

OPERATION MANUAL

Steam humidifier
Condair **RM**

Thank you for choosing Condair

Installation date (MM/DD/YYYY):

Commissioning date (MM/DD/YYYY):

Site:

Model:

Serial number:

Proprietary Notice

This document and the information disclosed herein are proprietary data of Condair Group AG. Neither this document, nor the information contained herein shall be reproduced, used, or disclosed to others without the written authorisation of Condair Group AG, except to the extent required for installation or maintenance of recipient's equipment.

Liability Notice

Condair Group AG does not accept any liability due to incorrect installation or operation of the equipment or due to the use of parts/components/equipment that are not authorised by Condair Group AG.

Copyright Notice

© Condair Group AG, All rights reserved.

Technical modifications reserved

Contents

1	Introduction	5
1.1	To the very beginning	5
1.2	Notes on the operation manual	5
2	For your safety	7
3	Product Overview	9
3.1	Models overview	9
3.2	Identification of the unit	10
3.3	Construction of the Condair RM steam humidifier	11
3.4	Functional description	12
3.5	System overview Condair RM	13
4	Operation	14
4.1	First-time commissioning	14
4.2	Display and operating elements	15
4.3	Commissioning after an interruption of operation	16
4.4	Notes on operation	17
4.5	Inspections during operation	17
4.6	Taking the unit out of operation	18
5	Working with the Display	19
5.1	Home screens	19
5.1.1	Home screens	19
5.1.1.1	Home screens with activated "External control"	19
5.1.1.2	Homescreens with humidity sensor and activated internal controller	20
5.2	Function of the warning triangle	21
5.3	Navigation elements	21
5.4	Configuration of the control software	22
5.4.1	Accessing the main menu	22
6	Configuration of Condair RM control software	24
6.1	Configuration procedures	24
6.1.1	Configuration procedure for humidity control via an external humidity controller	24
6.2	Settings in the "Service" menu	28
6.3	Settings in the "Engineering" menu	29

7	Maintenance	33
7.1	Important notes on maintenance	33
7.2	Maintenance intervals	34
7.3	Maintenance list	36
7.4	Removing and installing components for maintenance	37
7.4.1	Preparing the Condair RM for the removal of components	37
7.4.2	Removal and installation of the steam tank	37
7.4.3	Removal and installation of the filling cup, the level unit and the water hoses	42
7.4.4	Removal and installation of the drain pump	44
7.4.5	Removal and installation of the inlet valve	45
7.4.6	Removal and installation of the steam tank receptacle	46
7.5	Notes on cleaning the unit components	47
7.6	Notes on cleaning agents	49
7.7	Replacing the optional filter cartridge	50
7.8	Resetting the maintenance counter	53
8	Fault elimination	54
8.1	Important notes on fault elimination	54
8.2	Fault indication	55
8.3	Malfunction list	56
8.4	Resetting the fault indication	61
8.5	Replacing the fuses and backup battery in the control unit	62
8.6	Switching the heating channels	63
9	Taking out of service/Disposal	65
9.1	Taking out of service	65
9.2	Disposal/Recycling	65
10	Product specification	66
10.1	Performance data / Fuses "F6" voltage supply	66
10.2	Operating data	66
10.3	Connections/Dimensions/Weights	67
10.4	Certificates	67

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 operation manual

Limitation

The subject of this operation manual is the Condair RM steam humidifier in its different versions. Options and accessories are only described insofar as this is necessary for proper operation of the equipment. Further information on options and accessories can be obtained in the respective instructions.

This operation manual is restricted to the **commissioning, operation, maintenance and troubleshooting** of the Condair RM steam humidifier and is meant for **well trained personnel being sufficiently qualified for their respective work**.

This operation manual is supplemented by various separate items of documentation (e.g. installation 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 operation manual.

Symbols used in this manual



CAUTION!

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

Safekeeping

Please safeguard this operation 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 operation manual is available in other languages. Please contact your Condair representative for information.

2 For your safety

General

Every person working with the Condair RM must have read and understood the Condair RM operation manual and installation manual before carrying out any work.

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

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

Qualification of personnel

All work described in this operation manual **may only be carried out by specialists who are well trained and adequately qualified and are authorized 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.

The Condair RM steam humidifier may not be used by persons (including children) with reduced physical, sensory or mental abilities or persons with lacking experience and/or knowledge.

Children must be supervised to make sure that they do not play with the Condair RM steam humidifier.

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 steam humidifier



DANGER!
Danger of electric hazard!

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: Before carrying out any work set the Condair RM out of operation as described in [chapter 4.6](#) (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 RM produces hot water vapour. There is danger of scalding when coming in contact 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 RM immediately out of operation as described in [chapter 4.6](#). 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 tank, 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 RM out of operation as described in [chapter 4.6](#), then wait until the components have cooled down sufficiently thus preventing danger of burning.



WARNING!

High humidity can lead to the growth of biological organisms and thus endanger the health of people.

Prevention: To prevent this, the ventilation duct in which the steam is blown must be cleaned regularly (if applicable) in accordance with the applicable hygiene guidelines.

Preventing unsafe operation

If it is suspected that **safe operation is no longer possible**, the Condair RM should immediately be **shut down and secured against accidental power-up according to [chapter 4.6](#)**. This can be the case under the following circumstances:

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

All persons working with the Condair RM 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 RM without the express written consent of Condair Group AG.

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 specification label:

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

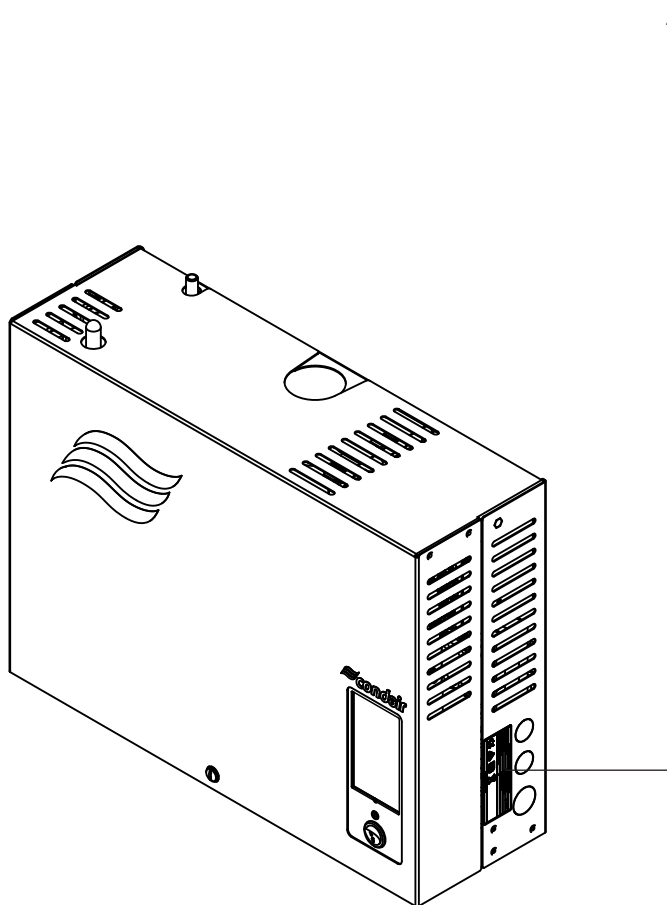
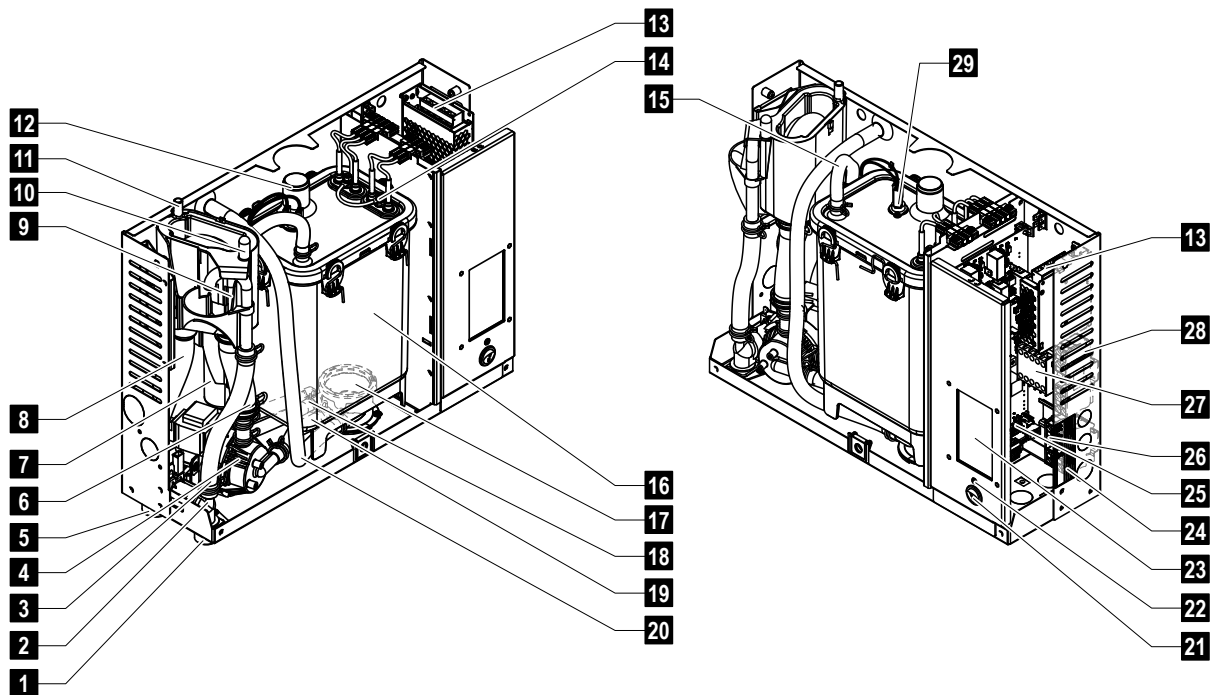


Fig. 1: Location of the specification label

3.3 Construction of the Condair RM steam humidifier



- | | |
|--|---|
| 1 Water supply connector G 3/4" | 16 Steam tank |
| 2 Inlet valve | 17 Coupling sleeve |
| 3 Water supply hose | 18 Level hose |
| 4 Drain pump | 19 Pump hose |
| 5 Water drain connector \varnothing 30 mm | 20 Manual drain hose |
| 6 Water fill and drain hose | 21 Unit switch |
| 7 Level unit | 22 Status LED |
| 8 Drain hose | 23 Display |
| 9 Filling cup | 24 Specification label |
| 10 Condensate connector \varnothing 10 mm (back to steam tank) | 25 RM control board |
| 11 Condensate connector \varnothing 10 mm (to drain) | 26 Terminals voltage supply ("L1", "L2", "L3" and "PE") |
| 12 Steam outlet connector \varnothing 30 mm | 27 Heating contactor |
| 13 24 V power supply | 28 Terminals voltage supply ("N") |
| 14 Heating elements | 29 Over temperature switch |
| 15 Pressure equalizing hose | |

Fig. 2: Construction Condair RM steam humidifier

3.4 Functional description

The Condair RM steam humidifier is an atmospheric steam humidifier. It operates on the resistance heating principle and is designed for indirect humidification via a steam distributor in ventilating and air-conditioning systems.

Water supply

The water is supplied via a filter valve (accessory "Z261") to the steam humidifier. It reaches the steam tank via the level controlled inlet valve and the open filling cup.

Note: The open filling cup is designed in such a way, that the supply water is separated from the unit water. That means, that no unit water can flow back into the supply water line.

Level regulation

The water level in the steam tank is continuously monitored with the level unit. If the water level reaches a preset level (due to the evaporation process) the level unit supplies a signal to the controller. This opens the inlet valve and the steam tank is filled up. When the preset operating level is reached, the level unit supplies another signal to the controller to close the inlet valve.

The pressure equalizing pipe connected to steam tank and the level unit ensures that the water levels are the same in the steam tank and the level unit.

Steam generation regulation

The steam is produced in the steam tank by one or several resistance heating elements. The integrated continuous controller or an external controller controls the steam production in steps from 0 to 100 %. Alternatively the Condair RM can be controlled also via an On/Off controller.

Flushing

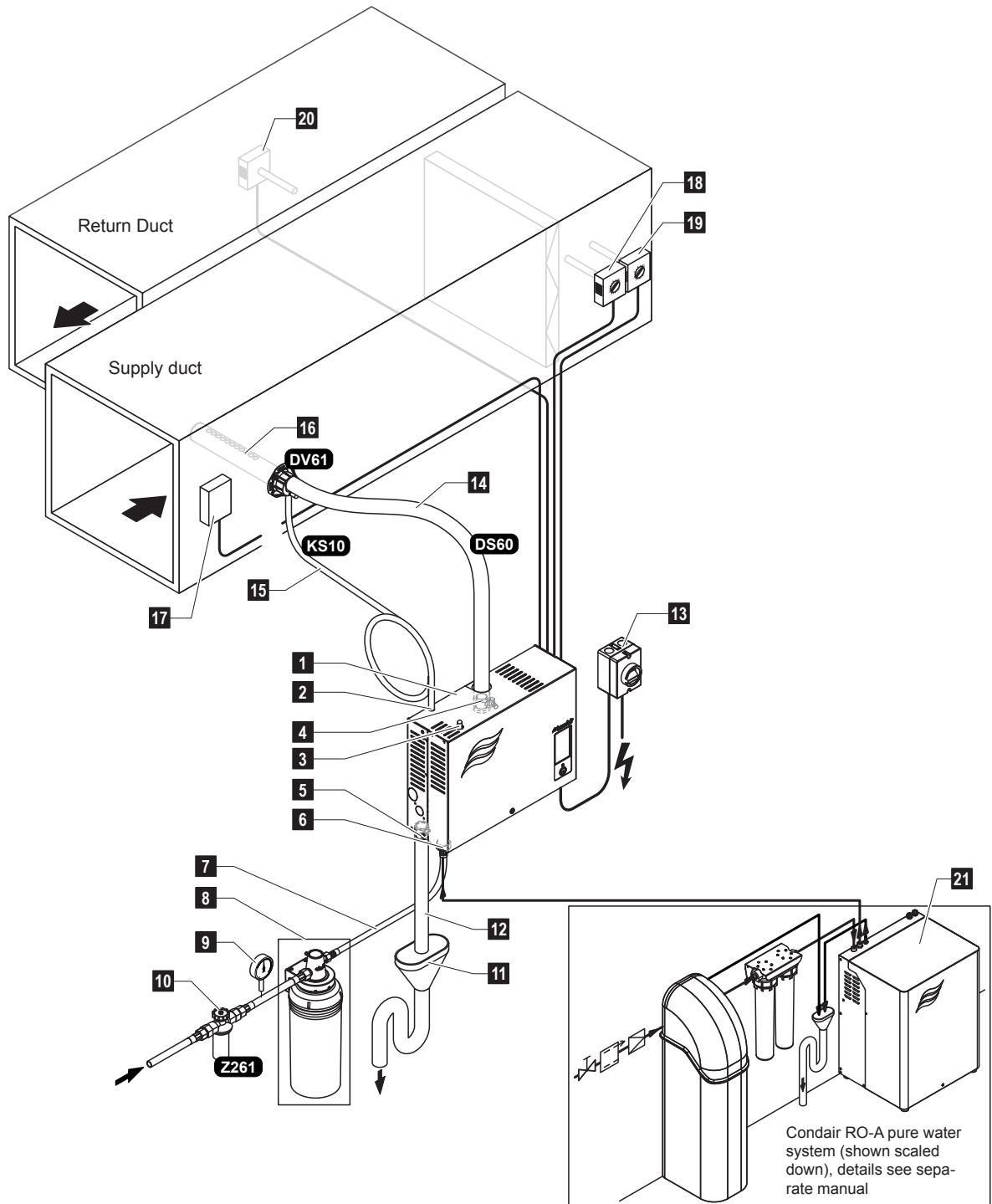
The evaporation process increases the concentration of minerals in the water of the steam tank. A suitable volume of water must be flushed out of the steam tank from time to time and replaced by fresh water to ensure that this concentration does not exceed a specific value unsuitable for operation.

The Condair RM consists of the following two forms of flushing:

- **Automatic flushing** takes place as soon as the water in the steam tank exceeds the upper operating level (e.g. by foaming of the water).
- **Flushing dependent on water quality.**

Automatic or water quality dependent flushing takes place depending on the water quality and the operating data. If the lowest operating level is reached during the flushing process, the inlet valve remains open until the water level in the steam tank has reached the normal working level again. If the lowest operating level is not reached, the inlet valve is closed.

