwards until it comes to a stop.
Important: Check whether the steam tank is correctly hooked in the retaining bracket on the back wall of the unit housing by pulling the steam tank to the front. A correctly mounted steam tank cannot be moved.
8. Connect heating cable plugs into the corresponding sockets (see [Fig. 5](#)).
Important: make sure the cables are not crossed!
Attach connecting cable to the connector of the overtemperature switch.

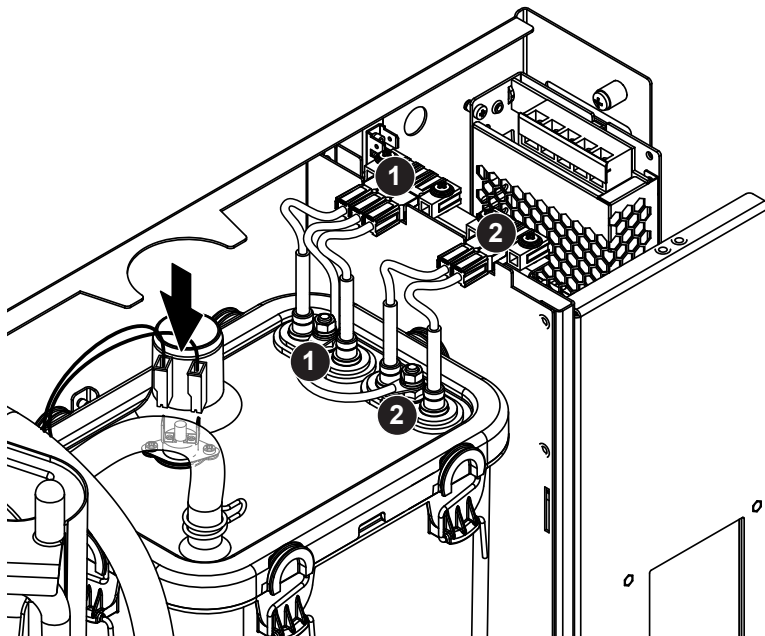
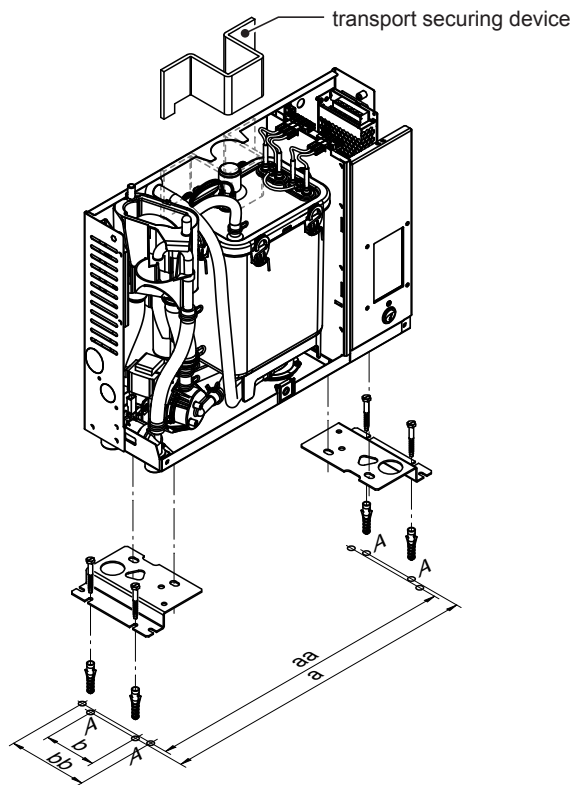


Fig. 5: Connecting the heating cables and the connecting cable of the over temperature switch

9. Insert the hocks of the filling cup into the opening in the filling cup support. Push filling cup upwards until the fixing clip engages.
Important: make sure the drain hose from water cup is inserted into the drain opening on the bottom of the unit housing.
10. Reattach the unit cover and secure it with the retaining screw.

5.3.3 Floor mounting



Dimension	Condair RM 2...8
"a" in mm	512
"b" in mm	84
"aa" in mm	499
"bb" in mm	128

Weights	Condair RM 2...8
Net weight in kg	10.6
Operating weight in kg	12.9

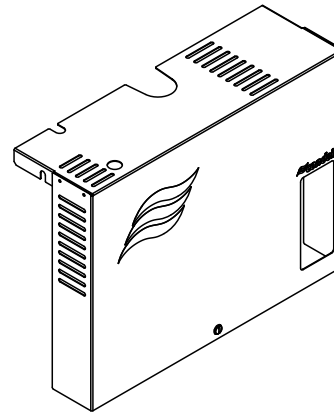


Fig. 6: Mounting the steam humidifier to the floor

Procedure

1. Screw the two floor supports to the steam humidifier from below with 2 screws on each side of the device
2. Mark the attachment points "A" (two on each side of the device) at the desired position. Then, drill holes diameter: 8 mm, depth: 40 mm.
Note: The mounting surface must be level in both directions (check with a spirit level).
3. Insert the supplied plastic plugs into the holes.
4. Fix the device to the floor using the screws supplied.
5. Unlock the retaining screw of the unit cover, then remove the unit cover. Remove transport securing device located on top of the steam tank. Reattach the unit cover and secure it with the retaining screw.

5.3.4 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](#) and [chapter 5.3.3](#))?
- Has the unit cover been relocated and correctly fixed with the screw?

5.4 Steam installation

5.4.1 Overview steam installation

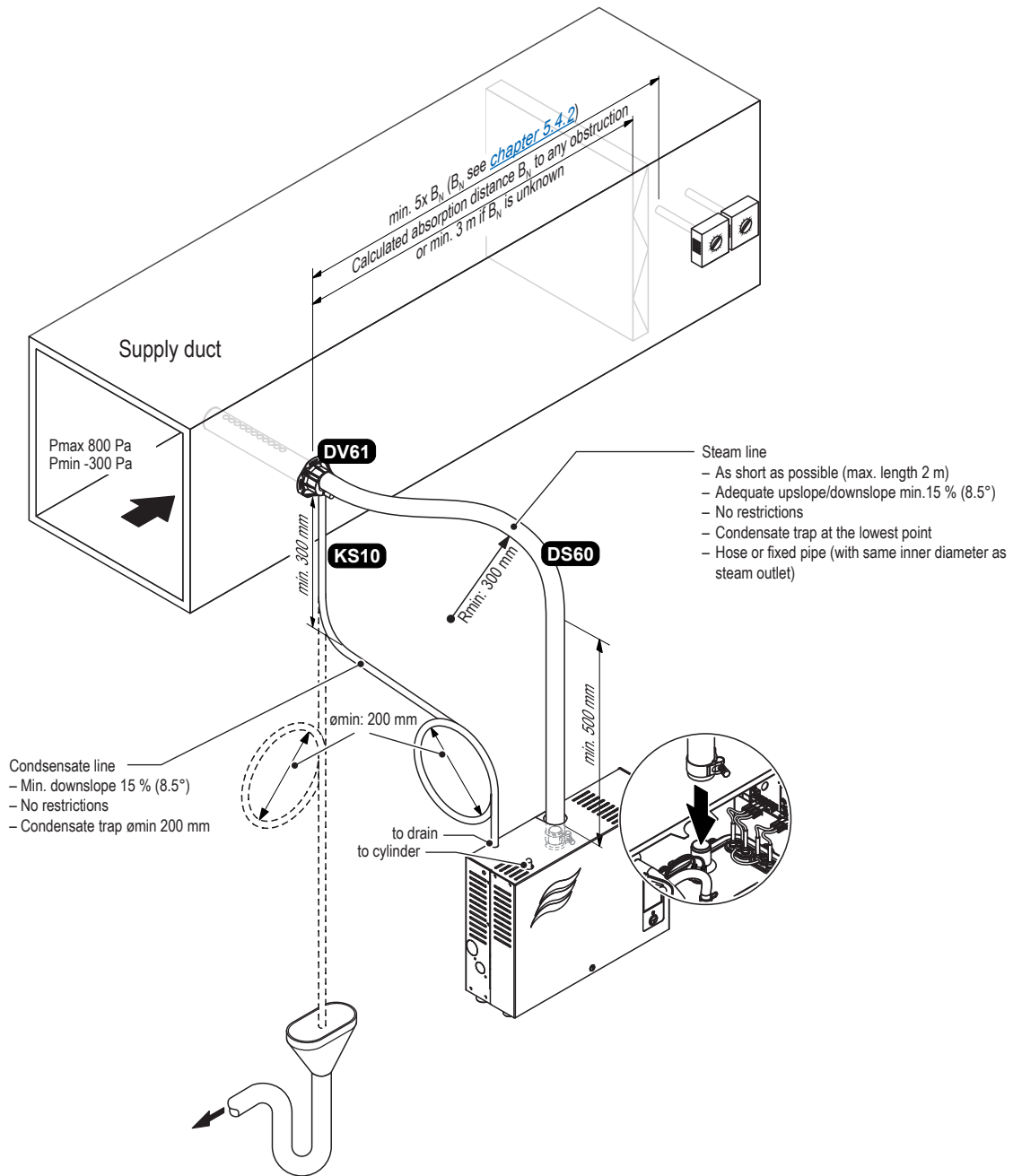


Fig. 7: Overview steam installation

5.4.2 Positioning of the steam distributor

The location of the steam distributor should be determined at the time of dimensioning the air conditioning system. Please note the following instructions to ensure proper humidification of the duct air.

Calculating the absorption distance

The steam, emitting from the steam distributor, requires a certain distance to be absorbed by the air so that it is no longer visible as steam. This distance is referred to as **absorption distance "B_N"** and serves as a basis for the determination of the minimum distances from the upstream components in the system.