3.5 System overview Condair RM



- | | |
|---|---|
| 1 Steam humidifier | 12 Drain hose (supplied) |
| 2 Condensate connector \varnothing 10 mm (to drain) | 13 Electrical isolator voltage supply |
| 3 Condensate connector \varnothing 10 mm (back to steam tank) | 14 Steam hose (accessory "DS60") |
| 4 Steam outlet connector \varnothing 30 mm | 15 Condensate hose (accessory "KS10") |
| 5 Water drain connector \varnothing 30 mm | 16 Steam distributor (accessory "DV61-...") |
| 6 Water supply connector G 3/4" | 17 Air flow monitor (by others) |
| 7 Water supply line (by others) | 18 Maximum humidistat |
| 8 Filter cartridge (accessory) | 19 Humidity controller or humidity sensor (supply air control) |
| 9 Manometer (recommended, by others) | 20 Humidity controller or humidity sensor (extract air control) |
| 10 Filter valve (accessory "Z261") | 21 Pure water system Condair RO-A (separate product) |
| 11 Open funnel with water trap (by others) | |

Fig. 3: System overview Condair RM

4 Operation

The Condair RM steam humidifier may be commissioned and operated only by persons familiar with the Condair RM steam humidifier and adequately qualified. It is the owner's responsibility to verify proper qualification of the personnel.

4.1 First-time commissioning

The first-time commissioning must always be done by a service technician of your Condair representative or a well trained and authorised person of the customer. Therefore the current manual does not provide detailed information on this procedure.

The following steps are carried out upon first-time commissioning in the specified order:

- Inspecting the steam humidifier for correct installation.
- Inspecting the electrical installation
- Inspecting the water installation
- Inspecting the steam installation
- Flushing and deaerating the water supply line
- Determining the **carbonate hardness** of the supply water (by measurement or from the local water supplier)
- Configuring the control software of the Condair RM via the RM Display (see [chapter 6.1](#)).
- Carrying out test runs including checking of the control and monitoring devices.
- Filling out the commissioning record.

4.2 Display and operating elements

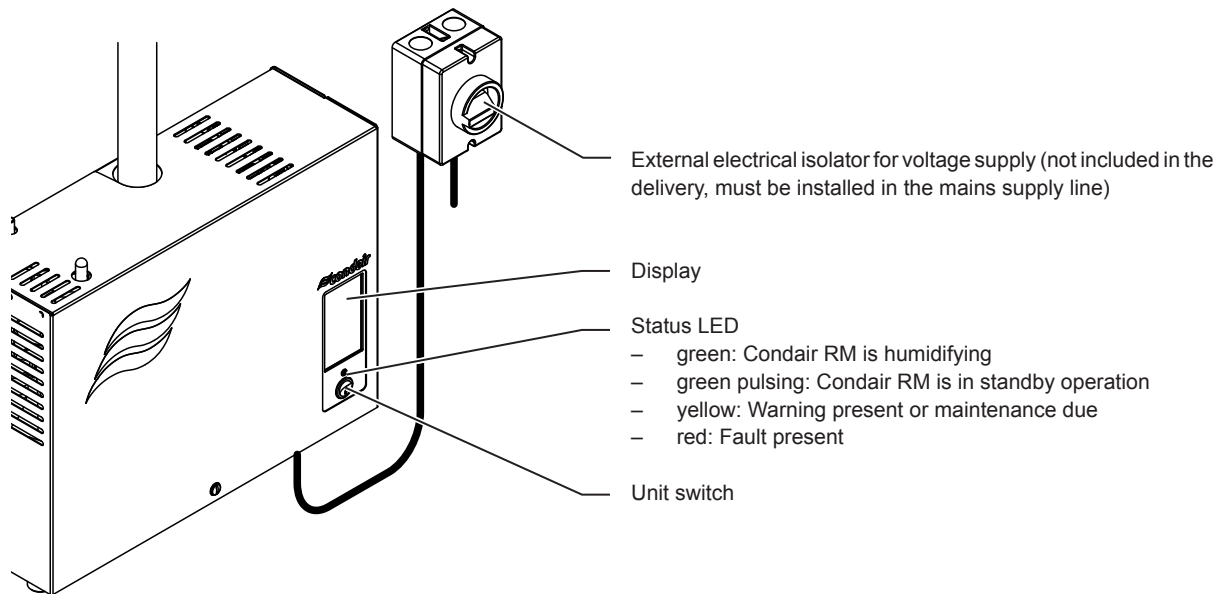


Fig. 4: Display and operating elements



DANGER!
Risk of electric shock!

After switching off the unit switch, there is still live voltage inside the control compartment of the Condair RM. **Therefore, before opening the unit the steam humidifier must be always separated from the mains supply/supplies via the electrical isolator(s).**

4.3 Commissioning after an interruption of operation

The following description outlines the start up procedure after an interruption of operation (e.g. after servicing the steam humidifier). It is assumed that first-time commissioning has been carried out properly by the service technician of your Condair representative and the Condair RM has been configured accordingly.

1. When putting the steam humidifier into operation after work has been carried out on the steam system, the operating personnel must check whether the steam pipe is open over the entire length.



WARNING!
Danger of scalding!

A steam line that is reduced in cross section or completely closed 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!

2. Examine the steam humidifier and installation for possible damage.



DANGER!

A damaged unit or systems with damaged installations may present danger to human life or cause severe damage to material assets.

Therefore: Damaged systems and/or systems with damaged or faulty installations must not be operated.

3. Relocate the unit cover and lock it with the retaining screw.
4. Open the filter valve / shut-off valve in the water supply line.
5. Switch on the electrical isolator in the mains supply line.
6. Switch on the unit switch of the steam humidifier.

The Condair RM carries out an automatic system test (initialising). If a malfunction is detected during the system test, the status LED indicates a "Warning" (LED lights yellow) or "Fault" (LED lights red).

If the test is successful, the steam tank fills up and a function check on the level unit is carried out.

Note: If a malfunction is detected during the function check on the level unit, the status LED indicates a "Warning" (LED light yellow) or "Fault" (LED light red).

If the function check on the level unit is successful, the Condair RM will be in **normal operating mode and the LED blinks green**. As soon as a steam demand is present or the humidifying operation is started manually, the heating current is switched on, the status LED lights green and steam is produced after a short time.

4.4 Notes on operation

After 24 hours in standby operation (no humidity demand), the steam tank is emptied automatically. The steam tank remains empty and is not filled until a steam demand is present or the humidifying operation is started manually.

If, during operation, it is recognized that consistently foaming occurs in the steam tank, the carbonate hardness setting of the inlet water should be increased. As a result, the steam tank of the Condair RM is drained more frequently and thus the foam formation is counteracted.

4.5 Inspections during operation

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

- the water and steam installations for any leaks.
- the steam humidifier 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. leakages, error indication) or any damaged components take the Condair RM out of operation as described in [chapter 4.6](#). Then, contact your Condair representative.

4.6 Taking the unit out of operation

In order to take the Condair RM steam humidifier out of operation (e.g. for maintenance purpose), perform the following steps:

1. If maintenance work on the water system of the Condair RM is to be carried out, the steam tank must be emptied. Proceed as follows:
 - a. Switch off the Condair RM via the unit switch.
 - b. Wait 5 seconds, then switch the Condair RM on again. If the drain pump starts, wait 60 seconds until the steam tank has been emptied. If the drain pump does not start automatically within 10 seconds (e.g. because of a pump failure), drain the steam tank manually via the manual drain hose (see [step 5](#)).
2. Close the shut-off valve in the water supply line.
3. Switch off the Condair RM via the unit switch (if not yet switched off).
4. **Disconnect Condair RM from the mains:** Switch off the electrical isolator in the mains supply line and secure switch in "Off" position against accidentally being switched on, or clearly mark the switch.
5. If you have to carry out work on the water system: Loosen the retaining screw on the unit cover, remove the unit cover, then drain (residual) water from the steam tank into an empty bucket via the manual drain hose (position of the drain hose, see [Fig. 2](#)).



WARNING!
Danger of burning!

The water in the steam tank can be hot (up to 95 °C). There is danger of burning when draining the steam tank via the manual drain hose shortly after steam has been produced.

Prevention: wear isolating gloves and be careful when draining the water via the manual drain hose.

5 Working with the Display

5.1 Home screens

After switching on the Condair RM and the automatic system test the steam humidifier is in **normal operating** mode and the **Home screen** is shown. The appearance of the Home screen depends on the configuration of the control software.

5.1.1 Home screens

5.1.1.1 Home screens with activated "External control"

External control enabled, Timer disabled.

Warning triangle (function see [chapter 5.2](#))

Navigation elements (see [chapter 5.3](#))

Operating status field

Current demand in % of the maximum steam capacity

Current steam production in % of the maximum steam capacity

External control and Timer enabled.

Note: In timer mode, steam can only be produced if a timer is active and a demand signal from the external controller is present, otherwise the unit is in standby mode.

Warning triangle (function see [chapter 5.2](#))

Navigation elements (see [chapter 5.3](#))

Operating status field.

Current demand in % of the maximum steam capacity.

Current steam production in % of the maximum steam capacity.

WeekTimer: Set starting time (weekday/time of day) with timer controlled humidifying operation.
Note: By pressing this button you access the settings window for determining the starting time.
Note: After the humidifying operation has started the remaining time until the end of the humidifying operation is displayed.

5.1.1.2 Homescreens with humidity sensor and activated internal controller

Internal controller enabled, Timer disabled.

Warning triangle (function see [chapter 5.2](#))

Navigation elements (see [chapter 5.3](#))

Operating status field

Current measured humidity in the air duct/room in % of the relative humidity

Current setpoint in% of the relative humidity

Internal controller and Timer enabled.

Note: In timer mode, steam can only be produced if a timer is active and a demand signal from the internal controller is present, otherwise the unit is in standby mode.

Warning triangle (function see [chapter 5.2](#))

Navigation elements (see [chapter 5.3](#))

Operating status field.




Current measured humidity in the air duct/room in % of the relative humidity

Current setpoint in% of the relative humidity




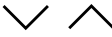


WeekTimer: Set starting time (weekday/time of day) with timer controlled humidifying operation.
 Note: By pressing this button you access the settings window for determining the starting time.
 Note: After the humidifying operation has started the remaining time until the end of the humidifying operation is displayed.

5.2 Function of the warning triangle

The warning triangle has the following functions:

Warning triangle	Description
	Warning triangle lights grey : The steam humidifier operates trouble free.
	Warning triangle lights yellow : A warning is present or a maintenance is due. The steam humidifier continues operation. However, depending on the type of warning, certain restrictions in the operation may occur.
	Warning triangle lights red : An fault is present. Depending on the type of fault the Condair RM is stopped or continous normal operation.

5.3 Navigation elements

Navigation element	Action
	<Menu> button - Accessing the main menu Note: If "Display lock" is set to "On" a password (factory set password "0000") must be entered in order to be able to access the main menu.
	<Home> button - Back to home screen
	Jumps back to previous screen (Cancel and back)
	Scroll up/down in the present window or selecting settings options.
	Confirm set value or selection (<Tick> button).
	Cancel or back to previous screen (<Cancel> button).



5.4 Configuration of the control software

























5.4.1 Accessing the main menu

Press the <Menu> button on the top right corner of the display. Then, enter the password "0000" (if main menu is configured with password protection). The main menu appears.

Note: The password for the user menu can be modified in the "Engineering > Admin > Password" submenu.

The content of the user menu depends on the selected HVAC application. The following description of the settings in the user menu lists all available parameters of the user menu.

User menu	
 Benutzer Sollwert Wochentimer Anzeige 	Setpoint Setting the humidity setpoint (factory setting: 45 %rh, setting range: 5 ... 80 %rh) Note: This menu item only appears if the internal controller is activated (setting under "Engineering > Steam Generator > Steaming Settings > Control Mode > rH".
	Week Timer When operating with the week timer, the humidifying operation is enabled on the set day(s) of the week at the set Start Time for the set Duration. During the set duration, the Condair RM humidifies as soon as a demand is present. You can set a timer with Start Time and Duration for a single day of the week or for a week day range. Note: If the set time of day is already past, but the set time in humidification operation would still be running, the remaining runtime is calculated and processed. Otherwise humidification operation starts at the next programmed time. Settings: <ul style="list-style-type: none"> – Week Day: Setting the week day or week day range at which the week timer shall be active (Mo-Fr, Mo-Sa, Sa-Su, Mo, Tu, We, Th, Fr, Sa, Su) or deactivating the week timer. – Start Time: Setting the time of day at which the humidifying operation should start. – Duration: Setting the duration of the humidifying operation in minutes.
	Display
	Display Lock Activating ("On") or deactivating ("Off") the password protection for the main menu. Note: The main menu password can be adjusted in the "Engineering" menu! If the password gets lost the display lock can be unlocked any time with the passwords 3562 or 1055.
	Language Selecting the dialogue language of RM Display.
	Brightness Adjusting the brightness of the RM Display.
	Screen Saver Mode Activating ("On") or deactivating ("Off") the screen saver mode (factory setting: "Off")
	Screen Saver Timeout Adjusting the screen saver timeout after which the display is switched off (factory setting: "10 min"). Note: Appears only if "Screen saver Mode" is set to "On".
	Theme Defining the appearance of RM Display ("Light" or "Dark").
	Units Selecting the units system ("metric" or "imperial").
Date Format Selecting the date format ("jjj-mm-tt", "tt.mm.jjjj", "tt/mm/jjjj" or "mm/tt/jjjj")	

<div style="text-align: right;">    </div> <div style="text-align: center; padding: 5px;">User</div> <div style="text-align: center; padding: 5px; background-color: #f0f0f0;">General</div> <div style="text-align: center; padding: 5px; background-color: #f0f0f0;">Info</div> <div style="text-align: center; padding: 5px; background-color: #f0f0f0;">Service</div> <div style="text-align: center; padding: 5px;">   </div>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2" style="text-align: left; padding: 5px;">General</td> </tr> <tr> <td style="width: 20%; padding: 5px;">Date</td> <td style="padding: 5px;">Setting the current date in the specified date format.</td> </tr> <tr> <td style="padding: 5px;">Time</td> <td style="padding: 5px;">Setting the current time of day in the format "hh:mm".</td> </tr> <tr> <td style="padding: 5px;">Info</td> <td style="padding: 5px;"> Anzeige von Geräteinformationen <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <div style="text-align: right;">     </div> <p style="margin: 0;">Cabin Board</p> <p style="margin: 0;">@Server ID 0</p> <p style="margin: 0;">Version FW 0.0</p> <p style="margin: 0;">Version HW (OTP) 0.0</p> <p style="margin: 0;">Hardware Option SPA Control</p> <p style="margin: 0;">System Mode Wellness</p> <p style="margin: 0;">Cabin Kind Steam Shower</p> <p style="margin: 0;">Generator Kind Internal Omega</p> <p style="margin: 0;">Heat Kind None</p> <p style="margin: 5px 0 0 0;">Steam humidifier Board</p> <p style="margin: 0;">@Server ID 0</p> <p style="margin: 0;">Version FW 0.0</p> <p style="margin: 0;">Version HW (OTP) 0.0</p> <div style="text-align: center; padding: 5px;">  </div> </div> </td> </tr> <tr> <td style="padding: 5px;">Service</td> <td style="padding: 5px;">Information regarding the "Service" menu can be found chapter 6.2.</td> </tr> <tr> <td style="padding: 5px;">Engineering</td> <td style="padding: 5px;">Information regarding the "Engineering" menu can be found chapter 6.3.</td> </tr> </table>	General		Date	Setting the current date in the specified date format.	Time	Setting the current time of day in the format "hh:mm".	Info	Anzeige von Geräteinformationen <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <div style="text-align: right;">     </div> <p style="margin: 0;">Cabin Board</p> <p style="margin: 0;">@Server ID 0</p> <p style="margin: 0;">Version FW 0.0</p> <p style="margin: 0;">Version HW (OTP) 0.0</p> <p style="margin: 0;">Hardware Option SPA Control</p> <p style="margin: 0;">System Mode Wellness</p> <p style="margin: 0;">Cabin Kind Steam Shower</p> <p style="margin: 0;">Generator Kind Internal Omega</p> <p style="margin: 0;">Heat Kind None</p> <p style="margin: 5px 0 0 0;">Steam humidifier Board</p> <p style="margin: 0;">@Server ID 0</p> <p style="margin: 0;">Version FW 0.0</p> <p style="margin: 0;">Version HW (OTP) 0.0</p> <div style="text-align: center; padding: 5px;">  </div> </div>	Service	Information regarding the "Service" menu can be found chapter 6.2 .	Engineering	Information regarding the "Engineering" menu can be found chapter 6.3 .
General													
Date	Setting the current date in the specified date format.												
Time	Setting the current time of day in the format "hh:mm".												
Info	Anzeige von Geräteinformationen <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <div style="text-align: right;">     </div> <p style="margin: 0;">Cabin Board</p> <p style="margin: 0;">@Server ID 0</p> <p style="margin: 0;">Version FW 0.0</p> <p style="margin: 0;">Version HW (OTP) 0.0</p> <p style="margin: 0;">Hardware Option SPA Control</p> <p style="margin: 0;">System Mode Wellness</p> <p style="margin: 0;">Cabin Kind Steam Shower</p> <p style="margin: 0;">Generator Kind Internal Omega</p> <p style="margin: 0;">Heat Kind None</p> <p style="margin: 5px 0 0 0;">Steam humidifier Board</p> <p style="margin: 0;">@Server ID 0</p> <p style="margin: 0;">Version FW 0.0</p> <p style="margin: 0;">Version HW (OTP) 0.0</p> <div style="text-align: center; padding: 5px;">  </div> </div>												
Service	Information regarding the "Service" menu can be found chapter 6.2 .												
Engineering	Information regarding the "Engineering" menu can be found chapter 6.3 .												
<div style="text-align: right;">    </div> <div style="text-align: center; padding: 5px;">User</div> <div style="text-align: center; padding: 5px; background-color: #f0f0f0;">Engineering</div> <div style="text-align: center; padding: 5px;">  </div>													

6 Configuration of Condair RM control software

The Condair RM control software is configured via the "Service" and the "Engineering" menu. [chapter 6.1](#) describes the configuration processes for the respective applications. In [chapter 6.2](#) and [chapter 6.3](#) you will find an overview of the setting parameters of the "Service" and the "Engineering" menu.