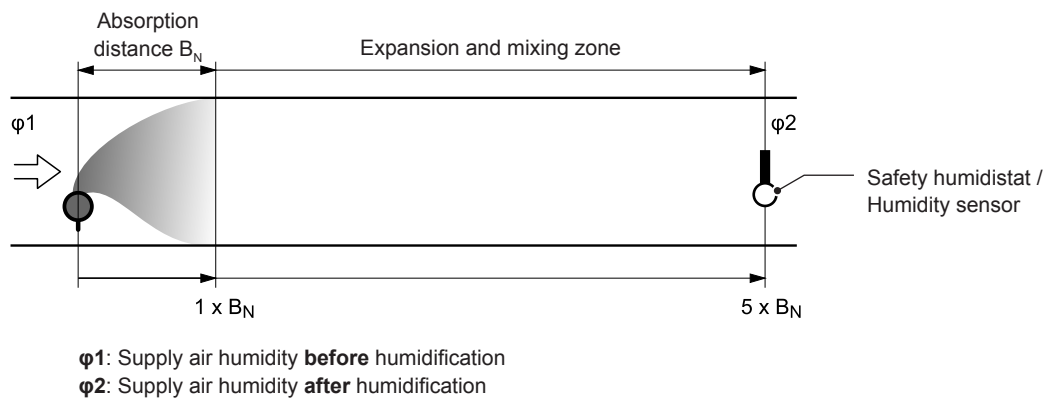


Fig. 8: Absorption distance "B_N"

The calculation of the absorption distance "B_N" is dependent on several factors. For a rough estimation of the absorption distance "B_N", the following table is useful. Recommended standard values listed in this table are based on a supply-air temperature range of 15 °C to 30 °C. The values **apply to steam distribution pipes DV61-...**

Humidity at inlet φ ₁ in %rh	Length of absorption distance B _N in m					
	Humidity at outlet φ ₂ in %rh					
	40	50	60	70	80	90
5	0,9	1,1	1,4	1,8	2,3	3,5
10	0,8	1,0	1,3	1,7	2,2	3,4
20	0,7	0,9	1,2	1,5	2,1	3,2
30	0,5	0,8	1,0	1,4	1,9	2,9
40	–	0,5	0,8	1,2	1,7	2,7
50	–	–	0,5	1,0	1,5	2,4
60	–	–	–	0,7	1,2	2,1
70	–	–	–	–	0,8	1,7

φ₁ in %rh: Relative supply air humidity prior to humidification at the lowest supply air temperature
φ₂ in %rh: Relative supply air humidity after the steam distribution pipe at maximum capacity

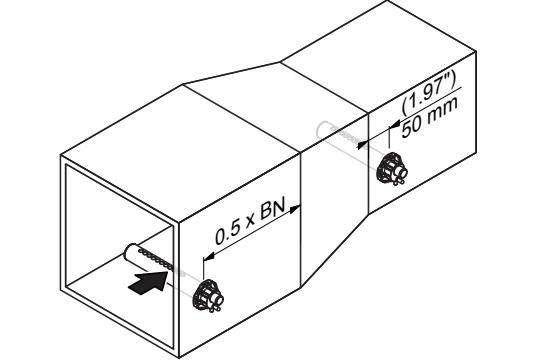
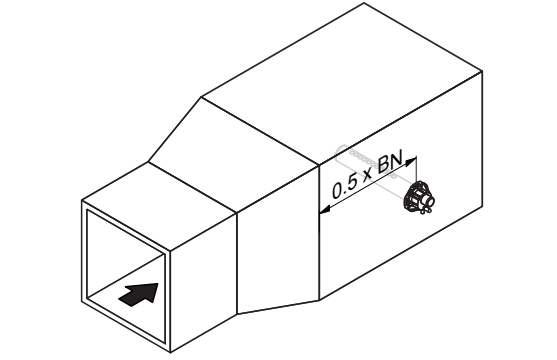
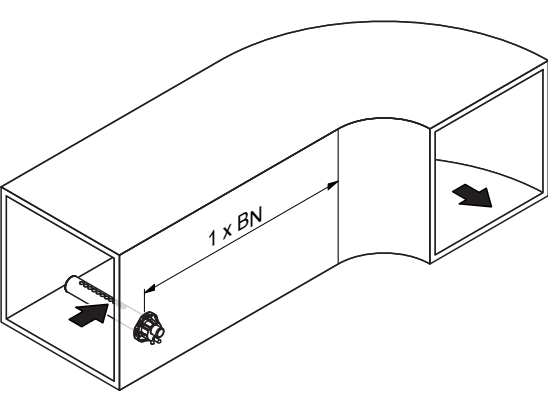
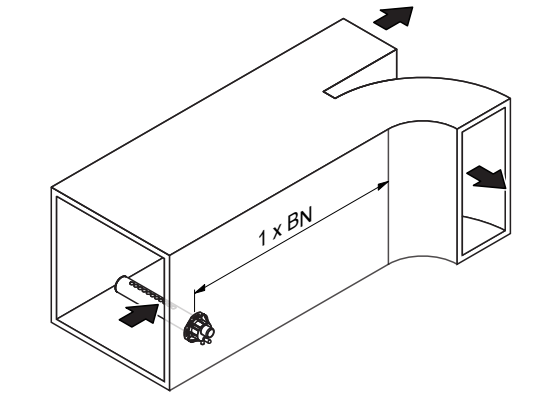
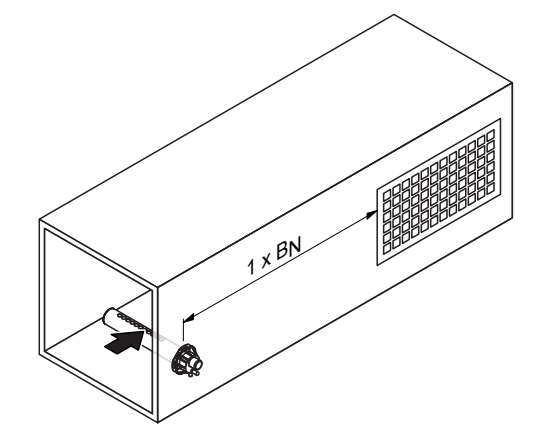
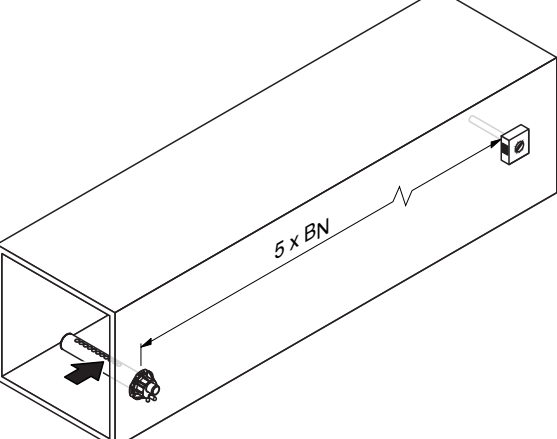
Example

given φ₁ = 30 %rh, φ₂ = 70 %rh
absorption distance B_N: **1,4 m**

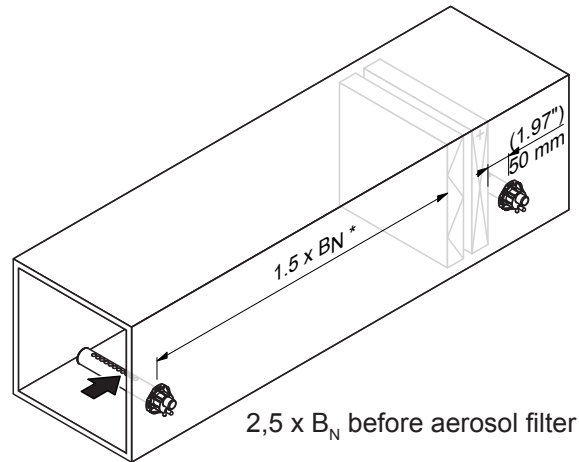
Note: If the absorption distance has to be reduced for technical reasons, the amount of steam per unit must be divided between several steam distribution pipes. If this is the case, contact your Condair representative.

Minimum distances to be observed

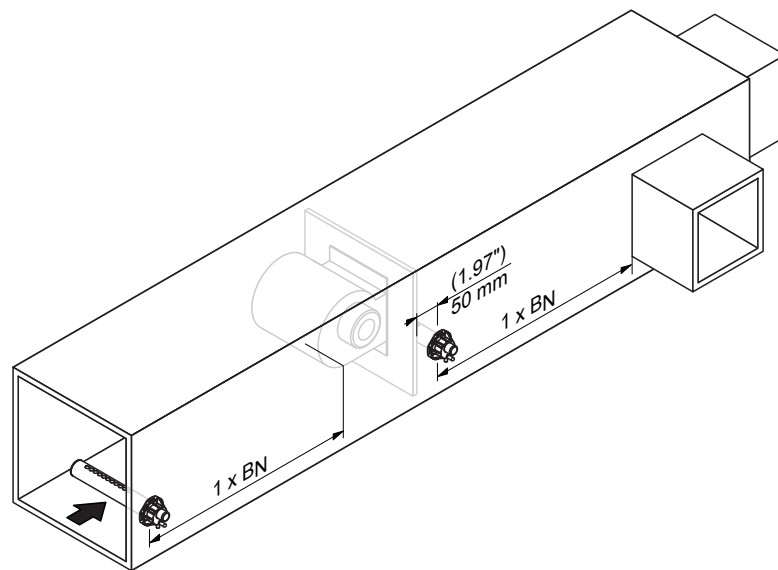
To prevent the steam, that is emitting from the steam distributor, from condensing on downstream system components, a minimum distance to the steam distributor must be observed (depends on the absorption distance "B_N").

before/after constriction	after expansion
	
before bend	before branch
	
before diffuser	before humidity controller/ humidity sensor
	

before/after filter/heater



before/after fan, zone exit



Installation notes

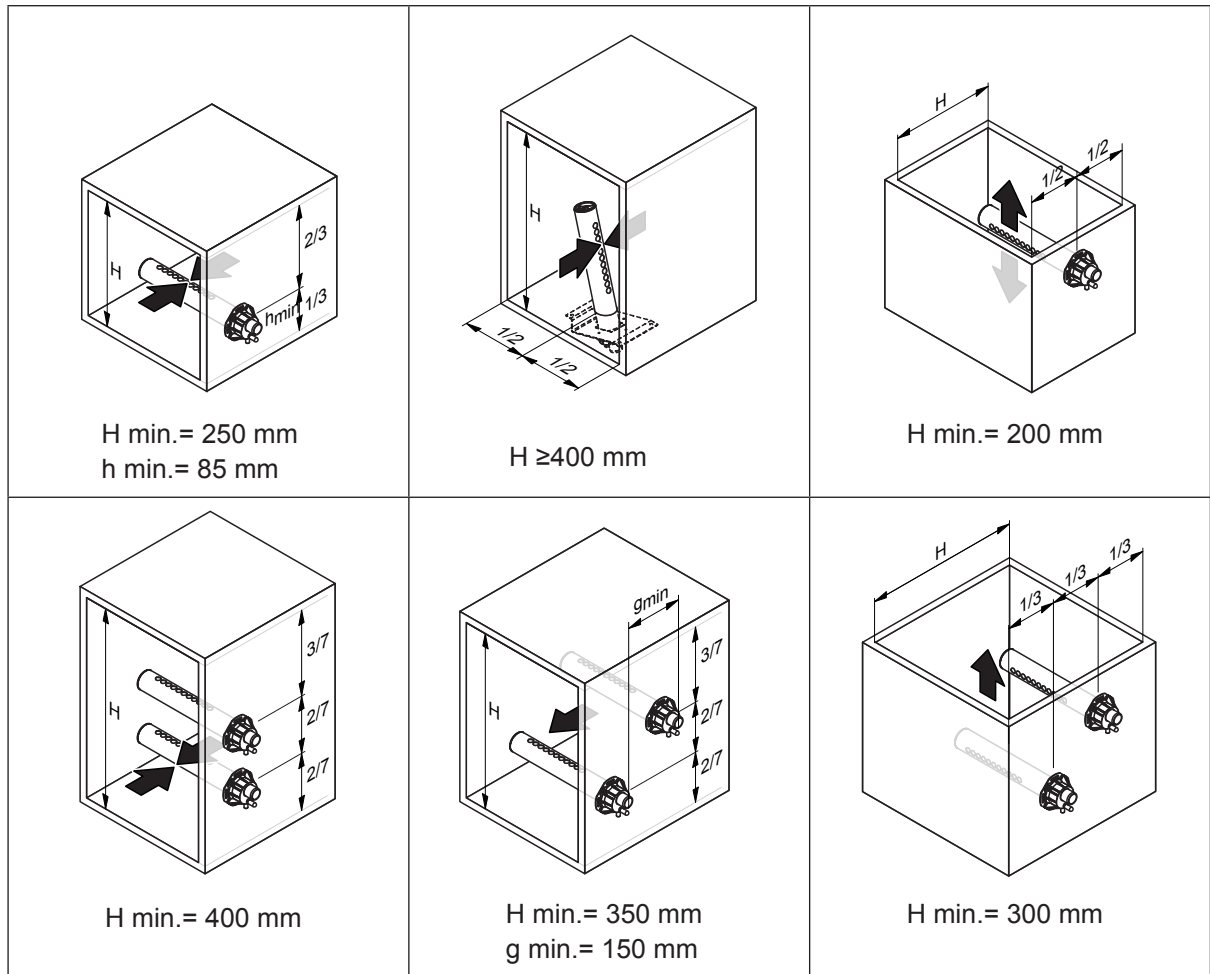
The steam distribution pipes are designed for either **horizontal** installation (on the duct wall) or, with accessories, for **vertical** installation (in the duct floor). The **outlet orifices should always point upwards and at right angles to the airflow**.

If possible, the steam distribution pipes should be installed on the **pressure side** of the duct (**max. duct pressure 800 Pa**). If the steam distribution pipes are installed on the suction side of the duct, the **maximum vacuum must not exceed 300 Pa**.

Select a location for the installation, tailored to suit your duct (see the following illustrations) and position the steam distribution pipes in the duct so that a uniform distribution of steam is achieved.

Positioning the steam distribution pipes in the duct

In positioning the steam distribution pipes, the following dimensions should be observed:



Guidelines for dimensioning the ventilation ducts

- To facilitate the installation of the steam distribution pipes and for control purposes, a sufficiently sized control opening should be planned.
- Within the range of the absorption distance, the ventilation duct should be waterproofed.
- Air ducts passing through cold rooms should be insulated to prevent the humidified air from condensing along the duct wall.
- Poor airflow conditions within the air duct (e.g. caused by obstacles, tight bends, etc.) can lead to condensation of the humidified air.
- Steam distribution pipes must not be mounted to round ducts.

If you have questions relating to the dimensioning of ventilation ducts in combination with steam humidifiers Condair RM, contact your Condair representative.

5.4.3 Installing the steam distributors

Detailed information on the installation of steam distribution pipes DV61-... can be found in the separate mounting instructions for these products.

5.4.4 Installing the steam and condensate lines

5.4.4.1 Notes on installing the steam and condensate lines

- 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 humidifier**. Then lead the steam line with a **minimum upslope** and/or a **minimum 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 humidifier 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. 2 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. The maximum pressure loss along the steam line is 800 Pa.
- **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 humidifier steam outlet by means of **hose clamps**. Solid steam pipes should be connected to the steam distributor and steam humidifier with short lengths of steam hose secured with hose clamps.
Caution! Do not overtighten the hose clamp on the steam connector of the steam humidifier.



WARNING!

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 humidifier 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).



DANGER!

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.

5.4.4.2 Installation examples

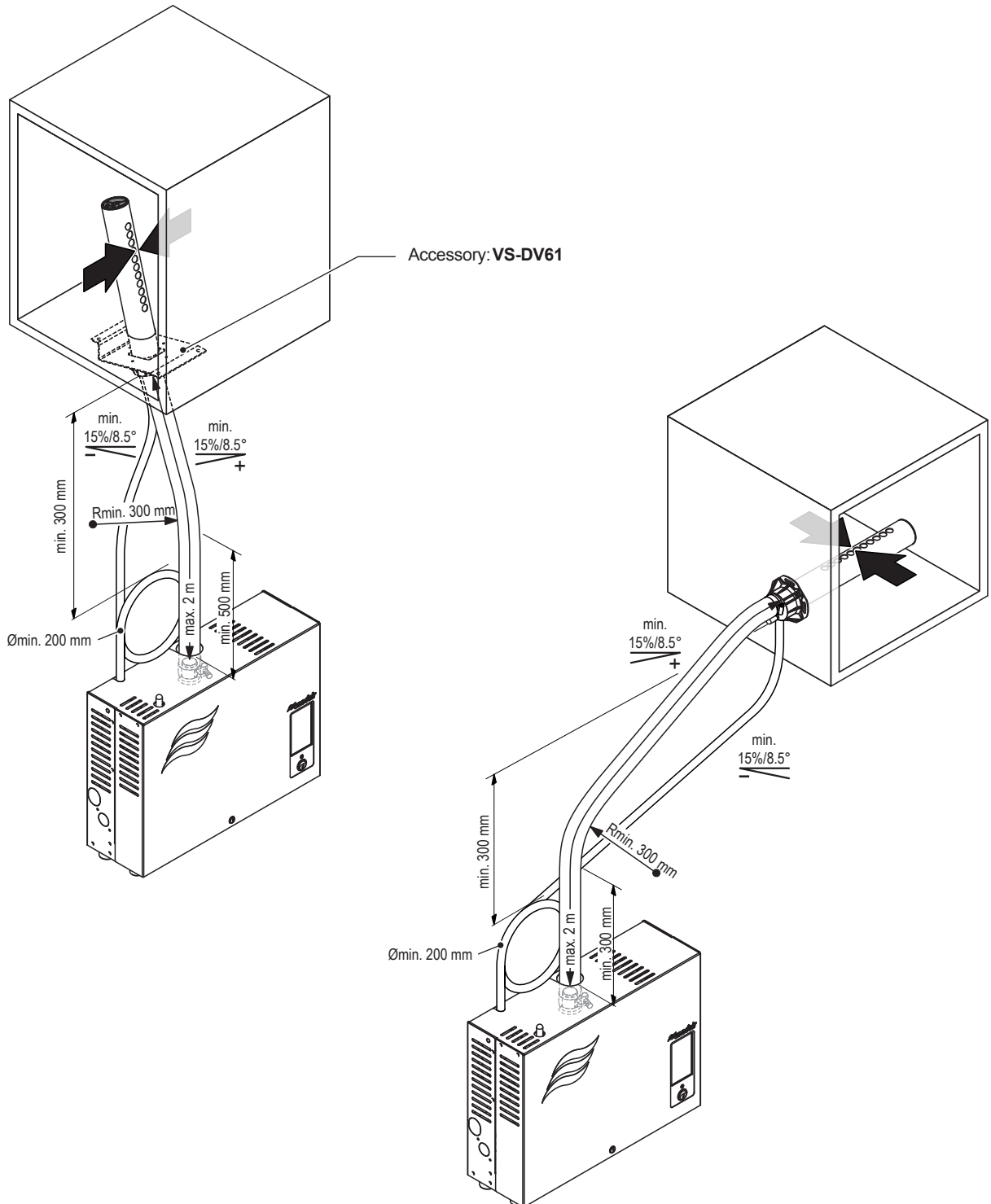


Fig. 9: Steam distributor is mounted more than 500 mm above the top edge of the steam humidifier