6.1 Configuration procedures

6.1.1 Configuration procedure for humidity control via an external humidity controller

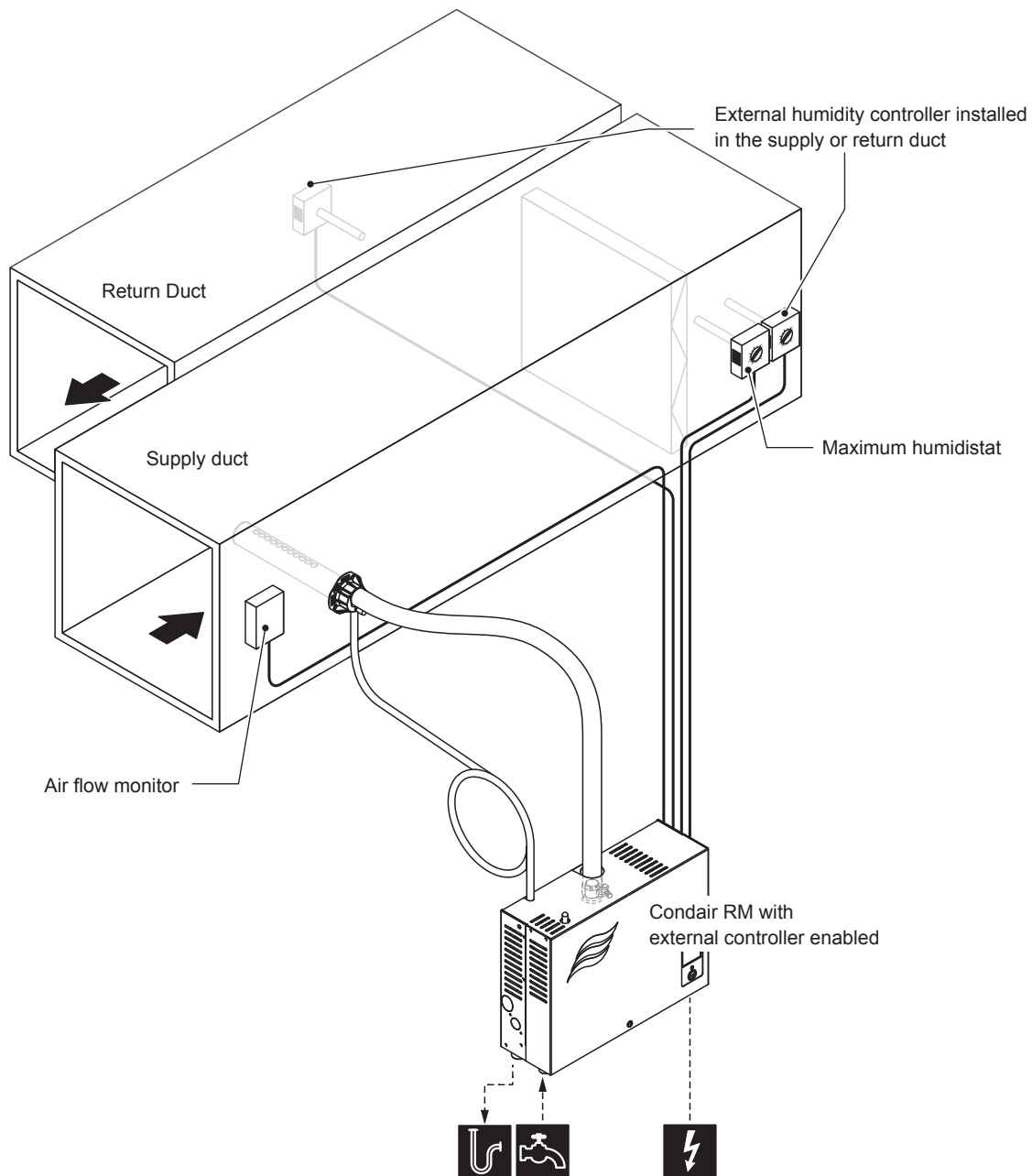


Fig. 5: System layout for operating the Condair RM with a demand signal from an external humidity controller

Configuration procedure for humidity control via an external humidity controller:

1. Reset RM Control to factory settings.
(Path: Engineering > Omega Control Board > Factory Reset)
2. Reset Condair RM Display to factory settings.
(Path: Engineering > Admin > Display > Factory Reset)
3. Set "System Mode" to "Steam Generator":
(Path: Engineering > Omega Control Board > System Mode > Steam Generator)
4. Set steam humidifier "Control Mode" to "Demand":
(Path: Engineering > Steam Generator > Steaming Settings > Control Mode > Demand)
5. Determine the demand signal setting:
(Path: Engineering > Steam Generator > Steaming Settings > Cntrl. Input Signal)
 - Determine the demand signal type ("0 - 5V", "1 - 5V", "0 - 10V", "2 - 10V", "0 - 20V", "0 - 16V", "3 - 16V", "0 - 20mA", "4 - 20mA" or "On/Off")
6. Set control accuracy:
 - Activate PWM Control to increase the control accuracy.
(Path: Engineering > Steam Generator > Steaming Settings > PWM Control)

Note: If PWM Control is activated, the flicker regulation IEC 61000-3-3 may no longer be complied with.
7. Determine unit size:

- Read the unit size on the specification label of the Condair RM and read out the corresponding values from the following table.

Unit size	Power per stage	Capacity
2 kg/h	1.5 kW	2 kg
4 kg/h	1.5 kW	4 kg
6 kg/h	2.25 kW	6 kg
8 kg/h	3 kW	8 kg

- Set the power per stage according to the table value.
(Path: Engineering > Steam Generator > Tank Settings > Power per Stage)
 - Set the capacity according to the table value.
(Path: Engineering > Steam Generator > Tank Settings > Capacity)
8. Determine supply water type and cartridge size:
 - Determine the supply water type ("Tap Water", "RO" or "Filter Cartridge") and the carbonate hardness of the supply water (only if water supply type is set to " Tap Water" or "Filter Cartridge")
(Path: Service > Steam humidifier > Water Supply > Type)
 - Determine cartridge size (only if water supply type is set to "Filter Cartridge")
(Path: Service > Steam Generator > Filter Cartridge > Cartridge Size)
 9. Set current date and time of day:
(Path: User > General)
 - Set date
 - Set time of day

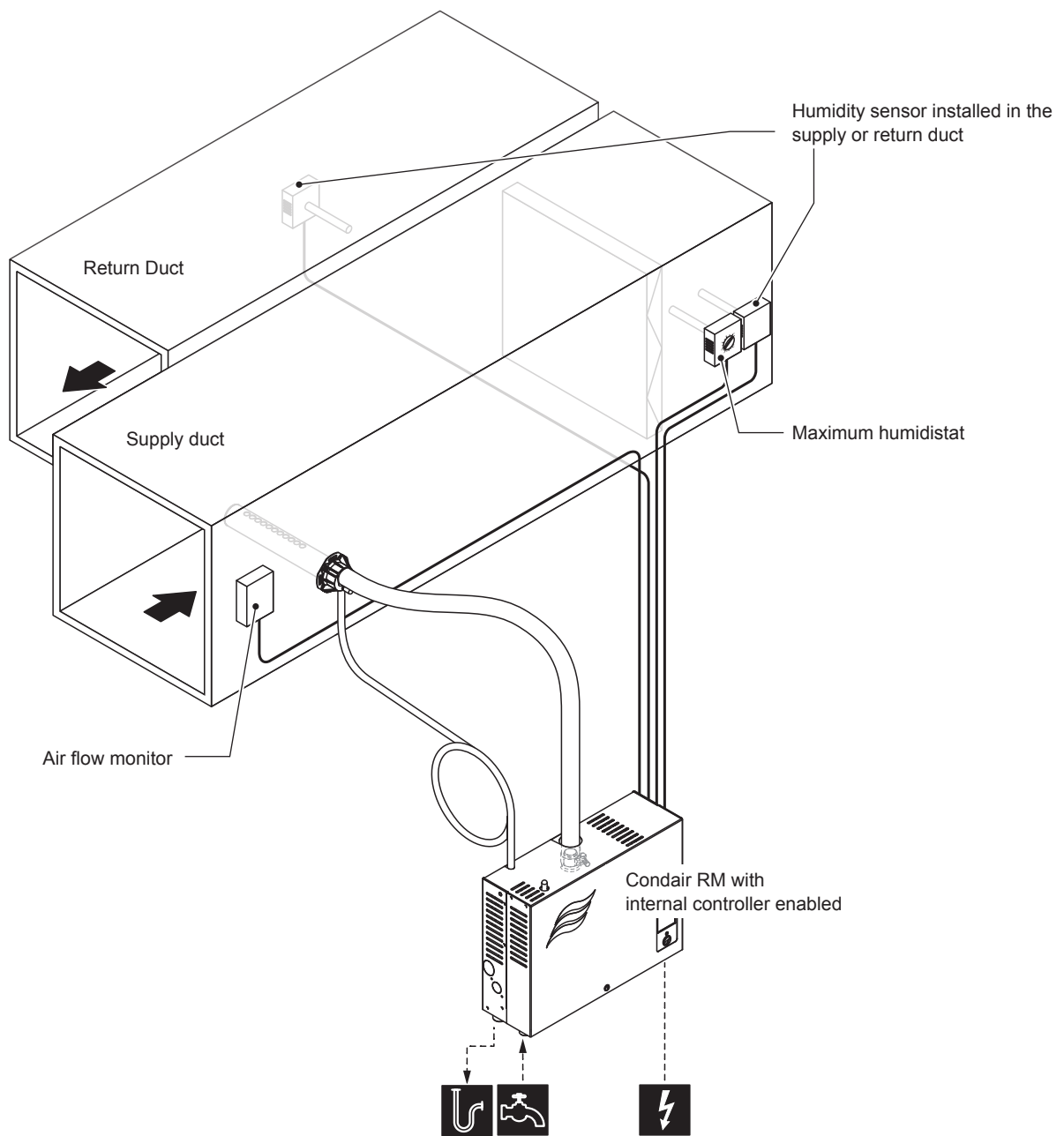


Fig. 6: System layout for the operation of the Condair RM with a humidity sensor and the internal humidity controller

Configuration procedure for humidity control via a humidity sensor and the internal humidity controller:

1. Reset RM Control to factory settings.
(Path: Engineering > Omega Control Board > Factory Reset)
2. Reset RM Display to factory settings.
(Path: Engineering > Admin > Display > Factory Reset)
3. Set system mode to "**Steam Generator**".
(Path: Engineering > Omega Control Board > System Mode > Steam Generator)
4. Set steam humidifier "Control Mode" to "rH":
(Path: Engineering > Steam Generator > Steaming Settings > Control Mode > rH)
5. Determine the controller type:
(Path: Engineering > Steam Generator > Steaming Settings > PID Type)
 - Determine the controller type ("On/Off", "P", "PI", "PID")
6. Determine sensor signal setting:
(Path: Engineering > Steam Generator > Steaming Settings > Cntrl. Input Signal)
 - Determine the sensor signal type ("0 - 5V", "1 - 5V", "0 - 10V", "2 - 10V", "0 - 20V", "0 - 16V", "3 - 16V", "0 - 20mA" or "4 - 20mA")
7. Set control accuracy:
 - Activate PWM Control to increase the control accuracy.
(Path: Engineering > Steam Generator > Steaming Settings > PWM Control)

Note: If PWM Control is activated, the flicker regulation IEC 61000-3-3 may no longer be complied with.
8. Determine unit size:
 - Read the unit size on the specification label of the Condair RM and read out the corresponding values from the following table.

Unit size	Power per stage	Capacity
2 kg/h	1.5 kW	2 kg
4 kg/h	1.5 kW	4 kg
6 kg/h	2.25 kW	6 kg
8 kg/h	3 kW	8 kg

- Set the power per stage according to the table value.
(Path: Engineering > Steam Generator > Tank Settings > Power per Stage)
 - Set the capacity according to the table value.
(Path: Engineering > Steam Generator > Tank Settings > Capacity)
9. Determine supply water type and cartridge size:
 - Determine the supply water type ("Tap Water", "RO" or "Filter Cartridge") and the carbonate hardness of the supply water (only if water supply type is set to " Tap Water" or "Filter Cartridge")
(Path: Service > Steam humidifier > Water Supply > Type)
 - Determine cartridge size (only if water supply type is set to "Filter Cartridge")
(Path: Service > Steam humidifier > Filter Cartridge > Cartridge Size)
 10. Set current date and time of day:
(Path: User > General)
 - Set date
 - Set time of day
 11. Set the desired humidity setpoint:
(Path: User > Sollwert)
 - Set desired humidity setpoint value in %rH

6.2 Settings in the "Service" menu

Accessing the "Service" menu

- Press the <Menu> button on the top right corner of the display. Then, enter the password "0000" (if main menu is configured with password protection). The main menu appears.
Note: The password for the user menu can be modified in the "Engineering > Administration > Password" submenu.
- Select menu item "Service" in the main menu.
- Enter the password ("3562") in the password entry window that appears and confirm. Then, the "Service" menu appears.

Note: The content of the "Service" menu depends on the selected HVAC application. The following description of the settings lists all available parameters of the "Service" menu.

Setting parameters Menu "Service"

Error List	Shows the list with the current warning and error messages.
Error History	Shows a list of the last 50 warning and error messages.
Steam Generator	
Error List	Shows the list with the current warning and error messages of the Condair RM steam humidifier
Error History	Shows a list of the last 50 warning and error messages of the Condair RM steam humidifier
Water Supply	Water supply settings for the Condair RM. <ul style="list-style-type: none"> – Type: Determining the water supply type <ul style="list-style-type: none"> – Tap Water – RO (Reverse Osmosis Water) – Filter Cartridge – Carbonate hardness: Setting the carbonate hardness of the supply water in °dH. Note: This menu item appears only if the supply water type is set to "Tap Water" or "Filter Cartridge".
Device Service	View and reset the service values of the Condair RM. <ul style="list-style-type: none"> – Service Done: Resetting the maintenance counter after maintenance has been carried out. – Heat Count: Shows the operating hours extrapolated to 100% steam output – Next Service: Remaining time in hours until the next maintenance is due.
Filter Cartridge	Display, set and reset of the filter cartridge service values. <ul style="list-style-type: none"> – Cartridge Size: Determining the size of the filter cartridge used. <ul style="list-style-type: none"> – Small – Large – Cartridge Replaced: Resetting the maintenance counter after replacing the filter cartridge. – Water Count: Shows the water consumption in liters. – Replace in: Remaining water consumption in liters until the next replacement of the filter cartridge is due.
Hardware	Selection of the heating channel/heating channels and display of operating information of the heating channels. <ul style="list-style-type: none"> – Hardware: <ul style="list-style-type: none"> – Heating Channel: Determining the heating channel to be used to control the heating element(s). Note: Warning 164 can be reset by switching to a heating channel that has not yet reached its maximum switching cycles (see Kapitel 8.6). – Sw. Cycles 1 - 5: Number of switching cycles of heating channels No. 1 to No. 5 – Replace HW 1 - 5: Theoretical remaining switching cycles of heating channels No. 1 to No. 5 – Op. Hours HW 1 - 5: Current operating hours of heating channels No. 1 to No. 5
Draining	Draining the steam tank.
Device test	– Level Test: Performing a functional test of the level unit.
Restart	Restart device software

6.3 Settings in the "Engineering" menu

Accessing the menu "Engineering"

- Press the <Menu> button on the top right corner of the display. Then, enter the password "0000" (if main menu is configured with password protection). The main menu appears.
Note: The password for the user menu can be modified in the "Engineering > Administration > Password" submenu.
- Select menu item "Engineering" in the main menu.
- Enter the password ("1055") in the password entry window that appears and confirm. Then, the "Engineering" menu appears.

Note: The content of the "Engineering" menu depends on the selected HVAC application. The following description of the settings lists all available parameters of the "Engineering" menu.