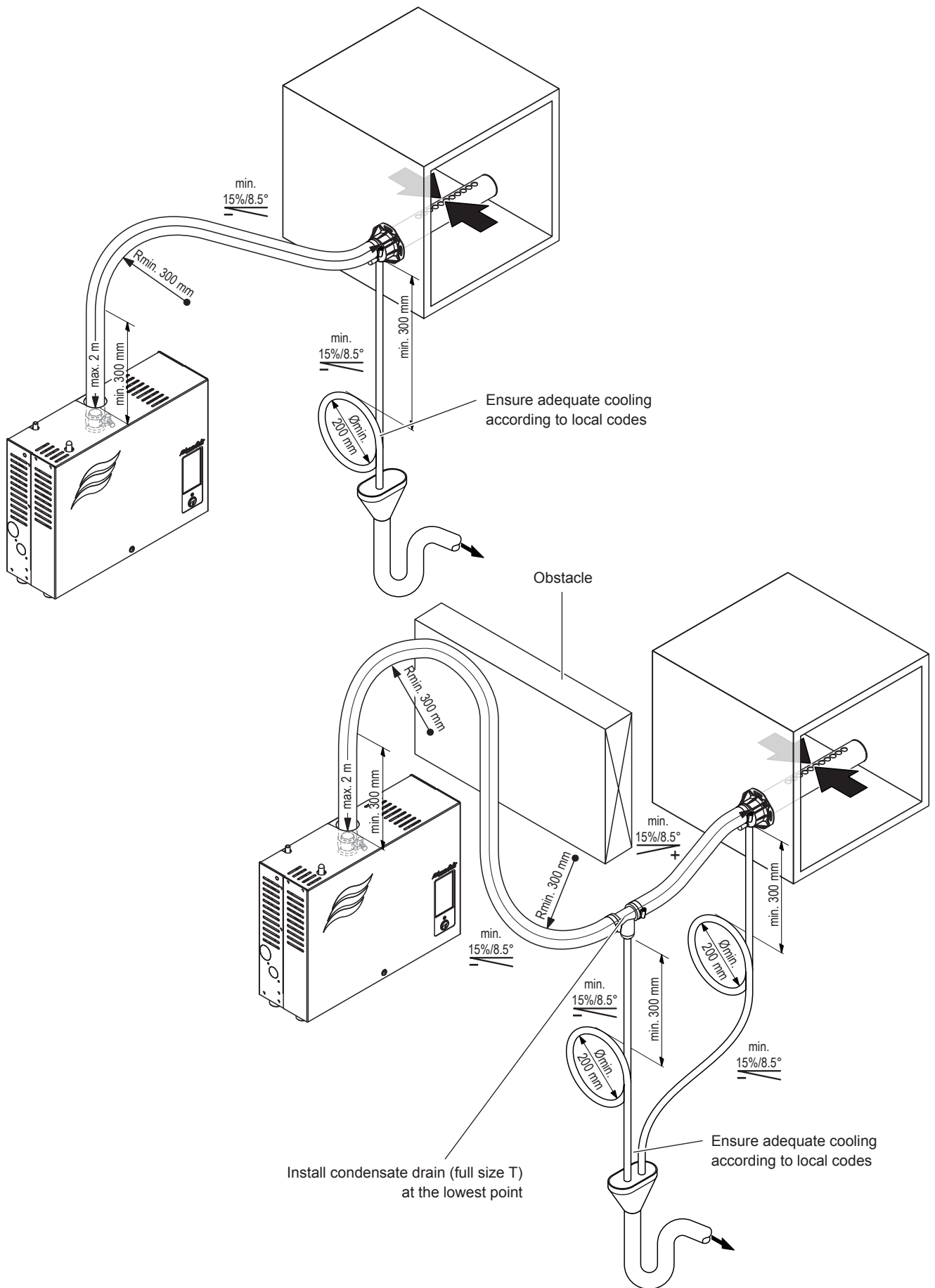


Fig. 10: Steam distributor is mounted less than 500 mm above the top edge of the steam humidifier

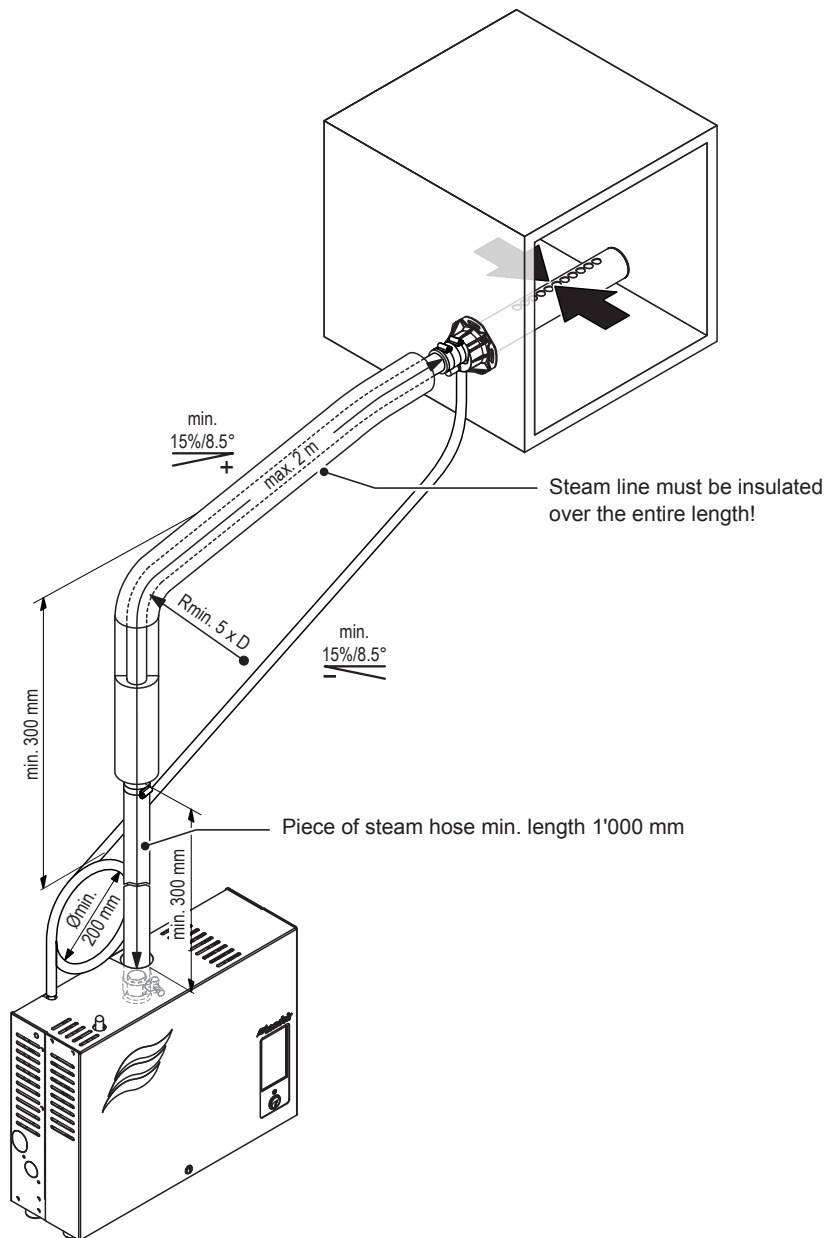
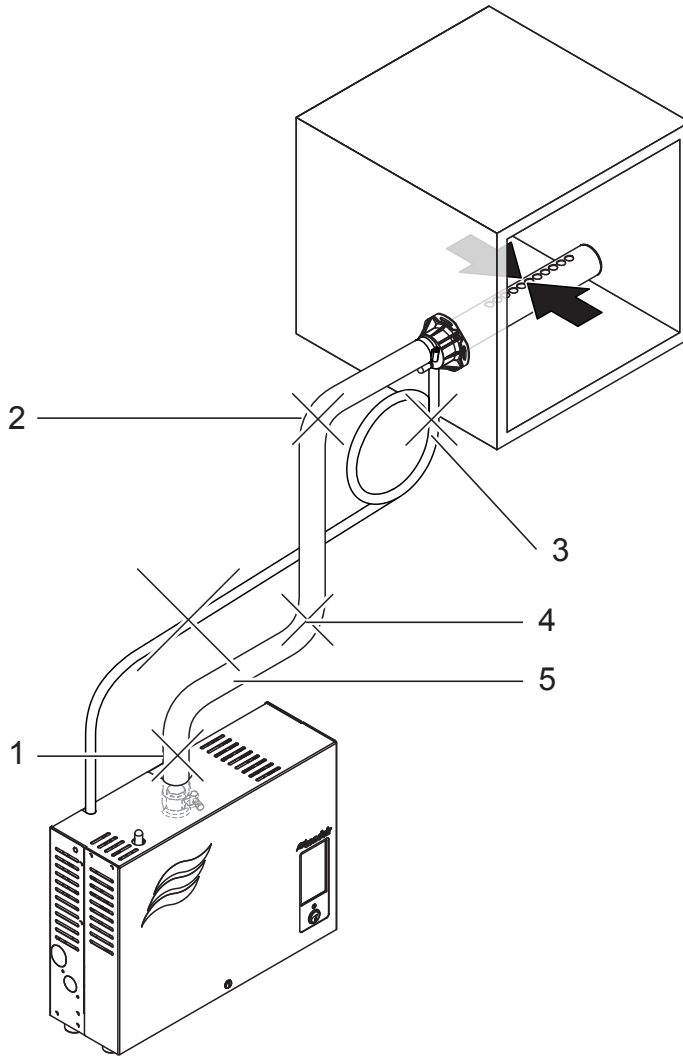


Fig. 11: Steam line with solid piping and insulation

The following notes should be observed:

- The **minimum internal diameter of the steam line** (diameter dependent on the steam humidifier) 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.
- 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 humidifier 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.

5.4.5 Common steam and condensate line errors



	Wrong	Correct
1	Steam hose/steam hose piece not led at least 500 mm (for steam hoses) or 1,000 mm (for solid piping) perpendicularly upwards before first bend (forming of condensate).	Lead steam hose/steam hose piece at least 500 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 (slope min. 20 %).	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°).