Setting parameters Menu "Engineering"

Omega Control Board	
System Mode	Determining in which system mode the Condair RM Control Board should run. <ul style="list-style-type: none"> – Steam Generator: Setting for the operation of the Condair RM as a pure steam generator for HVAC applications. The steam production is controlled either by a demand signal from an external controller or a humidity sensor signal when using the internal controller. – Wellness: Not used with Condair RM.
Generator Kind	Determining of the type of steam generation used for HVAC applications. <ul style="list-style-type: none"> – None: Not used with Condair RM. – Internal Omega: The steam is produced by a Condair RM with RM Control Board. – Internal Reservoir: Not used with Condair RM. – External Omega: Not used with Condair RM. – External Analog: Not used with Condair RM.
Signaling	Activation ("On") or deactivation ("Off") of the beeper for fault/warning signalisation.
Modbus Settings	Setting the Modbus parameters. <ul style="list-style-type: none"> – Processor: <ul style="list-style-type: none"> – Slave Address: Determining the slave address of the Processor. – Baudrate: Determining of the baud rate (4800, 9600, 19200, 38400, 57600, 115200) – Parity: Determining of the parity (none, 1 stop bit; none, 2 stop bit; odd, 1 stop bit; even, 1 stop bit) – Data Format: Determining of the byte order (ABCD: big edian; BADC: big, swap; CDAB: little, swap; DCBA: little, endi.) – Gateway: <ul style="list-style-type: none"> – Slave Address: Determining the slave address of the Gateway. – Baudrate: Determining of the baud rate (4800, 9600, 19200, 38400, 57600, 115200) – Parity: Determining of the parity (none, 1 stop bit; none, 2 stop bit; odd, 1 stop bit; even, 1 stop bit) – Data Format: Determining of the byte order (ABCD: big edian; BADC: big, swap; CDAB: little, swap; DCBA: little, endi.) <p>Note: Detailed notes on Modbus communication can be found in the Modbus addendum manual.</p>
Error History Reset	Reset the list of the 50 most recent warning and error messages from the RM control electronics.
Factory Reset	Resetting RM control electronics settings to factory defaults.
File System Reset	Resetting the internal file system. Note: The file system must be reset only if it does not function correctly anymore. Resetting the file system may take several minutes (up to 5 minutes). Leave the device switched on and wait until everything is working properly again.
Control Settings	
Safety	Determining of the safety parameters for the humidifying operation <ul style="list-style-type: none"> – Safetychain: Indicates whether the safety circuit is closed ("On") or open ("Off").

Keep Warm	<p>Determining of the keep warm functions. The keep-warm function serves to keep the water temperature in the steam cylinder in standby mode at a certain value, so that steam can be produced in steam operation in the shortest possible time, provided that the water has already been heated once.</p> <ul style="list-style-type: none"> - Keep Warm Mode: Determining of the control of the keep warm operation ("Off": The keep warm function is deactivated, "Always": The keep warm function is always activated, "Day Timer": The keep warm function is started at a certain time of the day. <p>The following parameters only appear if "Day Timer" has been selected as "Keep Warm Mode".</p> <ul style="list-style-type: none"> - Keep Warm Start: Determining of the starting time (time of day) at which the keep warm function is started. - Keep Warm Duration: Determining of the maximum running time of the keep warm function in hours.
Steam Generator	
Steaming Settings	<p>Determining of the steam settings for the steam humidifier</p> <ul style="list-style-type: none"> - Control Source: The Condair RM is usually controlled locally (leave parameter "Control Source" on "Local") but can also be controlled via Modbus (set parameter "Control Source" to "BMS"). - BMS Signal Timeout: Time intervall in which the demand signal must be sent via Modbus before warning "W184 - BMS Signal Timeout" is triggered. Note: This parameter appears only, if the parameter "Control Source" is set to "BMS". - Cntrl. Input signal: Determining of the type of demand signal for the steam humidifier (0-5V, 1-5V, 0-10V, 2-10V, 0-20V, 0-16V, 3-16V, 0-20mA, 4-20mA, On/Off). - Control Server ID: The Condair RM always uses the Server ID = 0. The setting must be left at "0". - Control Mode: Determining of the control mode, Demand (ext. controller) or rH (int. humidity controller). Note: If "Control Mode" parameter is set to "rH" , the following PID parameters are listed additionally. <ul style="list-style-type: none"> - PID Type: Determining of the control type (Off, P, PI or PID). - PID P-Band: Determining of the proportional range in %rH for the P, PI or PID controller. - PID I-Time: Determining of the integral time in seconds for the PI or PID controller. - PID D-Time: Determining of the differential time in seconds for the PID controller. - PWM Control: Switching PWM Control on and off (PWM = pulse width modulation). When PWM Control is switched on, the heating elements are controlled in a clocked manner, which results in greater control accuracy. Note: If PWM Control is activated, the flicker regulation IEC 61000-3-3 may no longer be complied with. - Min. Steam Req. Offset: Determining of the offset value for the optimization of the minimum steam demand defined under "Engineering > Steam Generator > Steam Values > Min. Steam Request". Note: If the steam hose is short and well insulated, the minimum steam demand can be optimized with a negative offset, for example. - Humidity Offset: Determining of the offset value in %rh to compensate measurement deviations.
Steam Values	<p>Display of current steam values</p> <ul style="list-style-type: none"> - Steam Quantity: Currently produced amount of steam in% of the steam humidifier. - Steam Request: Current steam demand in % for the steam humidifier. - Min. Steam Request: Shows the preset minimum controllable steam demand for the selected device size. Note: If the steam demand drops below the minimum controllable steam demand during operation, the steam humidifier continues to run with the minimum controllable steam demand until the demand drops below 5%. The value for the minimum controllable steam demand can be optimized with the parameter "Min. Steam Req. Offset".
Level	Current water level in the water tank.
Tank Settings	<p>Settings of the water tank.</p> <ul style="list-style-type: none"> - Power per Stage: Setting the power of the heating elements: 1.5 kW, 2.25 kW or 3.0 kW - Capacity: Setting the device size 2 kg/h, 4 kg/h, 6 kg/h or 8 kg/h. - Size: The water tank size is automatically determined by the capacity.
Safety	<p>Status indications of the safety elements of the steam humidifier.</p> <ul style="list-style-type: none"> - Tank Overtemp.: Status display of the overtemperature sensor on the steam tank.

Admin	
Password	Determining a password for the user level (no password set ex factory).
Display	Determining of the settings for the RM Display Software. <ul style="list-style-type: none"> – Server ID Display: Setting the server ID of the RM Display. – Calibrate: Performing a calibration of the RM Display. – Factory Reset: Resetting the display electronic settings to factory defaults. – File System Reset: Resetting the internal file system. <p>Note: The file system of the RM Display must be reset only if a logo must be reset or if the file system does not function correctly anymore. Resetting the file system may take several minutes (up to 5 minutes). During resetting, it may be that the RM Display is not working properly and the RM Display turns white. In this case, leave the device switched on and wait (max. 5 minutes) until everything is working properly again.</p>
System Parameters	Determining of the settings for importing and exporting data. <ul style="list-style-type: none"> – Export: Export of data to the internal file system ("SpaExportSettings.json"). – Import: Import of data from the internal file system ("SpaExportSettings.json").
Menu Tree	
Cabin 1	Settings not used with Condair RM
Cabin 2	Settings not used with Condair RM
Steam Generator 1	Determining whether the settings of the steam generator 1 should be displayed on the RM Display. <ul style="list-style-type: none"> – Enable: Display enabled ("On") or disabled ("Off"). – Server ID: Determining of the CAN BUS ID of the Condair RM control board.
Steam Generator 2	Settings not used with Condair RM
Diagnostic	Determining which control boards should be displayed in diagnostic mode on the RM Display. <ul style="list-style-type: none"> – Server ID 0: Display enabled ("On") or disabled ("Off"). – Server ID 1 to Server ID 7: Not used with Condair RM.
IP Settings	
Host Name Suffix	Determining of the host name suffix.
DHCP Mode	Determining whether DHCP mode should be used ("On") or not ("Off").
IP Address	Determining of the static IP address of the Condair RM.
Subnet Mask	Determining of the subnet mask for IP communication.
Gateway	Determining of the Gateway IP address of the Condair RM.
DNS Primary	Determining of the IP Address of the primary domain name server (DNS). The IP address for the primary domain name server is used when DHCP mode is off.
DNS Secondary	Determining of the IP Address of the secondary domain name server (DNS). The IP address for the secondary domain name server is used when DHCP mode is off.
Diag. Board ID 0	
Note: Only the boards that were selected in the menu tree appear under Diagnostics.	
Output Sensor Setup	Diagnostics of the settings for the sensor inputs. <ul style="list-style-type: none"> – Demand Select: Switching between current and voltage measurement. – Humidity Select: Not used with Condair RM. – Temp. Control: Not used with Condair RM. – Temp Gain: Not used with Condair RM. – Bench Temp. Control: Not used with Condair RM. – Bench Temp. Gain: Not used with Condair RM.
Output Relay	Diagnostics of the relay outputs. <ul style="list-style-type: none"> – Sec. Contactor: Switching the safety contactor on and off. – Inlet Valve: Switching the inlet valve of the Condair RM on and off. – Relay Drain: Switching the relay of the drain pump of the Condair RM on and off. – Relay Fan 1: Not used with Condair RM. – Relay Fan 2: Not used with Condair RM. – Relay 8: Switching the additional relay 8 on and off. – Relay 9: Not used with Condair RM. – Relay Error: Switching the error relay on and off (Err Out). – Relay Light 1: Not used with Condair RM. – Relay Light 2: Not used with Condair RM. – Relay Pump 1: Not used with Condair RM. – Relay Pump 2: Not used with Condair RM.
Output Heat	Diagnostic of the heating circuits. <ul style="list-style-type: none"> – Heat 1: Switching the heating circuit 1 on and off. – Heat 2: Switching the heating circuit 2 on and off. – Heat 3 to Heat 5: Not used with Condair RM..

Signaling	Turning the beeper on and off.
Output Analog	Diagnostic of the analog outputs. <ul style="list-style-type: none"> - Led Red: Control of the red LED of the Condair RM (fault). - Led Green: Control of the green LED of the Condair RM (steam production). - Demand: Control of the demand to the external steam humidifier. - Reserve: Control of the reserve output
Status Relay	Indication of the current state of the relay. <ul style="list-style-type: none"> - Status Valve: "On" (switched on), "Off" (switched off). - Status Sec Contactor: "On" (switched on), "Off" (switched off).
Status Heat	Indication of the current state of the heating circuits. <ul style="list-style-type: none"> - Heat 1: "On" (switched on), "Off" (switched off). - Heat 2: "On" (switched on), "Off" (switched off). - Heat 3 to Heat 5: Not used with Condair RM.
Input Digital	Indication of the current state of the digital inputs. <ul style="list-style-type: none"> - Cartridge Reset: "On" (reset button pressed), "Off" (reset button not pressed). - Cabin Overtemp.: "On" (no overtemperature), "Off" (overtemperature switch has triggered). - Low Water: "On" (water level OK), "Off" (water level too low). - Level 1: "On" (water level at level 1), "Off" (water level below level 1). - Level 2: "On" (water level at level 2), "Off" (water level below level 2). - Level 3: "On" (water level at level 3), "Off" (water level below level 3). - On/Off: Not used with Condair RM. - Door: Not used with Condair RM). - Light 1: Not used with Condair RM. - Light 2: Not used with Condair RM. - Safetychain: "On" (Safety chain closed), "Off" (Safety chain open) - Tank Overtemp.: "On" (no overtemperature in the steam tank), "Off" (overtemperature switch for steam tank has triggered). - Hardware Option SPA Control: Shows the hardware option of the Condair RM.
Input Analog	Indication of the current state of the analog inputs. <ul style="list-style-type: none"> - 24 V Local: Current voltage of the internal 24 V power supply. - 5 V Local: Current voltage of the internal 5 V power supply. - 24 V Extern: Current voltage of the external 24 V power supply. - 5 V Extern: Current voltage of the external 5 V power supply. - Demand: Current voltage value of the demand signal. - Temperature: Not used with Condair RM. - Bench Temp.: Not used with Condair RM. - Humidity: Not used with Condair RM. - Reserve: Current voltage value of the reserve input.

7 Maintenance

7.1 Important notes on maintenance

Qualification of personnel

All maintenance work must be carried out only by well qualified and trained specialists 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 steam humidifier is open. Touching live parts may cause severe injury or even lethal violation.

Prevention: Before carrying out any maintenance work set the Condair RM out of operation as described in [chapter 4.6](#) (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 steam humidifier are very sensitive to electrostatic discharge.

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



WARNING!
Danger of burning!

The water in the steam tank can be hot (up to 95 °C). There is danger of burning when the steam tank is dismantled shortly after steam has been produced.

Prevention: Before carrying out any work on the steam system set the Condair RM out of operation as described in [chapter 4.6](#), then wait until the components have cooled down sufficiently thus preventing danger of burning.

7.2 Maintenance intervals

To maintain operational safety the Condair RM steam humidifier must be maintained at regular intervals. The control software of the Condair RM features a maintenance counter for the unit maintenance of the steam humidifier and one for the Replacement of the filter cartridge (only active if system is configured for the operation with the optional filter cartridge). The maintenance counters for the unit maintenance or the replacement of the filter cartridge, respectively are determined at the initial commissioning based on the carbonate hardness of the supply water.

Maintenance intervals in hours for "unit maintenance"

The following table gives you an overview of the approximate interval times for the unit maintenance at 100 % steam output based on the carbonate hardness of the supply water and the unit size. When using RO water the maintenance interval time for the unit maintenance is set fixed to 2000 hours.

Supply water type	Carbonate hardness [°dH] supply water	Maintenance interval times "unit maintenance" in hours			
		Condair RM			
		2	4	6	8
Tap water	1	2800	1400	1050	700
	2	2520	1260	945	630
	3	2280	1140	855	570
	4	2040	1020	765	510
	5	1840	920	690	460
	6	1640	820	615	410
	7	1480	740	555	370
	8	1320	660	495	330
	9	1160	580	435	290
	10	1040	520	390	260
	11	920	460	345	230
	12	800	400	300	200
	13	720	360	270	180
	14	640	320	240	160
	15	560	280	210	140
	16	480	240	180	120
	17	440	220	165	110
	18	400	200	150	100
	19	360	180	135	90
	20	320	160	120	80
	21	280	140	105	70
	22	240	120	90	60
	23	200	100	75	50
	24	160	80	60	40
	25	120	60	45	30
>25		120	60	45	30
RO water	not configurable	2000			

Important! Independently whether the Condair RM is operated with tap water, RO water or filter cartridge water the **unit maintenance is to be carried out at least once a year.**

Replacement intervals of the optional filter cartridges in litres

The following table gives you an overview of the approximate replacement intervals of the filter cartridge based on the specific output, the carbonate hardness of the supply water (tap water).

Carbonate hardness [°dH] supply water	Replacement interval in litres Filter cartridge L
1	14000
2	7000
3	4667
4	3500
5	2800
6	2333
7	2000
8	1750
9	1556
10	1400
11	1273
12	1167
13	1077
14	1000
15	933
16	875
17	824
18	778
19	737
20	700
21	667
22	636
23	609
24	583
25	560
26	538
27	519
28	500
29	483
30	467
31	452
32	438
33	424
34	412
35	400
36	389
37	378
38	368
39	359
40	350

If the corresponding maintenance counter has elapsed, the yellow LED above the unit switch and additional the yellow warning triangle in the upper left corner of the display indicate that a maintenance must be carried out. In the fault list "Warning 29" is shown if the unit maintenance must be carried out or "Warning 165" if the optional filter cartridge must be replaced. The steam humidifier Condair RM continues normal operation.

Note: If a maintenance is due, the buzzer sounds at any time the unit is switched on and in regular intervals during operation. The buzzer sound can be deactivated in the "Engineering" menu of the RM Display.

Carry out the corresponding maintenance work, then reset the corresponding maintenance counter (see [chapter 7.8](#)).

Note: If during servicing a low or an increased calcification of the steam tank is determined, the maintenance interval time can be increased (by reducing the carbonate hardness) or decreased (by increasing the carbonate hardness).

7.3 Maintenance list

Adjacent you can find an overview of the maintenance work to be carried out at the unit maintenance.

Components	Work to be done
Steam tank	Remove, disassemble and clean, replace defective components if necessary. Note: When operating the Condair RM with the optional filter cartridge slight lime traces in the steam tank are normal. However, these slight lime traces must not be removed.
Steam tank receptacle	Inspect, clean if necessary.
Drain pump	Remove, disassemble and clean, replace if necessary.
Inlet valve	Remove and clean filter insert, replace if necessary.
Filling cup	Inspect, clean if necessary.
Level unit	Inspect, clean if necessary.
Drain	Inspect, clean if necessary.
Drain pipe and siphon	Inspect, clean if necessary (decalcify and rinse out).
Steam installation	Inspect steam and condensate hoses for cracks and ensure that they are correctly attached, replace defective hoses.
Water installation	Inspect water hoses in the unit for cracks and to see that they are correctly attached, replace defective hoses. Check supply pipe is tight, tighten it if necessary. Clean water filter, if available.
Electrical installation	Have all cables in the unit checked by an electrician that they are correctly fixed and that the insulation is not damaged
Heating elements	Check the resistance of the heating elements. Note: a heating element is defective and must be replaced, if the resistance value measured is $>20 \Omega$.