Fig. 12: Common steam and condensate line errors

5.4.6 Inspecting the steam installation

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

- Steam distributor
 - Steam distributor correctly positioned and secured (screws tightened)?
 - Are the outlet orifices at right angles to the air flow for horizontal installation, or at 45 degree angle for vertical installation?
 - Are unused condensate connectors on the steam distributor closed with a cap?
- Steam hose
 - Is maximum steam line length of 2 m maintained?
 - 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?
 - Is upslope or downslope of at least 15 % (8.5°) maintained?
 - Is minimum bend radius of 300 mm for steam hose maintained?
 - Have the instructions for hose positioning 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?
 - Steam hose(s) securely attached with clamps?
 - Heat expansion during operation and shortening of the hose with ageing taken into consideration?
 - Rigid steam lines: properly insulated? Correct installation material used? Minimum internal diameter maintained?
- Condensate hose
 - Downslope of at least 15 % (8.5°)?
 - Siphon (min. \varnothing 200 mm) existing and filled with water?
 - Condensate hose correctly fixed and not kinked?

5.5 Water installation

5.5.1 Overview water installation

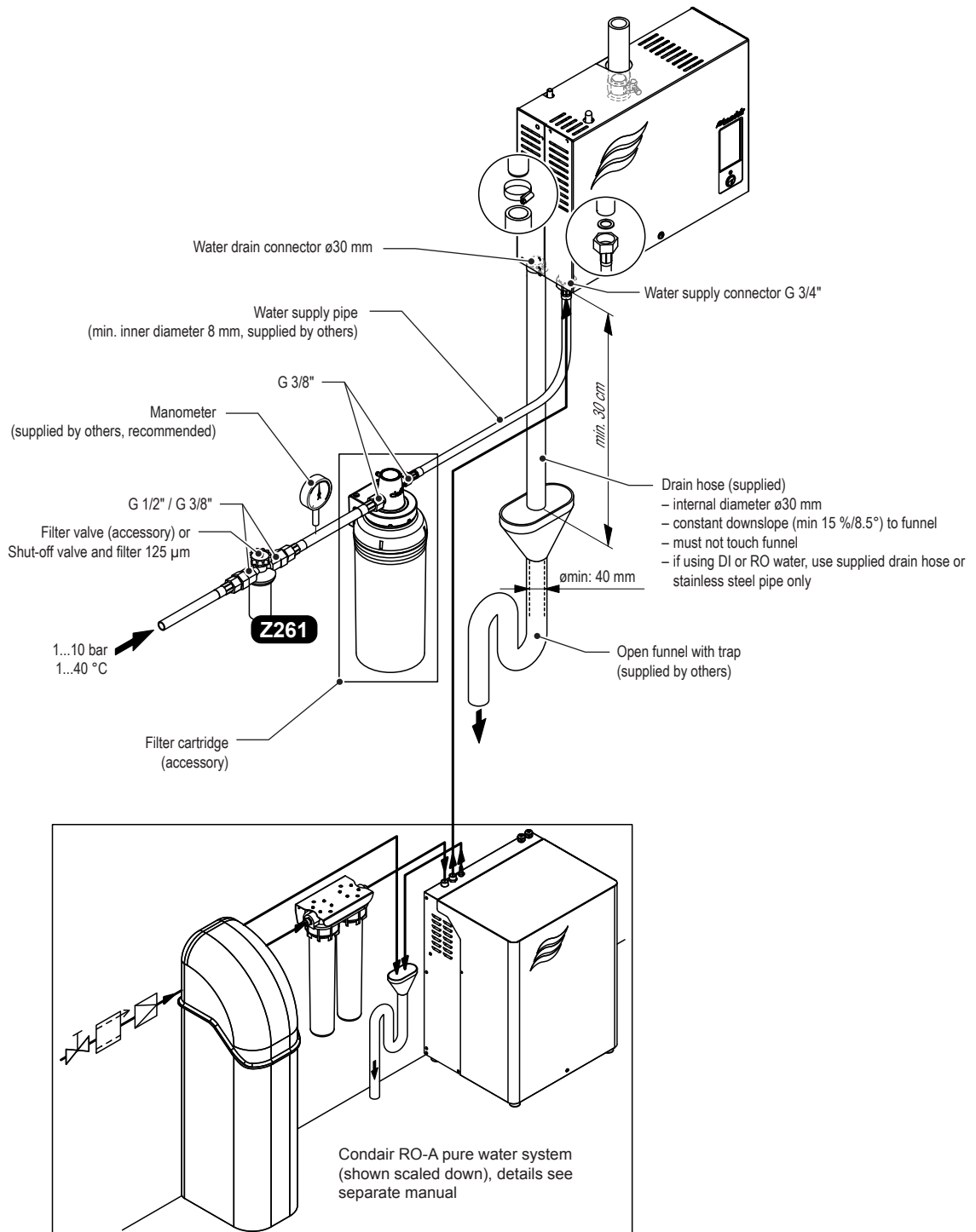


Fig. 13: Overview water installation (connections on the bottom of the unit)

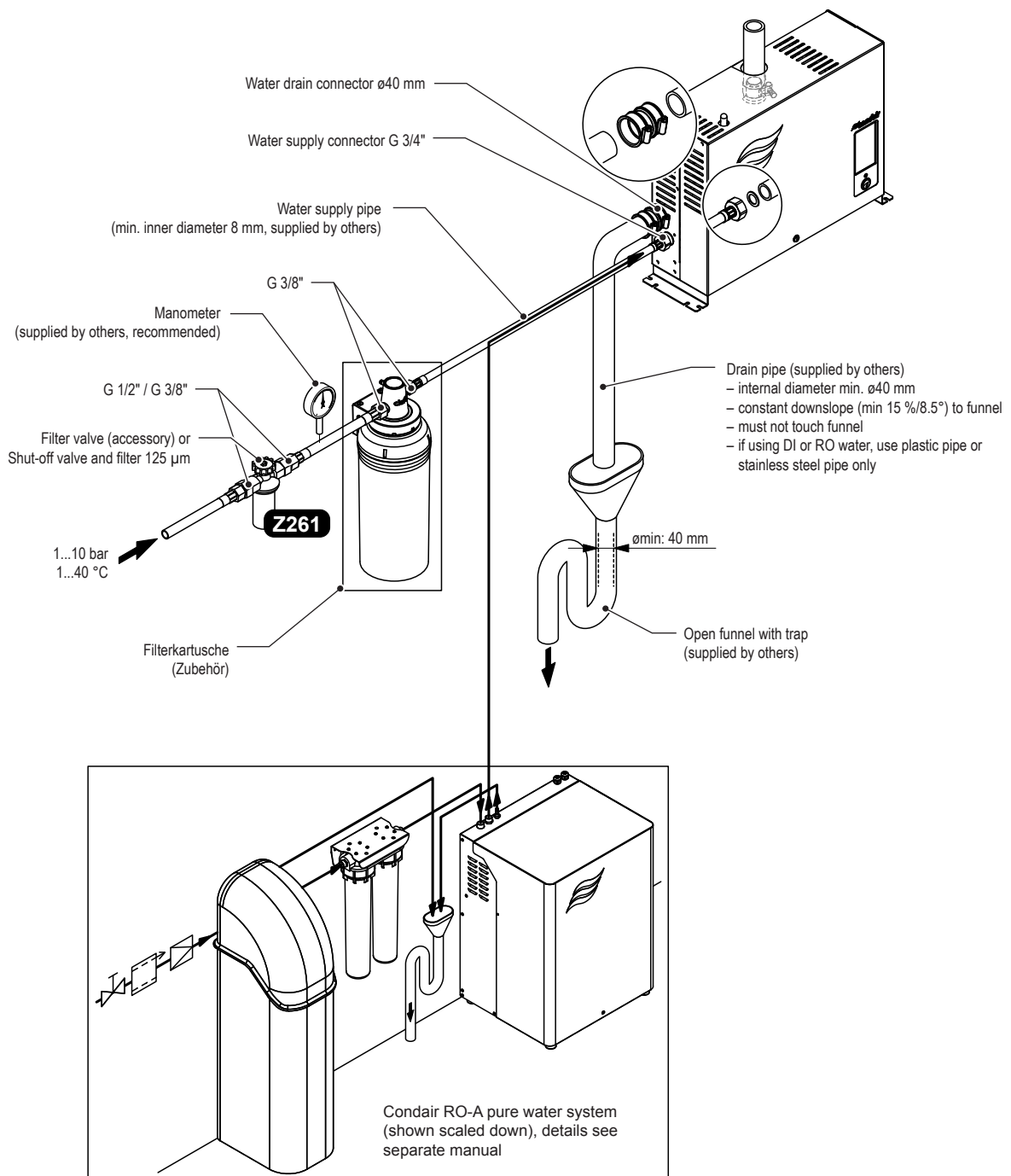


Fig. 14: Overview water installation (connections on the left side of the unit)

5.5.2 Notes on water installation

Notes: For the mounting of the optional filter cartridge please refer to notes given in the separate manual supplied with filter cartridge.

Water supply

The water supply is to be carried out according to the corresponding figure (see [Fig. 13](#) or [Fig. 14](#)) 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 water filter can be used) should be made as close as possible to the steam humidifier.
- 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 Condaire supplier.
- **Notes on water quality:**
 - For the water supply of the Condaire RM, use exclusively untreated drinking water, water from RO system (e.g. Condaire RO-A) or demineralised water from the filter cartridge (accessory).
 - The use of **additives** in the water such as fragrance liquids, corrosion inhibitors, disinfectants, etc. is **not allowed**, since these additives may endanger health and affect proper operation.
 - If the Condaire RM shall be operated with softened or partly softened water, please contact your Condaire representative.
- The connection material must be **pressure-proof** and **certified for use in drinking water systems**.
- **Important!** Before connecting the water line, **the line should be well flushed out and deaerated**.



CAUTION!

The thread at the steam 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 corresponding figure (see [Fig. 13](#) or [Fig. 14](#)) 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!
- 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 humidifier 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 internal diameter of the drain pipe from the unit to the funnel of ø30 mm maintained throughout the entire length?
 - Is the minimum internal diameter of the drain pipe from the funnel to the waste water line of the building of ø40 mm maintained throughout the entire length?
 - Has drain pipe been installed with a downslope of at least 15 %?
 - 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 Notes on electrical installation



DANGER!
Danger of electric shock

The Condair RM 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 RM 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!

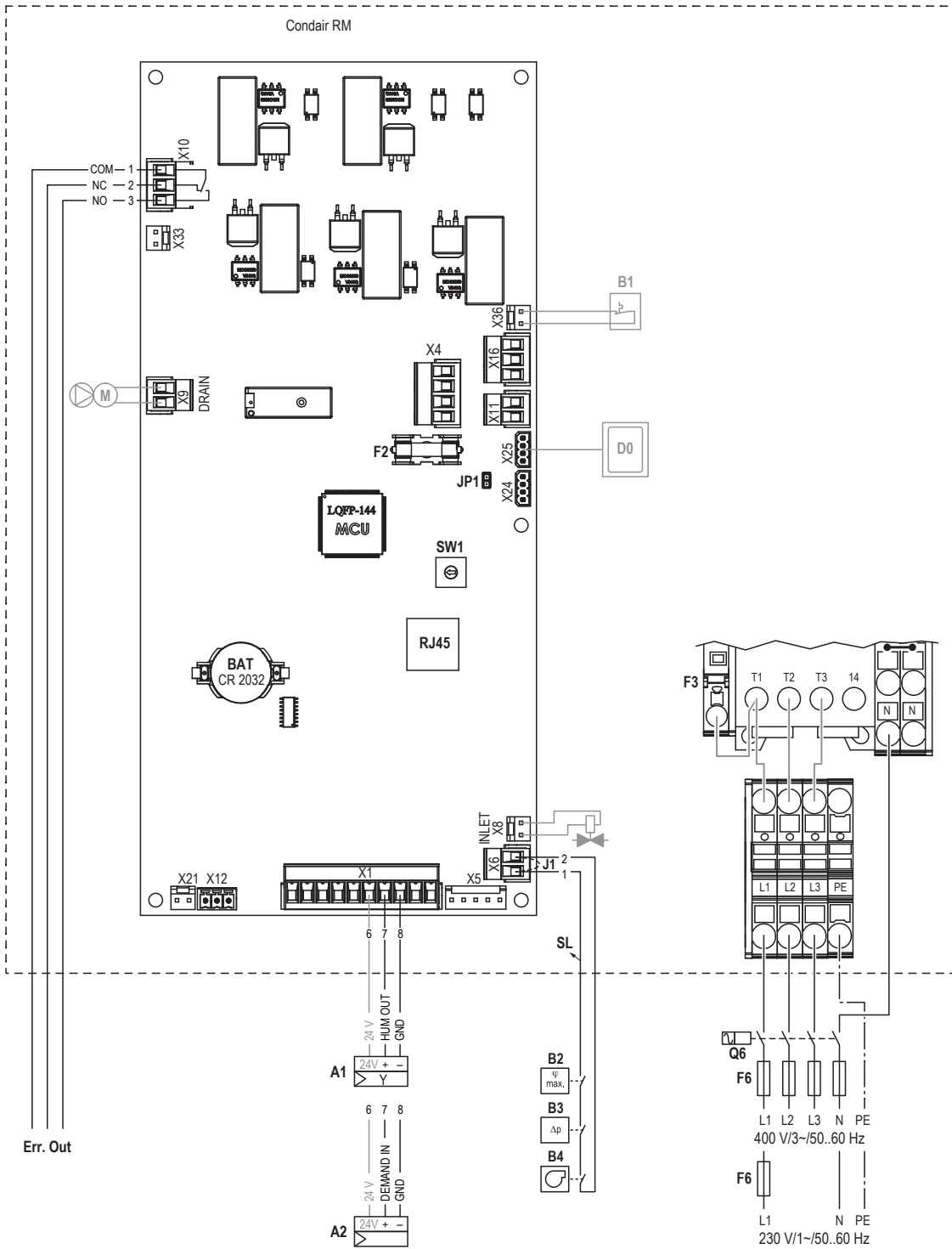
The electronic components inside the unit are very sensitive to electrostatic discharge. Before carrying out installations work inside the unit, appropriate measures must be taken to protect the electronic components against damage caused by electrostatic discharge (ESD protection).

- 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 wiring diagram (see [chapter 5.6.3](#)), the notes on electrical installation (see [chapter 5.6.4](#)) 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 voltage must match the voltage stated in the wiring diagram (see [chapter 5.6.3](#)).
- For the installation of accessory components, please observe the information in the corresponding documentation supplied by the respective manufacturer.

5.6.2 Notes on humidity control/ humidity monitoring

The steam production of the Condair RM must be controlled and monitored in such a way that the Condair RM stops humidification if the humidity in the air duct/room is too high (installation of a high limit humidistat) in order to prevent absorbent materials in the room to get wet.

5.6.3 Wiring diagram Condair RM

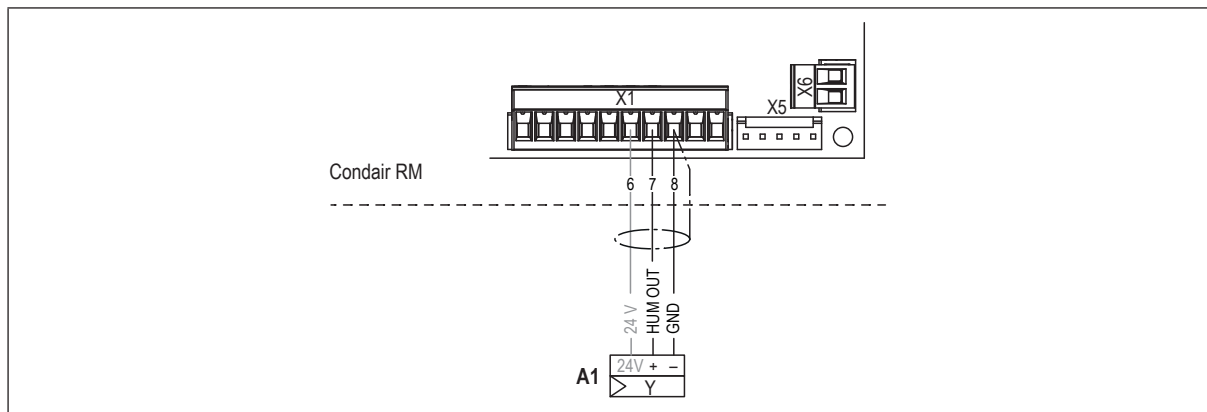


Legend wiring diagram Condair RM

Symbol	Description	Remarks	Technical Details
A1	Humidity sensor	Detecting of the air humidity for the control of the Condair RM via the internal controller	
A2	External humidity controller	For the control of the Condair RM via an external humidity controller	
B1	Over temperature switch steam tank		
B2	High limit humidistat	Potential-free contact	
B3	Air flow monitor	Potential-free contact	
B4	Ventilation interlock	Potential-free contact	
BAT	Backup battery RM control board		CR2032, Lithium 3V
D0	Internal SPA display (option)		
Err.Out	Fault output		
F2	Microfuse 24 VDC external		1 A, slow acting
F3	Internal fuse terminal power supply		1.6 A, slow acting
F6	Externals fuses power supply 230 V/1~/50...60 Hz	Condair RM 2 kg/h	10 A, fast acting
		Condair RM 4 kg/h	16 A, fast acting
		Condair RM 6 kg/h	25 A, fast acting
		Condair RM 8 kg/h	32 A, fast acting
	Externals fuses power supply 400 V/3~/50...60 Hz	Condair RM 6 kg/h	16 A, fast acting
		Condair RM 8 kg/h	16 A, fast acting
JP1	Terminating resistor CAN BUS	Remove jumper, if both CAN BUS connectors are used.	
J1	Cable bridge	Connect cable bridge to terminal block "X6", if no safety devices are connected to terminal block "X6".	
RJ45	Network connector	Network connector for the upload of software updates	
SL	Safety loop		
SW1	Rotary switch unit address	Always set to Pos. "0"	
Q6	External electrical isolator (all-pole disconnection) power supply		

5.6.4 Installation work external connections

5.6.4.1 Connecting the signal cable of a humidity sensor "A1" (operation with internal controller)



The signal cable of a humidity sensor "A1" (operation with internal controller) is connected according to the wiring diagram to terminals "7" (+) and "8" (-) of terminal block "X1" on the control board inside the control compartment of the Condair RM.

Note: if the humidity sensor shall be supplied with 24 V from the control board (terminal "VOUT"), connect the 24 V input of the humidity sensor to terminal "6" (24 V output) of terminal block "X1".

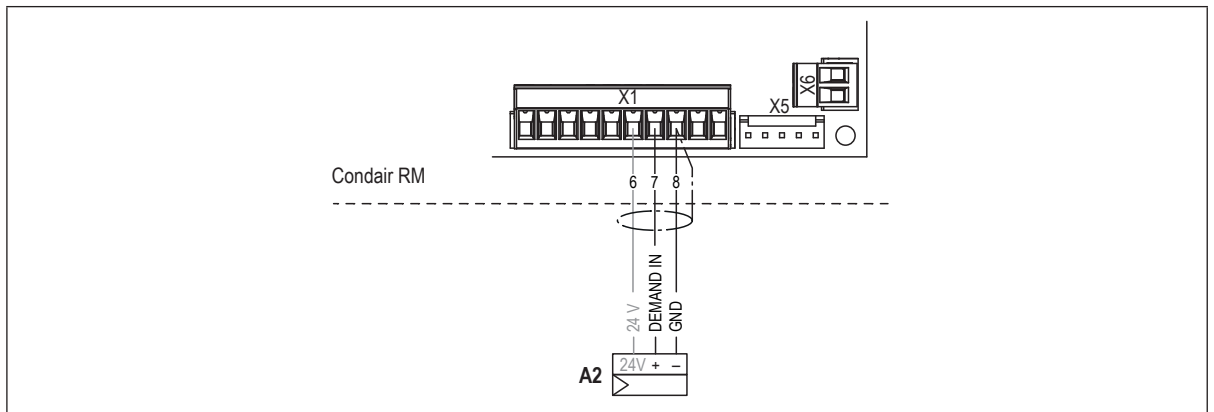
The following control signals are supported: 0-5V, 1-5V, 0-10V, 2-10V, 0-20V, 0-16V, 3-16V, 0-20mA and 4-20mA.