7.4 Removing and installing components for maintenance

7.4.1 Preparing the Condair RM for the removal of components

Before starting any removal work set the Condair RM out of operation and drain the steam tank. Please refer to the notes in [chapter 4.6](#).

7.4.2 Removal and installation of the steam tank



WARNING!
Danger of burning!

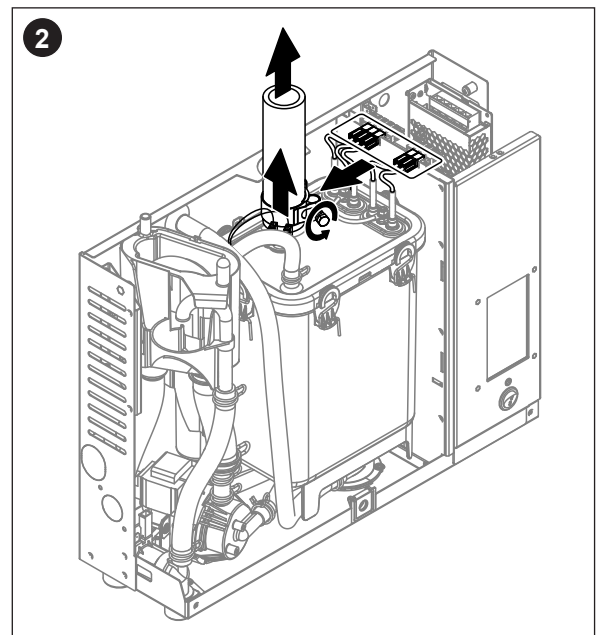
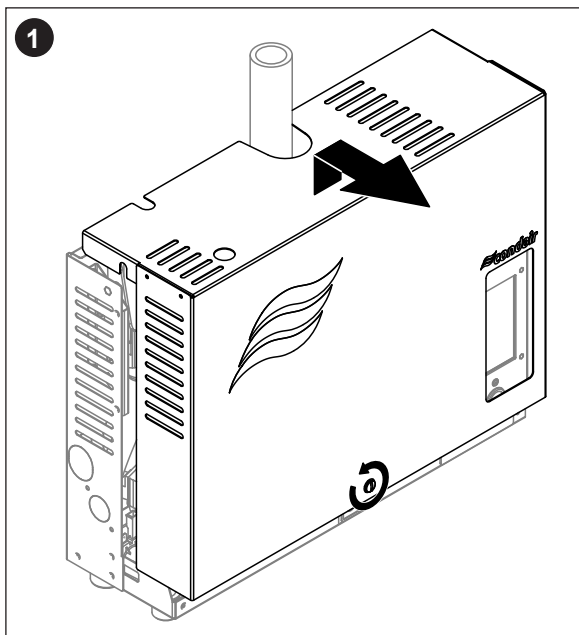
Before removal of the steam tank ensure the steam tank is empty and has cooled down, that no more burning danger exists.



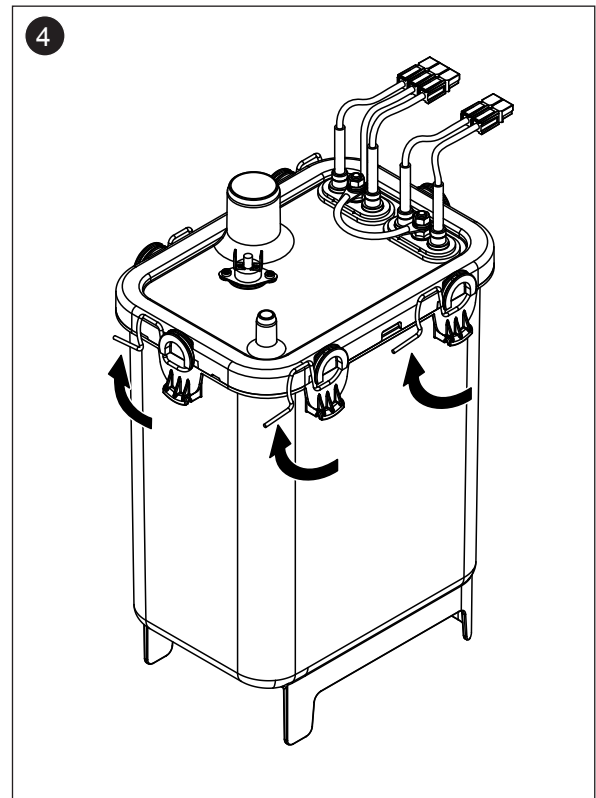
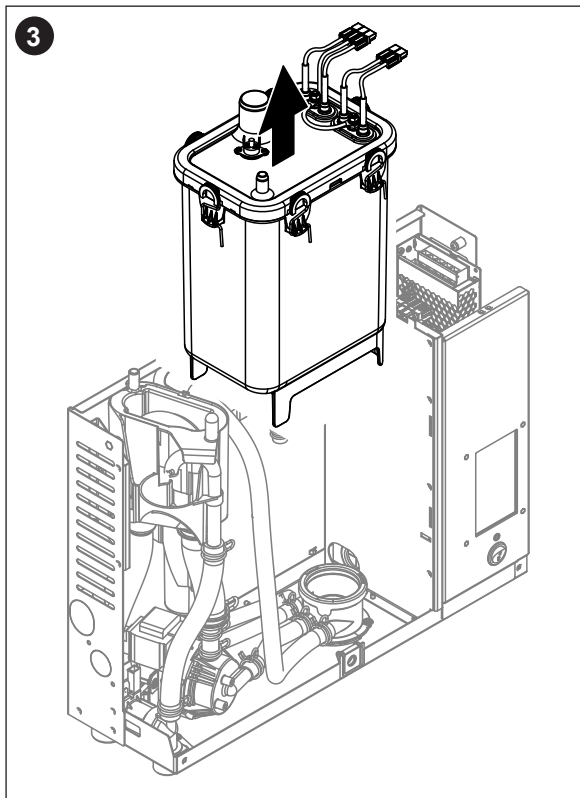
DANGER!
Danger of electric hazard!

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

Prevention: Before removal of the steam tank make sure the steam humidifier is separated from the mains (switch off electrical isolator in the mains supply line and check tensionless state with a voltage tester).



1. Loosen the retaining screw on the unit cover using a screwdriver, then remove the unit cover.
2. Free the hose clamp on the steam outlet connector using a screwdriver and remove steam hose from the steam connector. Release hose clamp of the pressure equalizing hose on top of the steam tank and remove hose from the connector. Unplug all heating cables from their sockets. Remove connecting cables from overtemperature switch(es).



3. Carefully lift the steam tank out of steam tank receptacle and remove it towards the front of the steam humidifier.



CAUTION!

Set down the steam tank carefully to ensure the connector on the bottom side of the steam tank is not damaged!

4. Unlock all locking clamps on the steam tank cover.

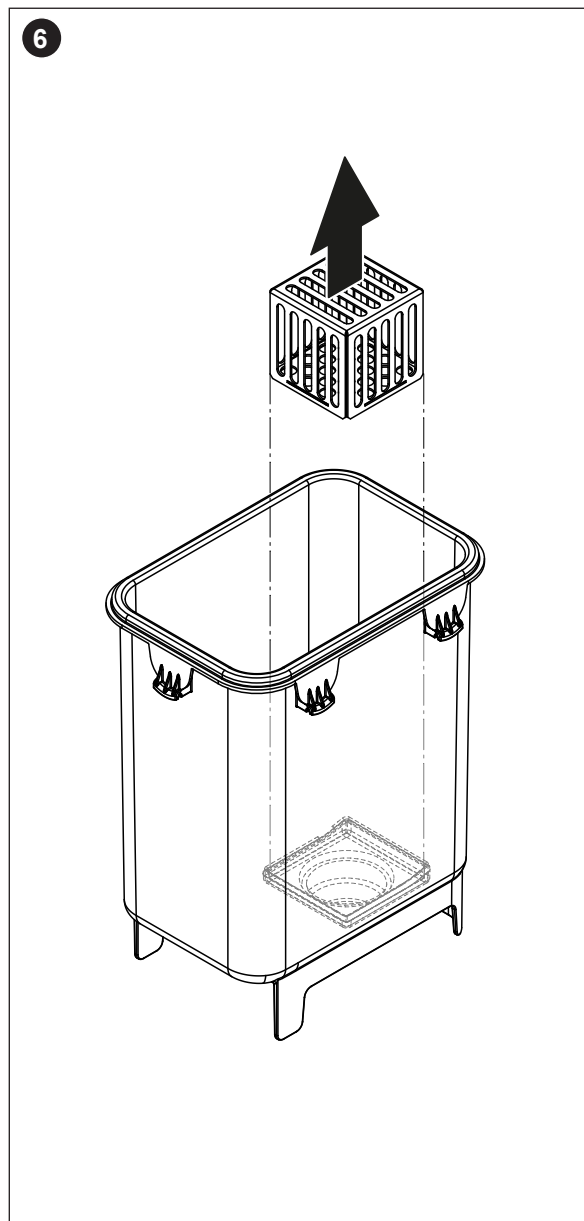
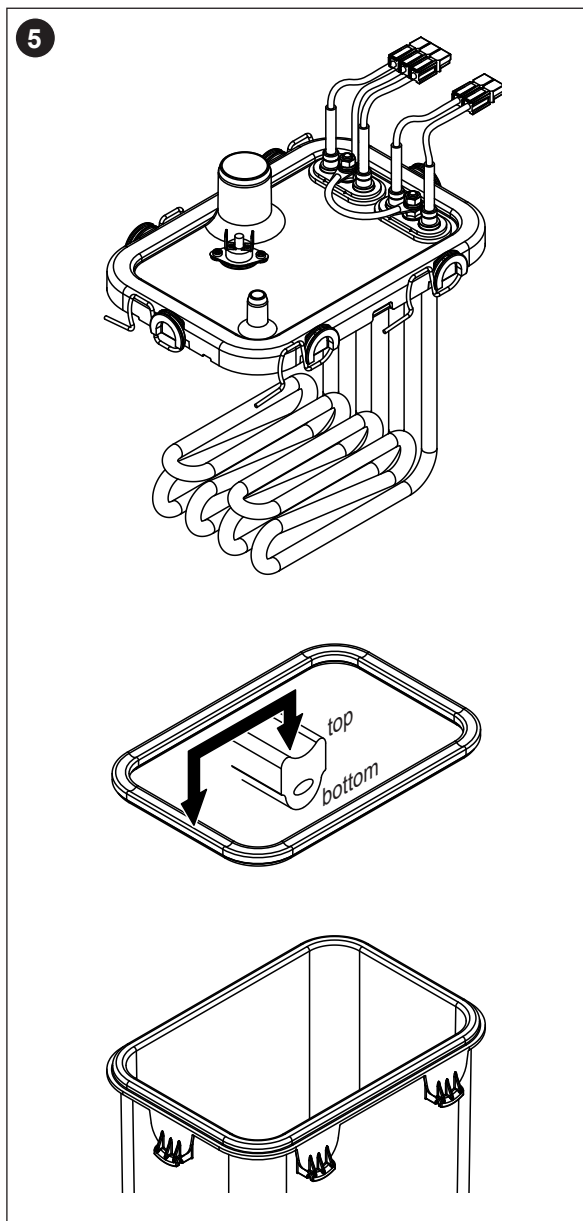
- Carefully lift off the steam tank cover with the heating elements, and remove cover sealing.



CAUTION!

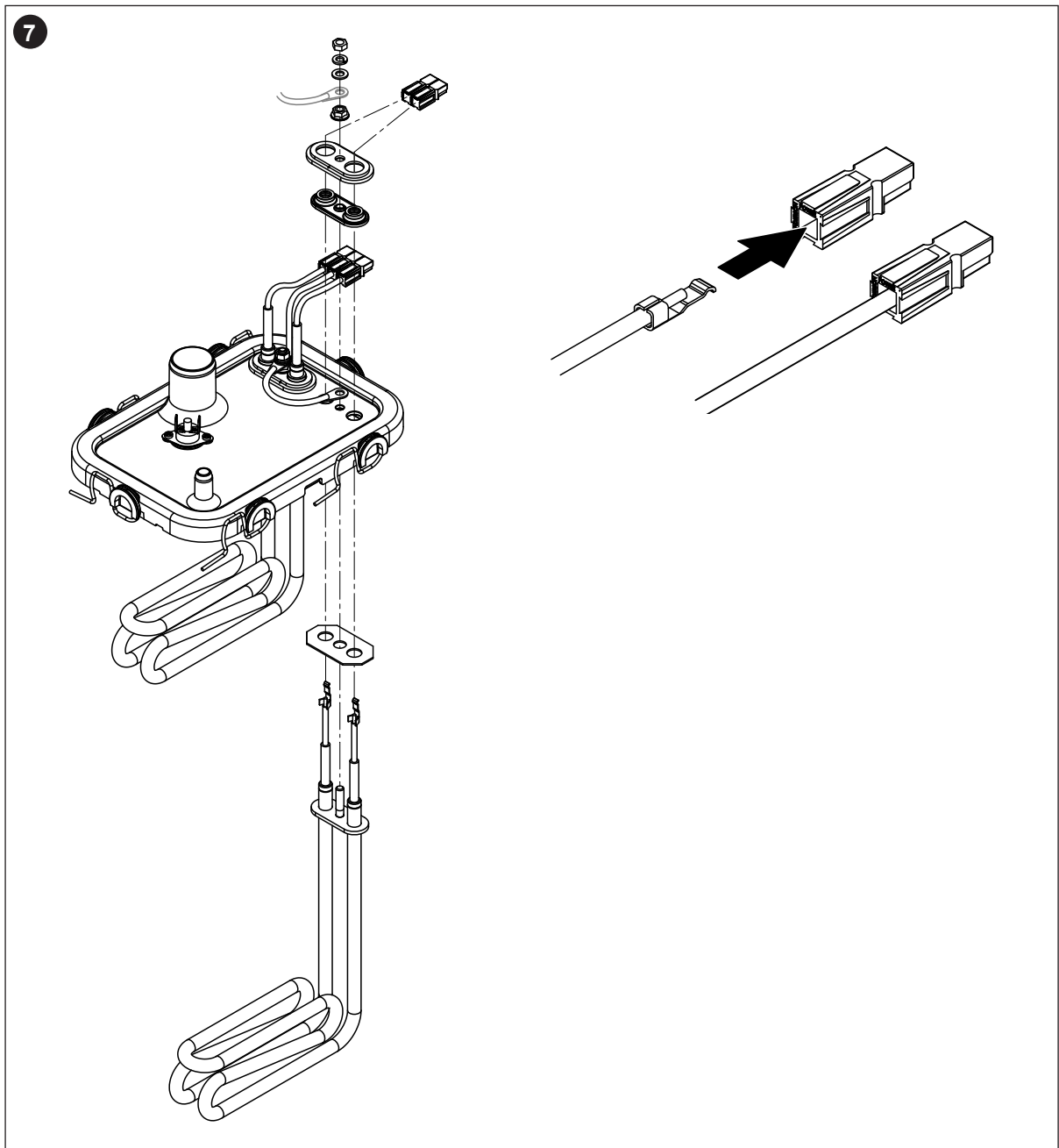
Take care with the cover while it is removed, so as not to damage the heating elements.

- Loosen the strainer insert and lift it out of the steam tank.



7. If during maintenance one or more heating elements must be replaced:

- First note position of the connecting cables inside the heating cable sockets.
- Cut cables on the heating cable connectors.
- Undo the nuts on the fixing flange of the appropriate heating element and remove heating element.
- Install new heating element with the shim from the below into the steam tank cover and fix it to cover with the flange, the gasket, and the toothed nut.
- Connect the protective conductor cable according to the figure below to the heating element flange with the washer, the spring washer and the nut.
- Push contact tongue of the heating cables into the heating cable plugs supplied until they are locked inside the plug (see figure below).



Assembly and installation of the steam tank

Assembly of the steam tank takes place in reverse sequence of the removal. Please note the following instructions:

- Installation of any heating elements which have been removed should follow the figure of [step 7](#) of the removal. Please take care that the heating elements are correctly positioned.
- Before installation of the steam tank cover check sealing. The sealing must be clean and undamaged (replace if indicated).

Important: the sealing must be replaced at least once per year.

Insert the cover sealing into the recess of the cover (consider installation position of the sealing, see figure of [step 5](#) of the removal).

- Before installation of the steam tank in the unit check O-ring in the steam tank receptacle and the snap ring for damage and replace if necessary.
- 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.

- Connect heating cable plugs into the corresponding sockets (see [Fig. 7](#)).
- Attach connecting cables to the connectors of the overtemperature switch(es) (see [Fig. 7](#)).

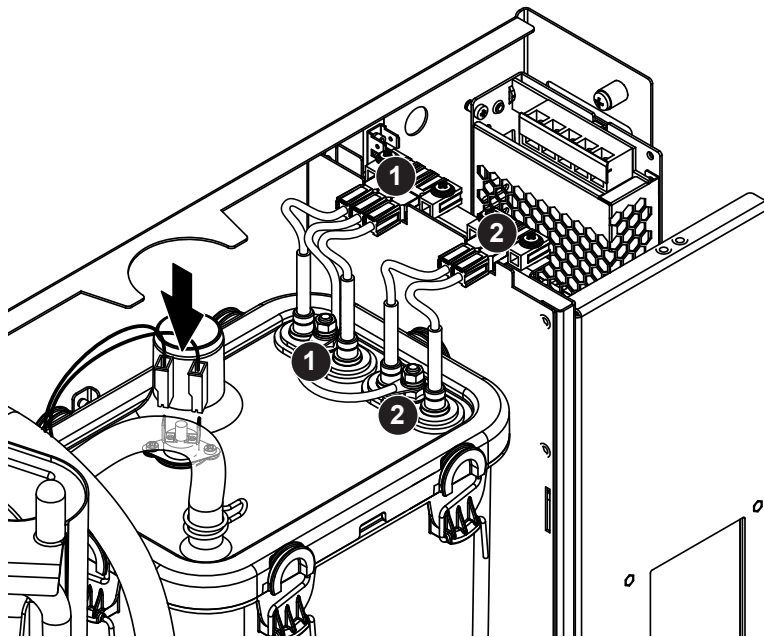


Fig. 7: Connection allocation of the heating cables

- Push steam hose onto the steam connector and fasten with hose clamp. A leaky steam hose can cause damp damage in the interior of the unit!
- Connect pressure equalizing hose to the connector on top of the steam tank and fix hose with the hose clamp.

7.4.3 Removal and installation of the filling cup, the level unit and the water hoses

For removing the filling cup, the level unit and the water hoses the steam tank must be removed first (see [chapter 7.4.2](#)).

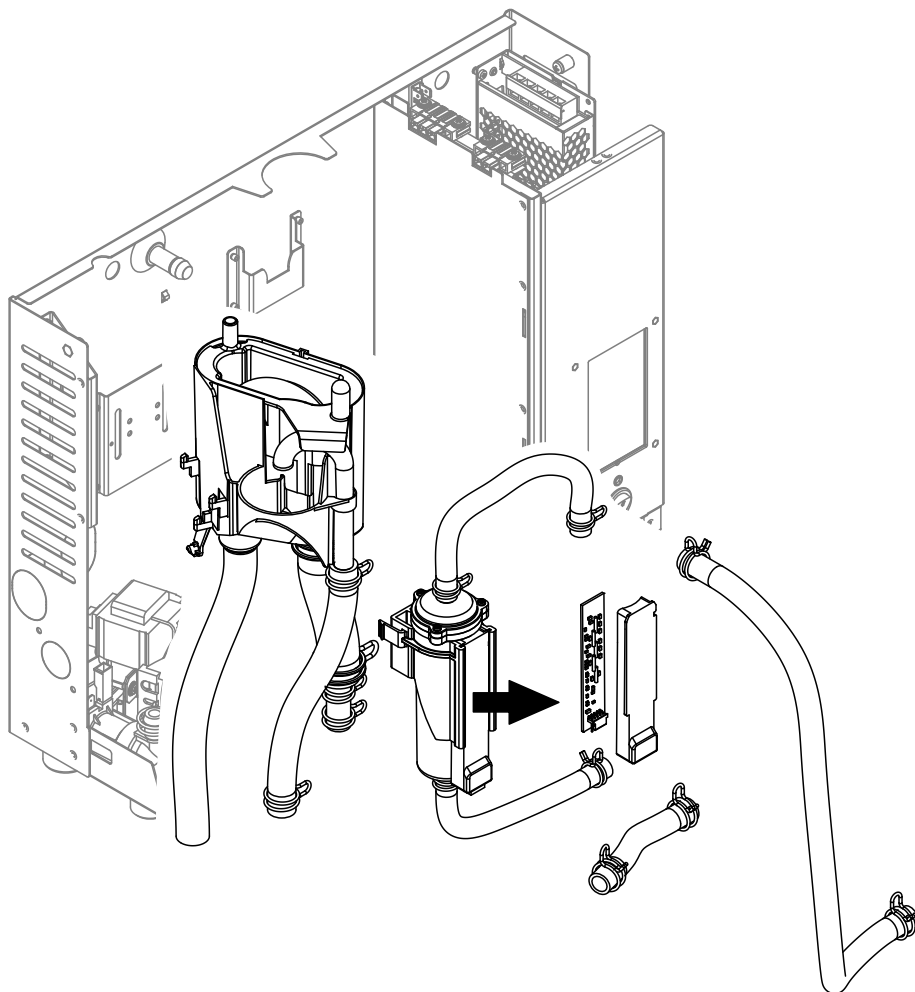


Fig. 8: Removal of the filling cup, the level unit and the water hoses

1. Release hose clamps, then disconnect all hoses from the corresponding connectors and remove the hoses.
Note: The hoses connected to the filling cup and the level unit may also be removed together with the filling cup and the level unit (see illustration) and then disconnected from the connectors outside the unit.

2. **Carefully** pull fixing clip of the filling cup to the front, then push filling cup downwards until it comes to a stop and remove it to the front.
3. Unplug cable from the socket of the level unit PCB. Carefully remove level PCB together with the PCB cover from the level unit. Pinch locking clips of the level unit together and remove level unit to the front. If the level unit must be cleaned carefully remove level PCB together with the PCB cover from the level unit.

The installation of the filling cup, the level unit with control boards and the water hoses follows the reverse sequence of the removal. Before fixing the hoses to the connectors with the hose clamps, align the hoses in a way that they are not twisted.

Important: when installing the level unit make sure the two burls of the level unit engage into the holes of the third row of holes from the top. Otherwise a wrong level will be detected during operation.

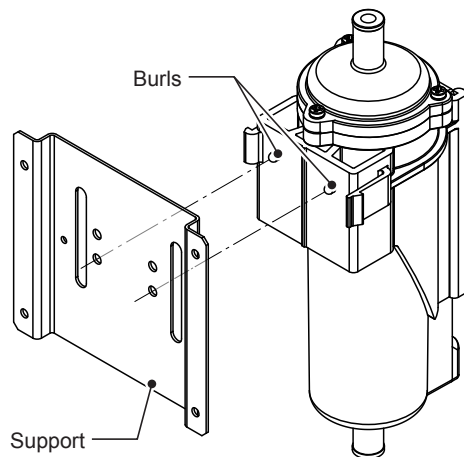


Fig. 9: Positioning of the level unit

7.4.4 Removal and installation of the drain pump

For removing the drain pump the steam tank must be removed first (see [chapter 7.4.2](#)).

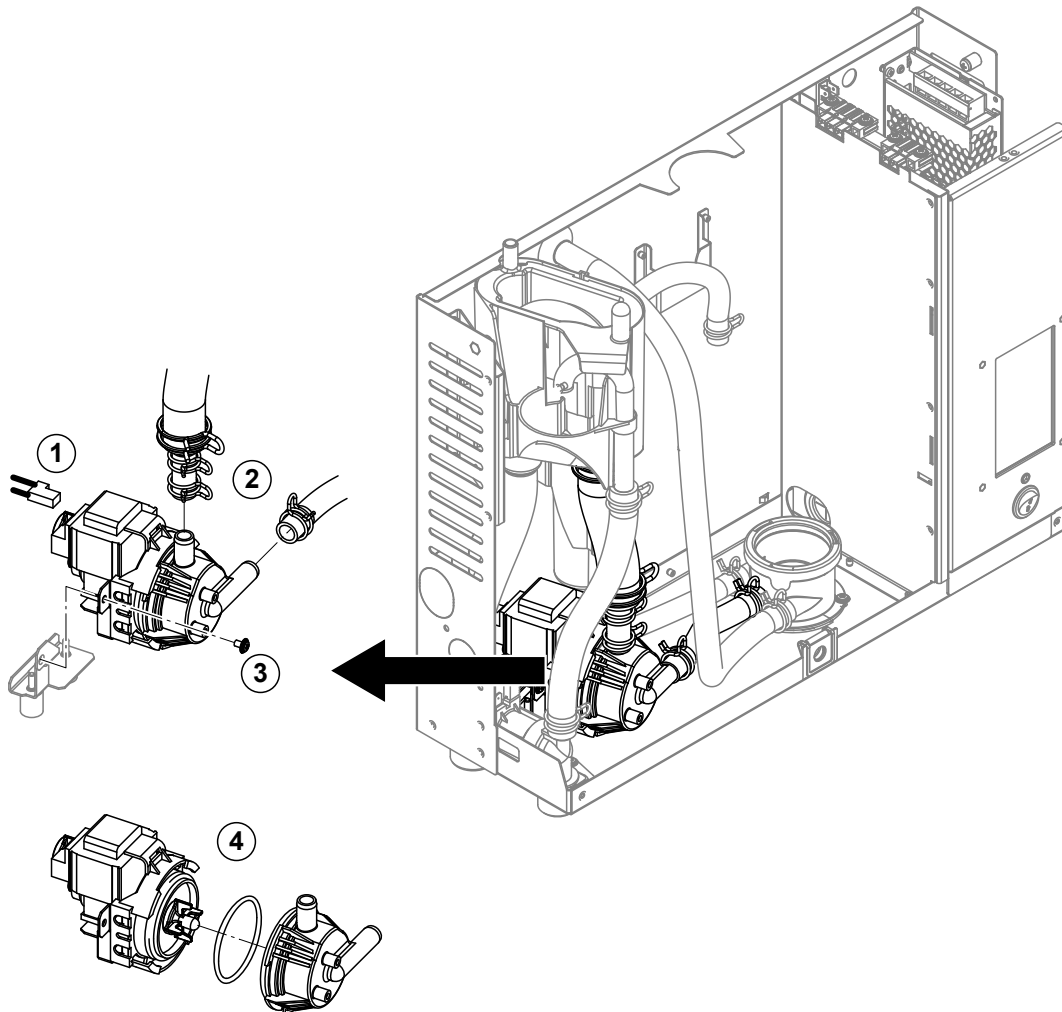


Fig. 10: Removal of the drain pump

1. Detach electric cables (polarity of the cables must not be observed).
2. Release hose clamps and remove the hoses from the connectors.
3. Undo the screw on the bottom of the housing with Phillips screwdriver, then remove drain pump to the front.
4. Separate the electric motor from the pump body: release the lock on the bayonet catch, then counter-rotate the electric motor and the pump body. Remove O-ring.

The assembly and the installation of the drain pump follows the reverse sequence of the removal. Before assembling the pump, check O-ring for damage and replace if necessary. Then, place the O-ring on the centering collar and moisten the O-ring with water.

7.4.5 Removal and installation of the inlet valve

For removing the inlet valve the steam tank must **not** be removed.

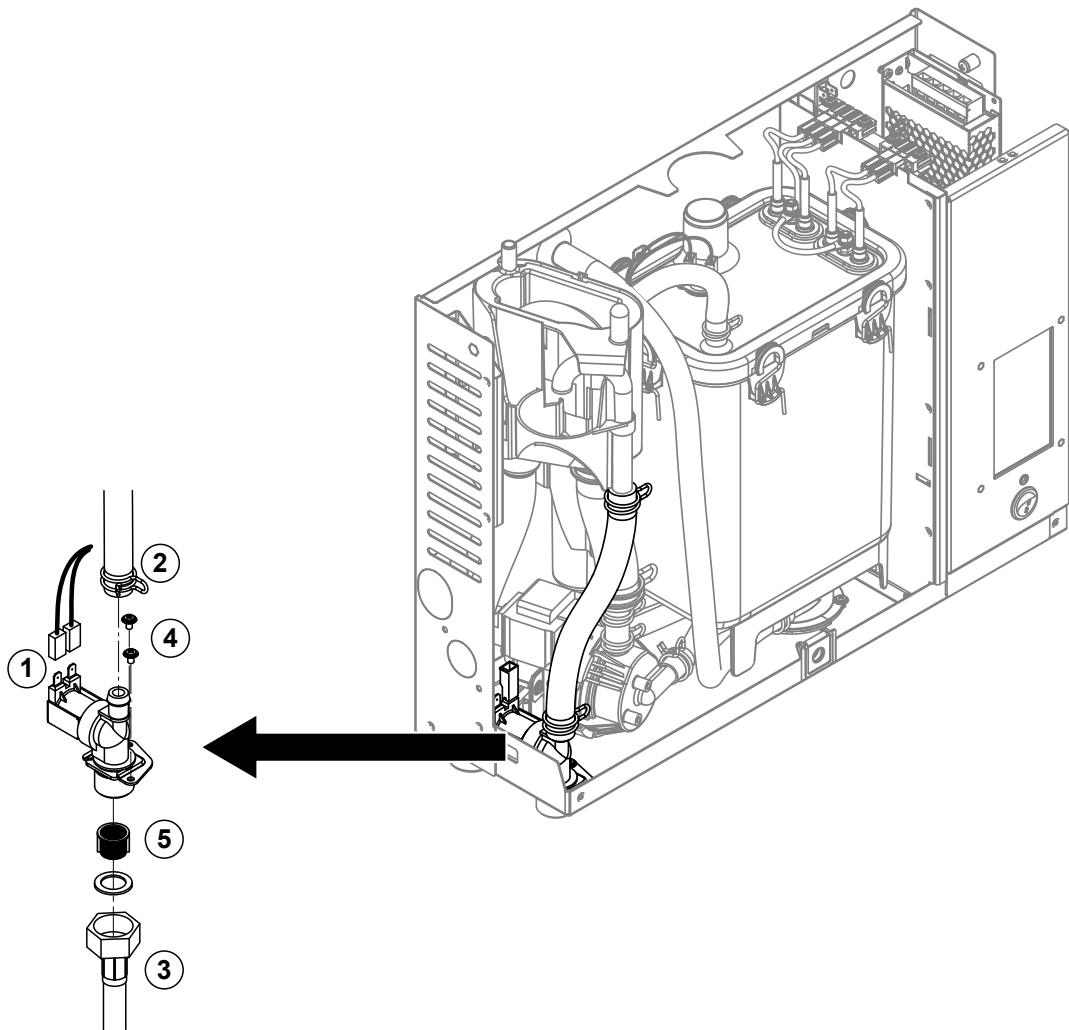


Fig. 11: Removal of the inlet valve

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

The installation of the inlet valve follows the reverse sequence of the removal. Before installing the valve make sure the strainer insert is installed in the inlet valve.

7.4.6 Removal and installation of the steam tank receptacle

For removing the steam tank receptacle the steam tank must be removed first (see [chapter 7.4.2](#)).

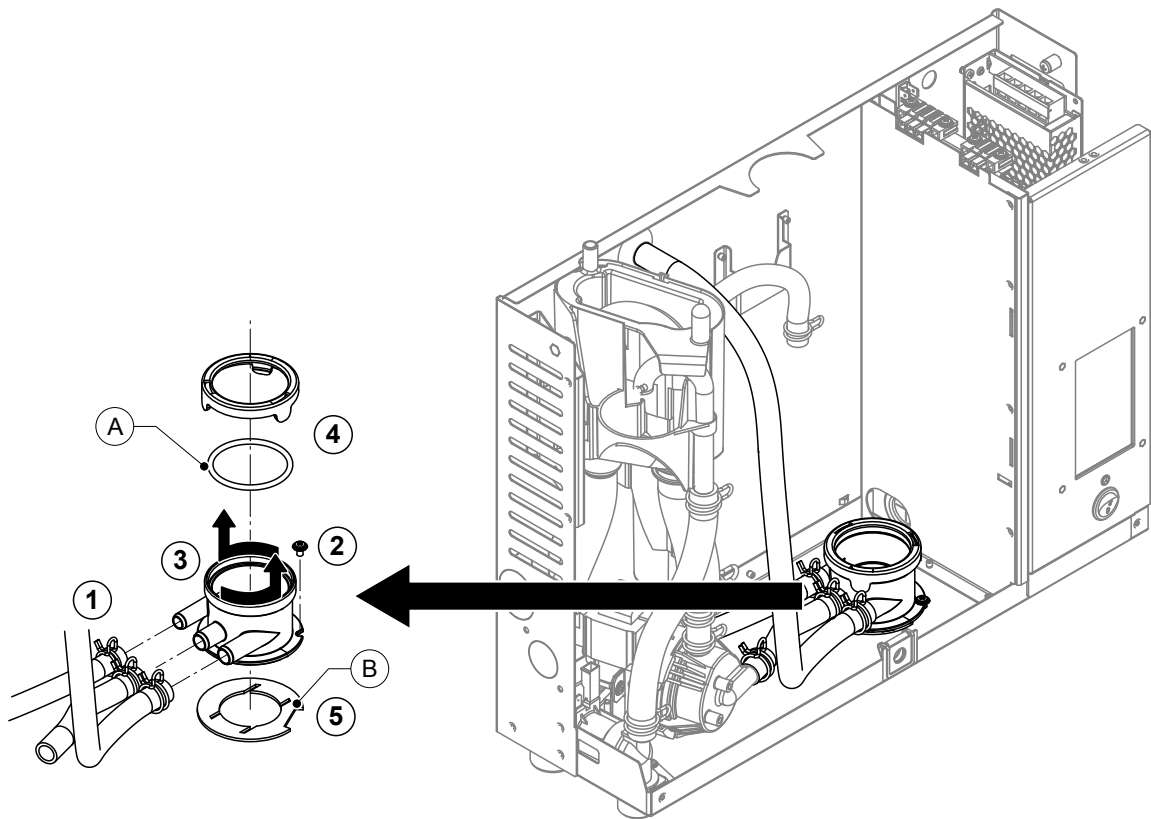
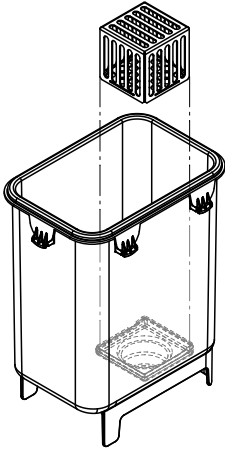
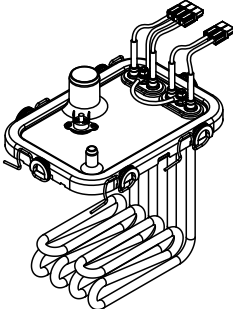
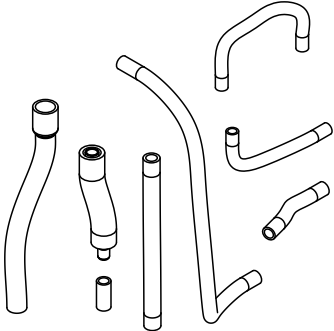