Note: the humidity control must be configured via the control software accordingly.

If a shielded signal cable is used, connect the shielding to terminal "GND".

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"

5.6.4.2 Connecting the signal cable of an external humidity controller "A2"



The signal cable of an external controller "A2" is connected according to the wiring diagram to terminals "7" (+) and "8" (-) of terminal block "X1" on the control board inside the control compartment of the Condair RM.

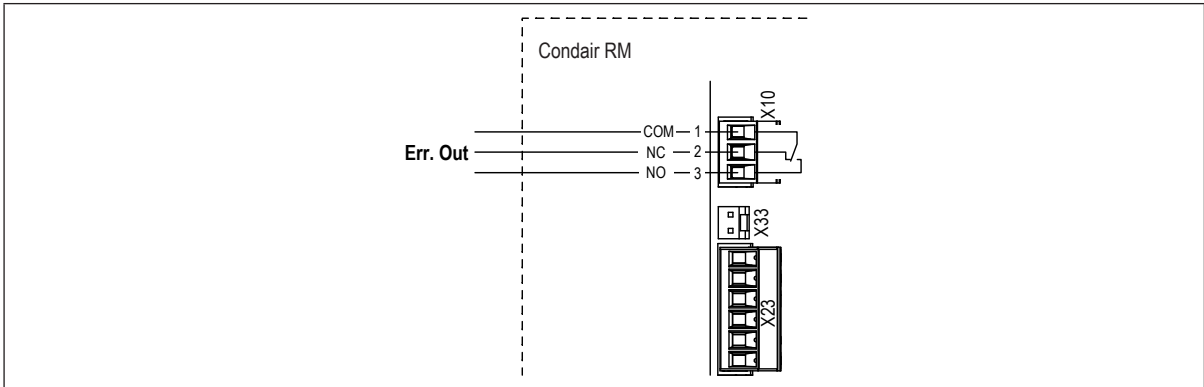
Note: if the external controller shall be supplied with 24 V from the control board (terminal "VOUT"), connect the 24 V input of the external controller to terminal "6" (24 V output) of terminal block "X1".

The following control signals are supported: 0-5V, 1-5V, 0-10V, 2-10V, 0-20V, 0-16V, 3-16V, 0-20mA, 4-20mA and "On/Off".

If a shielded signal cable is used, connect the shielding to terminal "GND".

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"

5.6.4.3 Connection of the fault output "Err. Out"



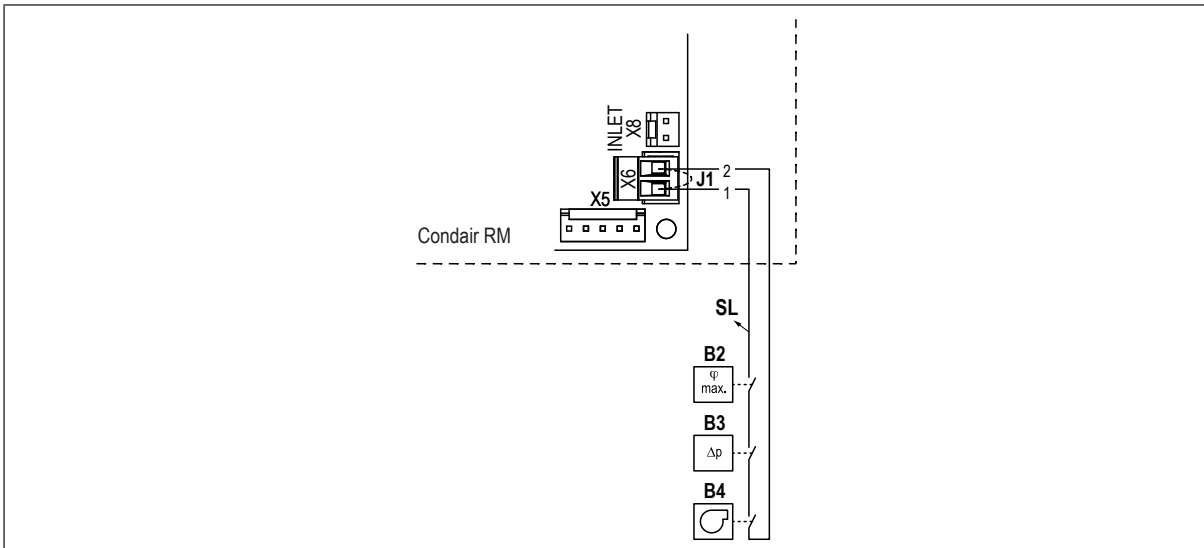
The potential-free "Err. Out" contact can be used for error signaling to external devices. In normal operation (no errors present) the contact between 1-3 is closed. In the event of a fault (a warning is not considered an error), the contact between 1-2 is closed.

Note: When the device is switched off, the contact is in the idle position between 1-2.

The cross-section of the connecting cables must comply with the applicable local regulations.

The maximum contact load is: 250 V, 3 A

5.6.4.4 Connection of external safety chain



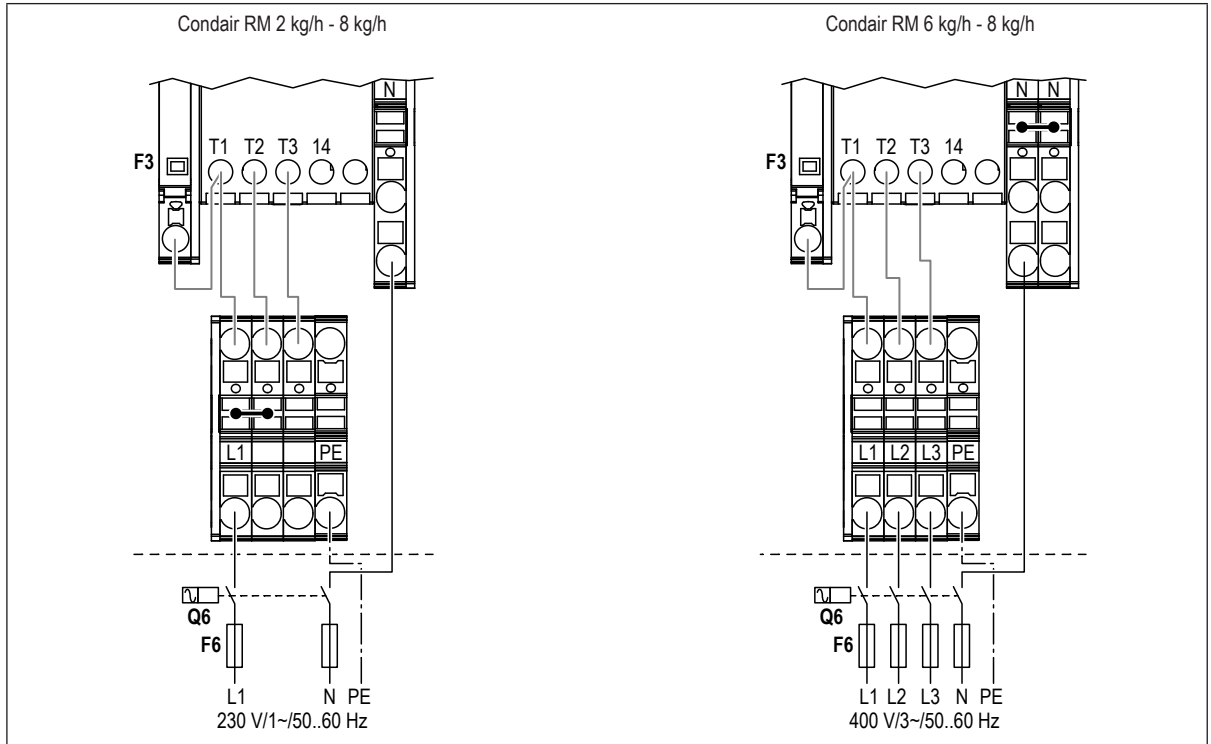
The potential-free contacts of external monitoring devices ("B2": High limit humidistat, "B3": Air flow monitor, "B4": Ventilation interlock) of the external safety chain "SL" are connected according to the wiring diagram in series (if more than one monitoring device is connected) to the terminals of terminal block "X6" to the SPA control board inside the control compartment of the Condair RM.

Note: If no monitoring devices are connected to the terminals of terminal block "X6", a wire jumper "J1" must be connected to the terminals.

The safety chain is operated with 24 VDC. In the event of a fault, the safety contact is opened, thus interrupting the safety chain. Use only approved 24 VDC safety devices.

CAUTION! Do not apply any external voltage via the contacts of the external monitoring devices "B2", "B3" and "B4" to terminal "X6"!

5.6.4.5 Power supply



The 230 V/1~/.60Hz power supply ("L1", "N" and "PE") for the Condair RM 2 - 8 kg/h or 400 V/3~/.60Hz power supply ("L1", "L2", "L3", "N" and "PE") for the Condair RM 6 - 8 kg/h are connected according to the wiring diagram to the corresponding plug-in terminals inside the control compartment of the Condair RM.

Connecting the cables to the plug-in terminals: Insert the stripped cable ends into the opening as far as they will go.

Important: Stranded cables must be provided with wire end ferrules for connection to the terminals.

The installation of the fuses "F6" and the electrical isolator "Q6" (all pole disconnecting device with a minimum contact clearance of 3 mm, supplied by others) in the mains supply line is mandatory. The value of the fuses "F6" and the cross-section of the supply line conductors can be found in the table below.

	230 V/1~/.60 Hz		400V/3~/.60 Hz	
	F6	Conductor cross section	F6	Conductor cross section
2 kg/h	10 A, fast acting	1.5 mm ²	–	–
4 kg/h	16 A, fast acting	2.5 mm ²	–	–
6 kg/h	25 A, fast acting	6 mm ²	16 A, fast acting	2.5 mm ²
8 kg/h	32 A, fast acting	6 mm ²	16 A, fast acting	2.5 mm ²

The electrical isolator must be mounted in direct proximity of the Condair RM (max. distance 1 m) and must be easily accessible.