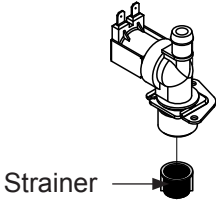
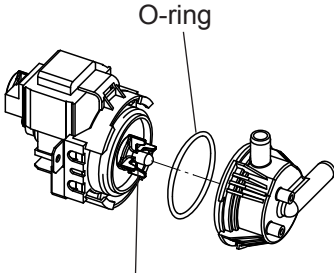
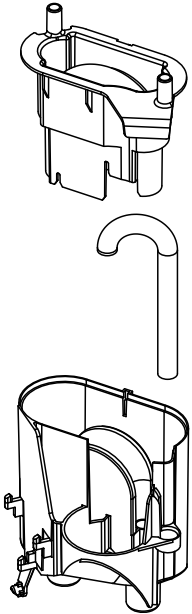
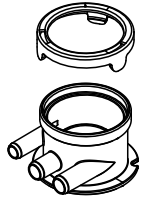
Fig. 12: Removal of the steam tank receptacle

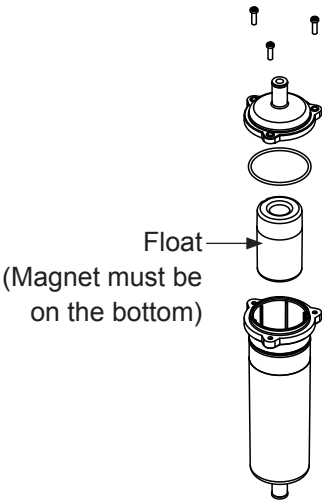
1. Release hose clamps and remove hoses from the connectors.
2. Undo the screw fixing steam tank receptacle to the bottom of the housing with Phillips screwdriver.
3. Turn steam tank receptacle counterclockwise to the stop and remove steam tank receptacle upwards.
4. Remove snap ring and O-ring "A".
5. Remove gasket "B" on the bottom side of the steam tank receptacle.

The installation of the steam tank receptacle follows the reverse sequence of the removal. Before mounting the steam tank receptacle, check O-ring "A", snap ring and gasket "B" for damage and replace if necessary.

7.5 Notes on cleaning the unit components

Unit component	What to clean and how to clean
<p data-bbox="284 318 703 344">Steam tank / steam tank strainer</p> 	<ul data-bbox="783 318 1469 568" style="list-style-type: none"> • Carefully brush off any limescale from the components (do not use a wire brush). If the components are heavily calcified, place them in an 8% formic acid solution (observe safety notes in chapter 7.6), until the limescale comes off. • Wash components with a lukewarm soap solution, then rinse well with tap water.
<p data-bbox="284 873 568 936">Steam tank cover and Heating elements</p> 	<ul data-bbox="783 873 1469 1496" style="list-style-type: none"> • Immerse cover with heating elements fitted to 2 cm below the rim of the cover in a container with 8% formic acid (observe safety notes in chapter 7.6). Allow the acid to take effect until the scale coating on the heating elements has dissolved. Note: The heating elements do not have to be entirely free from scale. • Rinse heating elements thoroughly with fresh water. CAUTION! Ensure that the electrical connections remain dry. CAUTION! On no account remove scale coating on the heating elements with tools (screwdriver, scraper, etc.) or by striking. This could damage the heating elements. • Carefully remove any limescale underneath the cover and on the thermostat(s) with a soft bristled brush (do not use a wire brush). The thermostat must be free of limescale.
<p data-bbox="284 1520 368 1547">Hoses</p> 	<ul data-bbox="783 1520 1469 1615" style="list-style-type: none"> • Remove any limescale in the hoses by carefully twisting and the hoses. Then, rinse the tubes well with hot tap water.

Unit component	What to clean and how to clean
<p data-bbox="245 210 383 241">Inlet valve</p>  <p data-bbox="371 443 469 474">Strainer</p>	<ul data-bbox="743 210 1433 439" style="list-style-type: none"> • Carefully remove any limescale inside the inlet valve and on the strainer using a soft bristled brush (do not use a wire brush). • Wash inlet valve and strainer insert with a lukewarm soap solution, then rinse well with tap water. <p data-bbox="788 407 1294 439">Let the inlet valve dry before reinstallation!</p>
<p data-bbox="245 508 400 539">Drain pump</p>  <p data-bbox="448 566 523 598">O-ring</p> <p data-bbox="355 846 507 878">Pump wheel</p>	<ul data-bbox="743 508 1433 716" style="list-style-type: none"> • Carefully remove any limescale from the pump housing and the pump wheel using a soft bristled brush (do not use a wire brush). • Wipe pump wheel with a damp cloth. Wash the pump housing with a lukewarm soap solution and rinse well with tap water. <p data-bbox="788 730 1307 761">Let the drain pump dry before reinstallation!</p>
<p data-bbox="245 900 384 931">Filling cup</p> 	<ul data-bbox="743 900 1433 1272" style="list-style-type: none"> • Disassemble filling cup. • Carefully remove any limescale from the components of the filling cup and its connectors using a soft bristled brush (do not use a wire brush). If components of the filling cup are heavily calcified, place them in an 8% formic acid solution (observe safety notes in chapter 7.6), until the limescale comes off. • Wash the components of the filling cup with a lukewarm soap solution and rinse well with tap water. • Reassemble filling cup.
<p data-bbox="245 1606 536 1637">Steam tank receptacle</p> 	<ul data-bbox="743 1606 1433 1890" style="list-style-type: none"> • Carefully remove any limescale from the steam tank receptacle and its connectors using a soft bristled brush (do not use a wire brush). If the steam tank receptacle is heavily calcified, place it in an 8% formic acid solution (observe safety notes in chapter 7.6), until the limescale comes off. • Wash the steam tank receptacle with a lukewarm soap solution and rinse well with tap water.

Unit component	What to clean and how to clean
<p>Level unit</p> 	<ul style="list-style-type: none"> Disassemble level unit. Carefully remove any limescale inside the housing of the level unit and its connectors using a soft bristled brush (do not use a wire brush). If the housing of the level unit is heavily calcified, place it in an 8% formic acid solution (observe safety notes in chapter 7.6), until the limescale comes off. CAUTION! Remove any limescale on the float using a soft bristled brush (do not use a wire brush)! Carefully remove any limescale on the float using a soft bristled brush (do not use a wire brush)! Wash components of the level unit with a lukewarm soap solution and rinse well with tap water. Reassemble level unit. Important: When inserting the float in the housing of the level unit make sure that the magnet of the float points to the bottom of the housing.
<p>Interior of the unit (water side only)</p>	<p>Wipe the interior of the unit with a damp cloth without using any cleaning agent. CAUTION: Take care that the electrical connections and the electronic components remain dry!</p>

7.6 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 clean drinking water after cleaning.



WARNING!

Formic acid is harmful to the skin, eyes and the respiratory tracts. Therefore prevent your skin, eyes and respiratory tracts from getting in touch with the acid and its vapours (wear gloves, 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 manufacturers information and instructions regarding the cleaning agents used. Observe in particular: all information relating to the protection of personnel, environmental protection and restrictions regarding usage.

7.7 Replacing the optional filter cartridge

To replace the filter cartridge, proceed as follows

1. Switch off the Condair RM via the unit switch.
2. Make sure the white hose is connected to the bypass connector on the filter head.
3. Place a rag below the filter cartridge in order to collect any residual water which flows out when the filter cartridge is removed.
4. Close the shut-off valve in the water supply line to the Condair RM.
5. Hold the filter cartridge firmly with both hands on the circumference, so that it does not fall down during removal. Then, carefully turn filter cartridge in the direction of the arrow as shown in [Fig. 13 left](#) until it comes to a stop (approx. 45 °) and remove filter cartridge.
6. Unpack new cartridge and remove protecting cap.
7. Place the filter cartridge below the filter head in such a way, that the label on the filter cartridge points to the front (that way all necessary information is always visible).
8. Simultaneously push filter cartridge upwards and turn it until the filter cartridge engages into the bayonet catch in the filter head. Then, while slightly pushing the filter cartridge upwards turn filter cartridge in the direction of the arrow as shown in [Fig. 13 right](#) into the filter head until it comes to a stop (approx. 45 °).

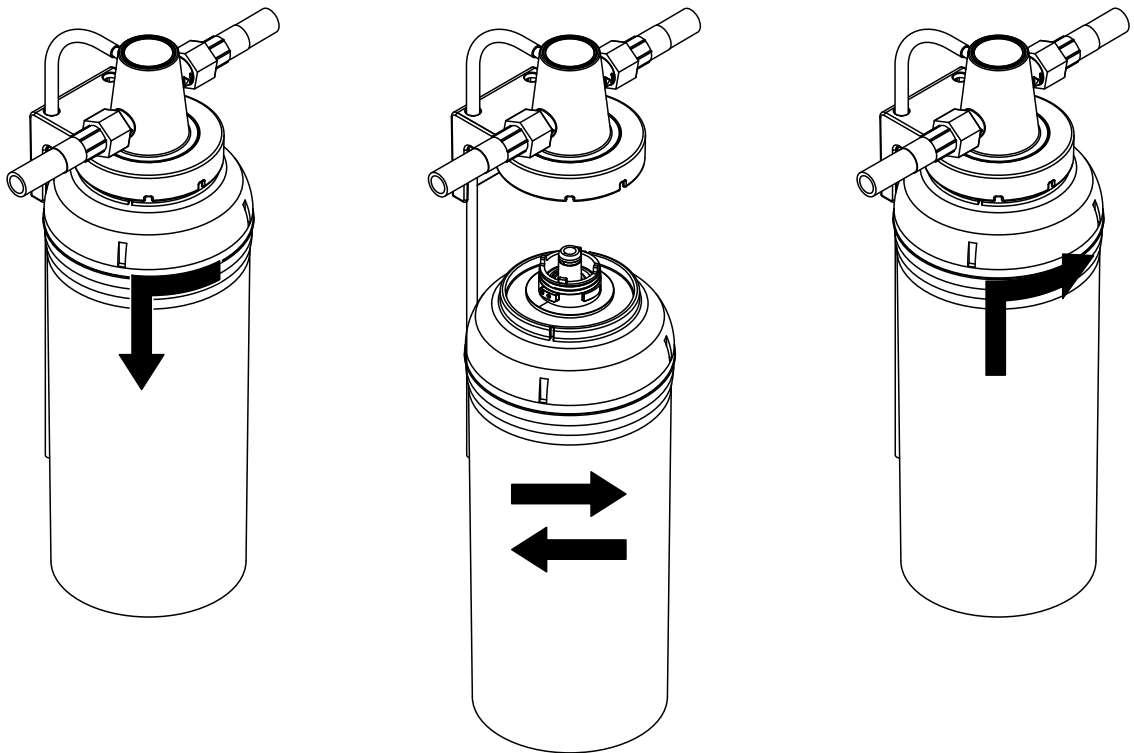


Fig. 13: Replacing the filter cartridge

- Place an empty container with at least 10 l capacity beside the filter cartridge and lead the open end of the bypass hose into that container.

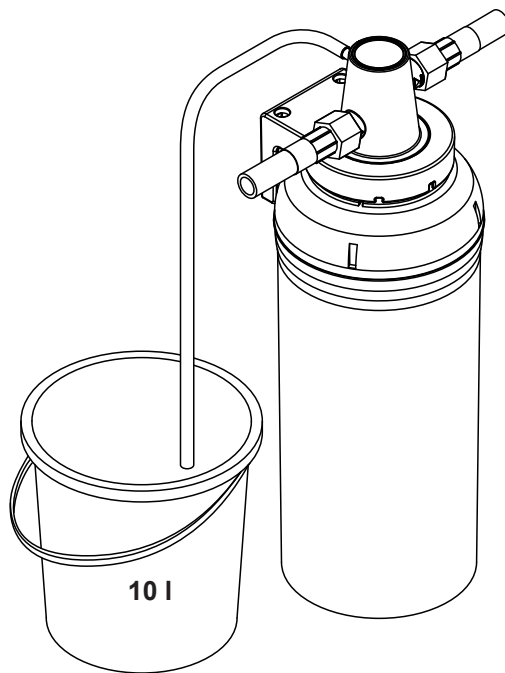


Fig. 14: Lead bypass hose into an empty container

- Turn valve in the filter head in such a way, that "open" points to "Bypass" (flushing position, see [Fig. 15](#)).

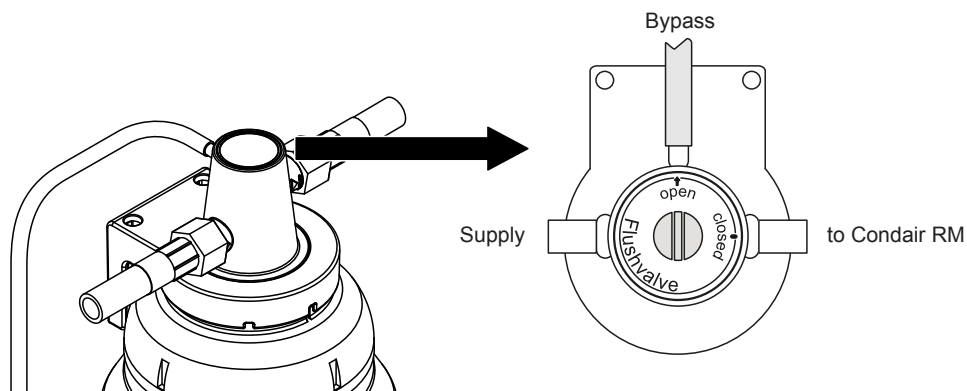


Fig. 15: Turn valve to "Bypass" (flushing position)

- Carefully open the shut-off valve in the water supply line to the Condair RM (slowly) and let water flow into the container (approx. 5 l) until it emerges without bubbles. Then close the shut-off valve in the water supply line again.

Note: This step is important because during this flushing process the filter cartridge is filled with water and loose particles from the manufacturing process are flushed out. A milky or dark discolouration of the water flowing out is normal and does not indicate a contamination.

12. Turn valve in the filter head in such a way, that "open" points to "Supply" (operating position, see [Fig. 16](#)).

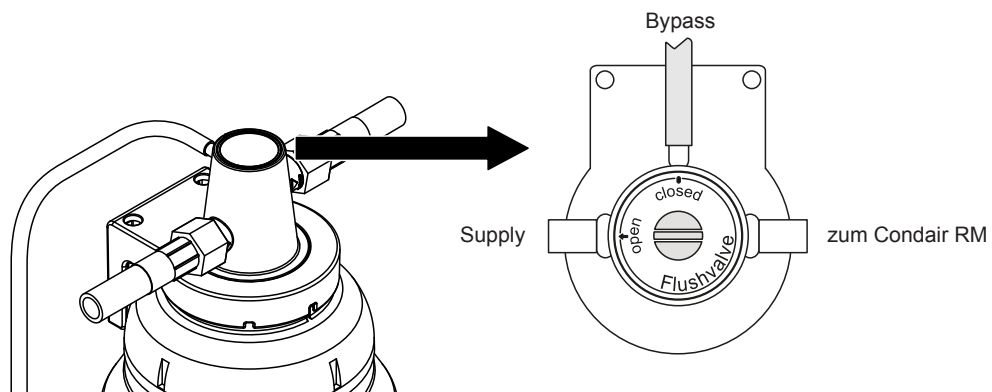


Fig. 16: Turn valve to "Supply" (operating position)

13. Open the shut-off valve in the water supply line to the Condair RM.

Disposal of the exhausted filter cartridge

Exhausted filter cartridges can be disposed of in accordance with local waste disposal regulations with domestic waste.