CAUTION! Make sure that the local mains voltage corresponds to the voltage values of 230 V/1~/.60Hz and 400 V/3~/.60Hz stated on the wiring diagram. Otherwise, do not connect the Condair RM.

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

5.6.5 Performance data / Fuses "F6" power supply

Condair RM	230V/1~/50...60 Hz					400V/3~/50...60 Hz				
	Max. steam capacity in kg/h	P _N max. in kW	I _N max. in A	Cable cross section A _L min. in mm ²	Fuses "F6" in A, fast acting (gR)	Max. steam capacity in kg/h	P _N max. in kW	I _N max. in A	Cable cross section A _L min. in mm ²	Fuses "F6" in A, fast acting (gR)
2	2.0	2.0	8.7	1.5	10	—	—	—	—	—
4	4.0	3.5	15.3	2.5	16	—	—	—	—	—
6	6.0	5.0	21.8	6.0	25	6.0	5.0	12.0	2.5	16
8	8.0	6.5	28.3	6.0	32	8.0	6.5	15.3	2.5	16

5.6.6 Inspecting the electrical installation

Check the following points:

- Does the supply voltage for the respective unit meet the specifications in the wiring diagram and is the power supply connected in accordance with the wiring diagram?
- Is the power supply correctly fused (fuse values and "F6" see wiring diagram in [chapter 5.6.5](#))?
- Is the electrical isolator "Q6" installed in the power supply line?
- 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?
- Are a approved safety devices (e.g. High limit humidistat, air flow monitor, ventilation interlock) connected in series via the safety loop "SL"?
- Is the housing cover relocated and locked with the screw?

6 Appendix

6.1 Unit dimensions

6.1.1 Unit dimensions Condair RM 2...8

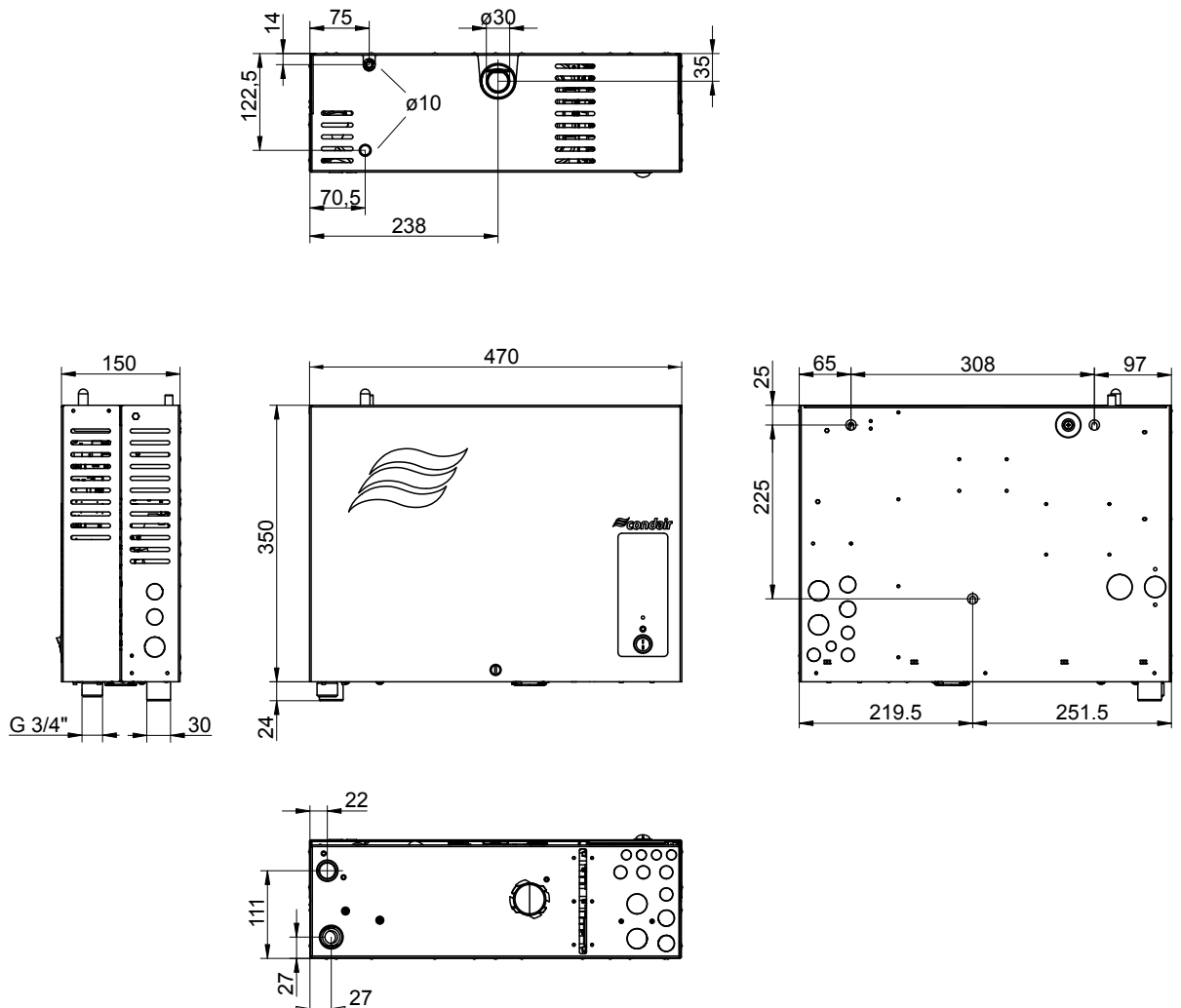
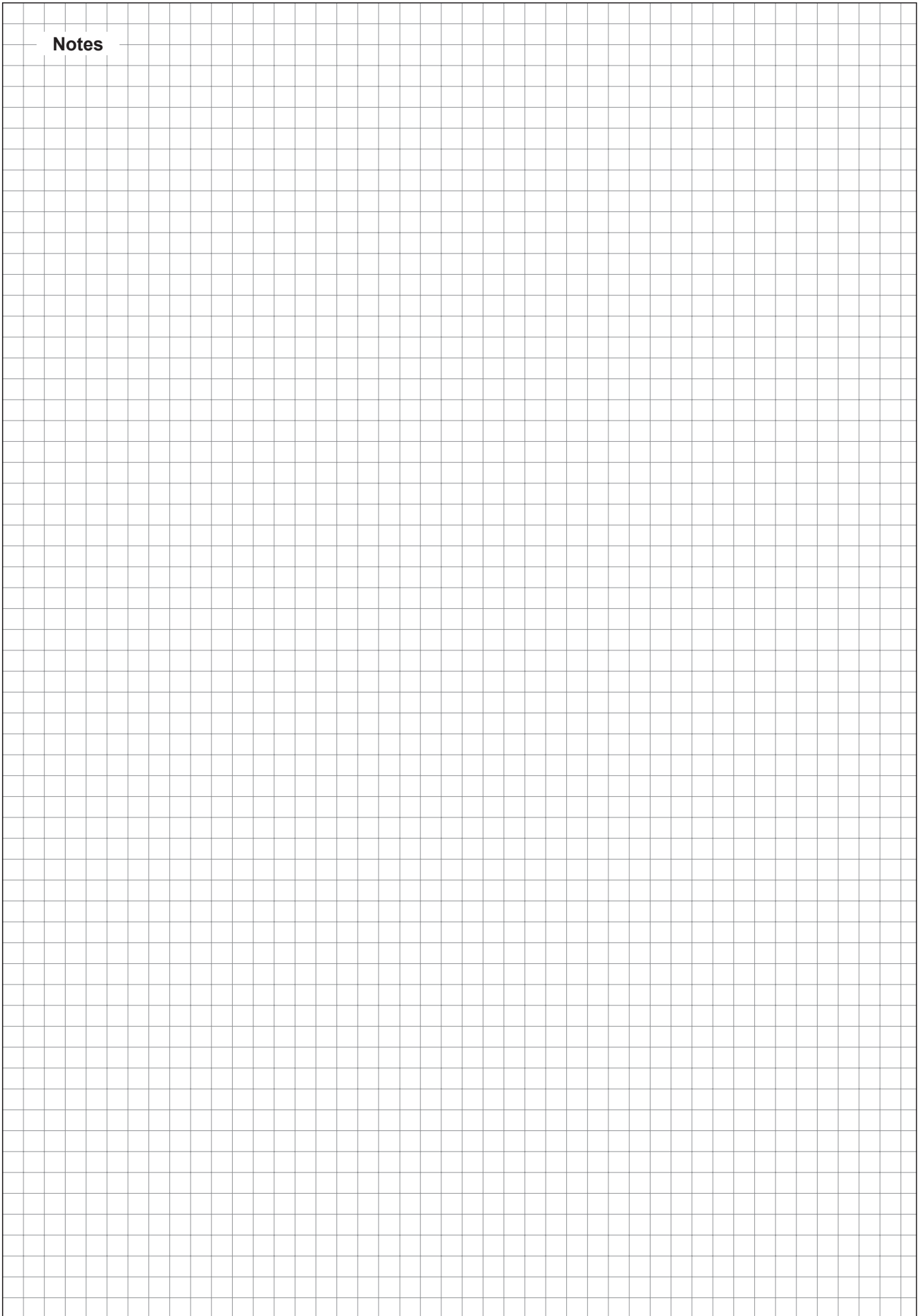


Fig. 15: Unit dimensions Condair RM 2...8 (dimensions in mm)

Notes



CONSULTING, SALES AND SERVICE:



CH94/0002.01

Condair Group AG
Gwattstrasse 17, 8808 Pfäffikon SZ, Switzerland
Phone +41 55 416 61 11, Fax +41 55 588 00 07
info@condair.com, www.condairgroup.com