7.8 Resetting the maintenance counter

If the maintenance work (unit maintenance or replacement of the optional filter cartridge) has been carried out, the maintenance indication or maintenance counter must be reset. Proceed as follows:

1. Make sure that the unit cover is attached and secured.
2. Switch on the Condair RM.
3. Press the menu button to access the main menu and enter the password "0000" (if the display lock is activated).
4. Select the "Service" submenu and enter the password "3562".
5. **Resetting the maintenance counter for the "unit maintenance":**
Important: the maintenance counter for the "unit maintenance" must be reset only, if all work of the unit maintenance has been carried out!

- Select "Device Service" submenu.
- Select the reset function "Service Done".

Resetting the maintenance counter for the "cartridge replacement":

Important: the maintenance counter for the "cartridge replacement" must be reset only, if the cartridge has been replaced!

- Select "Filter Cartridge" submenu.
 - Select the reset function "Cartridge Replaced".
4. The reset dialogue appears:
 - Press the **<Tick>** button to reset the corresponding maintenance counter. The maintenance indication and the maintenance counter are reset.
 - Press the **<Cancel>** button if the unit maintenance work or the replacement of the filter cartridge has not been completed yet and you want abort the reset procedure. The control unit returns to the "Service" submenu.

8 Fault elimination

8.1 Important notes on fault elimination

Qualification of personnel

Repair work must be carried out only by **qualified and well trained professionals authorised by the owner**.

Repair work relating to the electrical installation must be carried out by an electrician or professionals authorised by the owner.

General notes

Only use original spare parts from your Condair representative to replace defective parts.

Safety

Before starting repair work on the Condair RM set the unit out of operation and disconnect it from the mains (see [chapter 4.6](#)).



Make sure the Condair RM is separated from the mains (check with voltage tester) and the shut-off valve in the water supply line is closed.



The electronic components inside the control compartment of the Condair RM are very sensitive to electrostatic discharge.

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

8.2 Fault indication

Malfunctions during operation detected by the control software are indicated by the **yellow illuminated LED** (warning present or maintenance due) or the **red illuminated LED** (fault present) above the unit switch and by the **yellow or red warning triangle** in the upper left corner of the display.

Warning (maintenance indication)



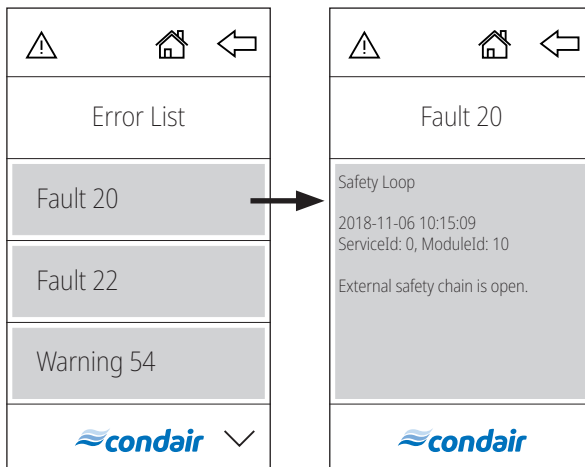
Warnings and/or a due maintenance are indicated by the yellow warning triangle in the home screen and the yellow illuminated LED above the unit switch. The Condair RM continues operation. Depending on the type of warning, certain operational restrictions may occur.

Fault



Operational states where further operation is limited or not possible, or where further operation would damage the system are indicated by the red warning triangle in the home screen and the red illuminated LED above the unit switch. Depending on the type of fault the steam production is stopped or the Condair RM continues normal operation.

By pressing on the warning triangle the error list is shown with all active warning and fault messages. By pressing on the corresponding Warning or Fault entry additional information regarding the malfunction are displayed (see display on the far-right).



8.3 Malfunction list

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 (e.g. hose connections, control system, etc.).

Warning	Fault	Message	Possible causes	Remedy
—	E20	Safety loop	External safety loop is open. Note: The Condair RM goes into standby operation. As soon as the external safety loop is closed again the Condair RM continues to work normally.	
			One or more monitoring device(s) of the external safety loop has/have triggered.	Check the monitoring device(s) of the external safety loop.
			External safety loop not connected correctly.	Let have the wiring of the external safety loop be checked and correctly connected by an electrician.
—	E21	Max. level	Water level in the steam tank of the Condair RM too high. Note: The operation of the Condair RM is stopped. After the fault has been eliminated, the Condair RM must be switched off and on again.	
			Level unit calcified.	Clean level unit.
			Hose connections between level unit and steam tank blocked.	Check/clean hose connections between level unit and steam tank blocked.
—	E22	Max. filling time	Maximum filling time exceeded. Note: The operation of the Condair RM is stopped. After the fault has been eliminated, the Condair RM must be switched off and on again.	
			Water supply blocked, shut-off valve in the water supply line closed. Water pressure too low.	Check water feed (filter, pipes, etc.), check/open shut-off valve, Check water pressure.
			Inlet valve blocked or defective.	Check strainer inside the inlet valve, clean if necessary. Replace valve.
			Excessive back pressure in the steam line (pressure in the air duct too high, steam line too long or kinked), causing water loss via filling cup.	Check pressure in the air duct, inspect steam installation.
			Water system leaky.	Check/seal water system.
W29	—	Service required	The maintenance counter for the unit maintenance of the Condair RM has elapsed. Note: The Condair RM continues to work normally.	
			The maintenance counter for the unit maintenance has elapsed.	Carry out unit maintenance in accordance with the operating instructions of the Condair RM. Then, reset the maintenance counter.

Warning	Fault	Message	Possible causes	Remedy
—	E46	Max. drain time	Maximum drain time of the Condair RM exceeded. Note: The operation of the Condair RM is stopped. After the fault has been eliminated, the Condair RM must be switched off and on again.	
			Drain pump not or not correctly connected.	Check/correctly connect drain pump.
			Drain hose inside the unit kinked or blocked.	Check/clean drain hose inside the unit, replace if necessary.
			Water drain obstructed (external drain line or funnel blocked).	Clean external drain line and siphon.
			Hoses to level unit blocked.	Clean or replace hoses.
			Drain pump defective.	Replace drain pump.
—	E47	Level unit	The level in the steam tank of the Condair RM is in an unacceptable range. Note: The operation of the Condair RM is stopped. After the fault has been eliminated, the Condair RM must be switched off and on again.	
			Level unit defective.	Replace level unit.
—	E56	Int. safety loop	The internal safety loop of the Condair RM is open. Note: The operation of the Condair RM is stopped. After the fault has been eliminated, the Condair RM must be switched off and on again.	
			Overtemperature switch(es) not connected correctly.	Let have the wiring of the overtemperature switch(es) checked/correctly connected by an electrician.
			Overtemperature switch(es) defective	Let have the overtemperature switch(es) be replaced by an electrician.
			Overtemperature switch(es) has/have triggered.	Let have the Condair RM be checked by a Condair service technician. Important: for safety reasons all heating elements have to be replaced if the over temperature switch(es) has/have triggered.
—	E87	Local 24 V supply	Local 24 V voltage on the control board the Condair RM out of valid range. Note: The Condair RM goes into standby mode. If the fault disappears on its own, the Condair RM continues to run normally.	
			Short circuit on the supply module or supply module defective.	Contact your Condair representative.
—	E88	Local 5 V supply	Local 5 V voltage on the control board of the Condair RM out of valid range. Note: The Condair RM goes into standby mode. If the fault disappears on its own, the Condair RM continues to run normally.	
			Short circuit on the supply module or supply module defective.	Contact your Condair representative.
—	E97	Ext. 24 V supply	External 24 V supply of the Condair RM faulty. Voltage too high or too low Note: The Condair RM continues to work normally.	
			Fuse "F2" on the control board defective.	Replace fuse "F2" on the control board.
			Short circuit on external connection.	Let have the short circuit be eliminated by an electrician.
			Overload on external connection.	Disconnect load on external connection.

Warning	Fault	Message	Possible causes	Remedy
—	E120	Min. fill time	Minimum filling time of the Condair RM underrun. Note: The operation of the Condair RM is stopped. After the fault has been eliminated, the Condair RM must be switched off and on again.	
			Level unit calcified.	Clean level unit.
			Hose connections between level unit and steam tank blocked.	Check/clean hose connections between level unit and steam tank.
			Strainer insert in the steam tank strongly calcified or unit strongly calcified.	Carry out the unit maintenance, then reset the maintenance counter "Service Done".
W121	—	Max. evaporation time	Maximum vaporisation time of the Condair RM exceeded. Note: The Condair RM carries out a level test and, if the test is successful, continues to operate normally and the warning message is cleared. If the level test was not successful, the warning message appears again and the level test is repeated. If the warning occurs repeatedly, check the following points.	
			Individual heating elements defective.	Replace corresponding heating elements.
			Mains voltage too low or failure of a phase (L1, L2 or L3).	Let have the mains voltage and connections be checked by an electrician.
			Steam line too long or not insulated.	Maintain maximum steam line lengths (max. 4 m), Insulate steam line.
—	E155	Ext. 5 V supply	External 5 V supply of the Condair RM faulty. Voltage too high or too low. Note: The Condair RM continues to work normally.	
			Short circuit on LED.	Contact your Condair representative.
			Overload on LED connection.	Check LED connection.
	E156	EEPROM read	Reading from EEPROM not possible. Note: In order to reset the fault, the Condair RM must be switched off and on again.	
			EEPROM defective.	Contact your Condair representative.
	E157	EEPROM write	Writing to EEPROM not possible. Note: In order to reset the fault, the Condair RM must be switched off and on again.	
			EEPROM defective.	Contact your Condair representative.
—	E158	Heat Element 1 control relay	Heating element control relay 1 does not work correctly. Note: The operation of the Condair RM is stopped. After the fault has been eliminated, the Condair RM must be switched off and on again.	
			Heating element control relay 1 on control board blocked.	Contact your Condair representative.
—	E159	Heat Element 2 control relay	Heating element control relay 2 does not work correctly. Note: The operation of the Condair RM is stopped. After the fault has been eliminated, the Condair RM must be switched off and on again.	
			Heating element control relay 2 on control board blocked.	Contact your Condair representative.

Warning	Fault	Message	Possible causes	Remedy
W163	—	Cartridge replacement	The maintenance counter for replacement of the optional filter cartridge in the water supply of the Condair RM has elapsed. Note: The Condair RM continues to work normally.	
			Optional filter cartridge is exhausted.	Replace filter cartridge, then reset the maintenance counter (see Condair RM operation manual).
W164	—	Hardware replacement	The maintenance counter for replacement of the hardware of the Condair RM has elapsed. Note: The Condair RM continues to work normally.	
			The hardware of the Condair RM is outdated.	Contact your Condair representative.
—	E171	Hum. Sensor Instable	Measurement of air humidity unstable. Note: The operation of the Condair RM is stopped. After eliminating the fault, the Condair RM must be switched off and on again.	
			Unstable humidity measurement due to manipulation of the humidity sensor.	Check humidity sensor.
—	E181	Demand/Hum. Input	The demand signal or the humidity sensor signal at the signal input is outside the valid range. Note: The operation of the Condair RM is stopped. After eliminating the fault, the Condair RM must be switched off and on again.	
			The measured value at the signal input is outside the valid range.	Check the signal input.
			Wrong humidity sensor connected.	Check that the correct humidity sensor is connected.
			Humidity sensor not connected or not correctly connected.	Check the wiring of the humidity sensor.
			Incorrect configuration of the humidity sensor in the control software.	Check the humidity sensor settings in the control software.
			Humidity sensor defective.	Replace humidity sensor.
W184	—	BMS Signal Timeout	No demand signal via Modbus. Note: The operation of the Condair RM is stopped. As soon as the Condair RM receives a demand signal via Modbus again the Condair RM continues to work normally.	
			Modbus cable incorrectly connected or interrupted.	Check Modbus wiring.
			Incorrect Modbus settings.	Check the Modbus settings in the control software.
—	E200	File System	Initialization of the Flash file system failed. Note: The Condair RM continues to work normally. After eliminating the fault, the the Condair RM must be switched off and on again to reset the fault.	
			A problem occurred during initialization of the flash file system.	Contact your Condair representative.
—	E201	Ethernet	Initialization of Ethernet adapter failed. Note: The Condair RM continues to work normally. After eliminating the fault, the Condair RM must be switched off and on again to reset the fault.	
			A problem occurred during initialization of the Ethernet adapter.	Contact your Condair representative.

Warning	Fault	Message	Possible causes	Remedy
—	E202	CANopen	Initialization of the CANopen adapter failed. Note: The Condair RM continues to work normally. After eliminating the fault, the Condair RM must be switched off and on again to reset the fault.	
			A problem occurred during initialization of the CANopen adapter.	Contact your Condair representative.
W204	—	CANopen Heartbeat	The clock signal of one or more components connected to the CAN BUS is missing. Note: The Condair RM continues to work normally.	
			One or more components on the CAN BUS do not work.	Let have the CAN BUS wiring between components be checked by an electrician. Also check if all devices on the CAN bus are switched on.
			Warning appears after a software update.	The warning should disappear after a few seconds. Ignore this warning, it disappears after a few seconds.
W205	—	Node incompatible	Unsupported component(s) connected to the CAN BUS. Note: The Condair RM continues to work normally.	
			Software of one or more components is not up to date.	Check that all components on the CAN BUS are updated with the latest software.
W206	—	Update in Progress	A firmware update is running. Note: It is possible that the Condair RM may not work properly during the update. In addition, it is possible that the RM Display turns white during update. In this case, leave the device switched on and wait (max. 5 minutes) until everything is working properly again.	
			A firmware update is in progress.	Wait until the firmware of all components of the CAN BUS is updated. The warning is automatically reset after the update is completed.
W207	—	Update Failed	The firmware update failed. Note: The the Condair RM continues to work normally.	
			The firmware update failed.	Make sure that the correct firmware is used and restart the update.
—	E208	Slave Master Missing	A device (slave or master) on the CAN BUS can not be found. Note: The operation of the Condair RM is stopped. Once the slave or master is found, the system continues to run normally.	
			A CAN BUS participant (slave or master) is missing.	Make sure that all CANBUS users are available and correctly connected. Also check if all devices on the CAN BUS are switched on.
—	E209	OTP Hardware	The OTP hardware code is invalid. Note: The operation of the Condair RM is stopped. After eliminating the fault, the Condair RM must be switched off and on again.	
			The hardware version which is stored in the OTP is invalid.	Replace the control board in the Condair RM.
W250	—	Export File	The configuration file was not saved. Note: The Condair RM continues to work normally.	
			The configuration file ("SpaExportSettings.json") could not be created on the local file system.	Make sure the local file system is working properly.

Warning	Fault	Message	Possible causes	Remedy
W251	—	Export Incomplete	Not all data records of the configuration file were saved. Note: The Condair RM continues to work normally.	
			Not all configuration settings could be stored in the configuration file ("SpaExportSettings.json") on the internal file system.	Make sure that the saving process has not been interrupted or that no components have been removed from the CAN BUS.
W252	—	Import File	Downloading of the configuration file failed. Note: The Condair RM continues to work normally.	
			The configuration file ("SpaExportSettings.json") could not be found or opened on the local file system.	Make sure the configuration file ("SpaExportSettings.json") is present and has been saved correctly.
W253	—	Import Incompatible	The configuration file to be downloaded is incompatible. Note: The Condair RM continues to work normally.	
			Some parameters in the configuration file ("SpaExportSettings.json") are not supported.	Make sure that all components of the CAN BUS are updated with the latest software version and that the configuration file has not been manipulated.
W254	—	Import Incomplete	Not all data from the configuration file could be loaded. Note: The Condair RM continues to work normally.	
			The configuration file ("SpaExportSettings.json") to be downloaded has been exported with an older firmware version.	A file export with the latest firmware has to be done again.
			A component has been removed from the CAN BUS after an export has been performed.	Check that all components are connected correctly to the CAN BUS.

8.4 Resetting the fault indication

To reset the fault indication (red LED light on the Condair RM, warning triangle on the RM Display lights up red):

1. Switch off the Condair RM via the unit switch on the front side of the unit.
2. Wait approx. 5 seconds, then switch on the Condair RM again.

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

8.5 Replacing the fuses and backup battery in the control unit



WARNING!

The fuses and the backup battery on the control board must be replaced by **authorized personnel only** (e.g. trained electrician, Condair service technician).

Replace the fuses on the control board only with fuses matching the specifications below with the appropriate nominal current capacity. Never use refurbished fuses. Do not bridge the fuse holder.

To replace the fuse or the backup battery proceed as follows:

1. Disconnect the Condair RM from the mains by switching off the electrical isolator in the mains supply line and secure electrical isolator in "Off" position against inadvertent switching on.
2. Undo the retaining screw of the unit cover, then remove the unit cover.
3. From the left side release the locking lug of the swivel plate with the RM Display using a screw driver. Then, push swivel plate upwards until it comes to a stop and remove it from the openings in the housing. Turn swivel plate 90° outwards and hang it into the corresponding openings in the housing.
4. Replace the fuses or the backup battery.

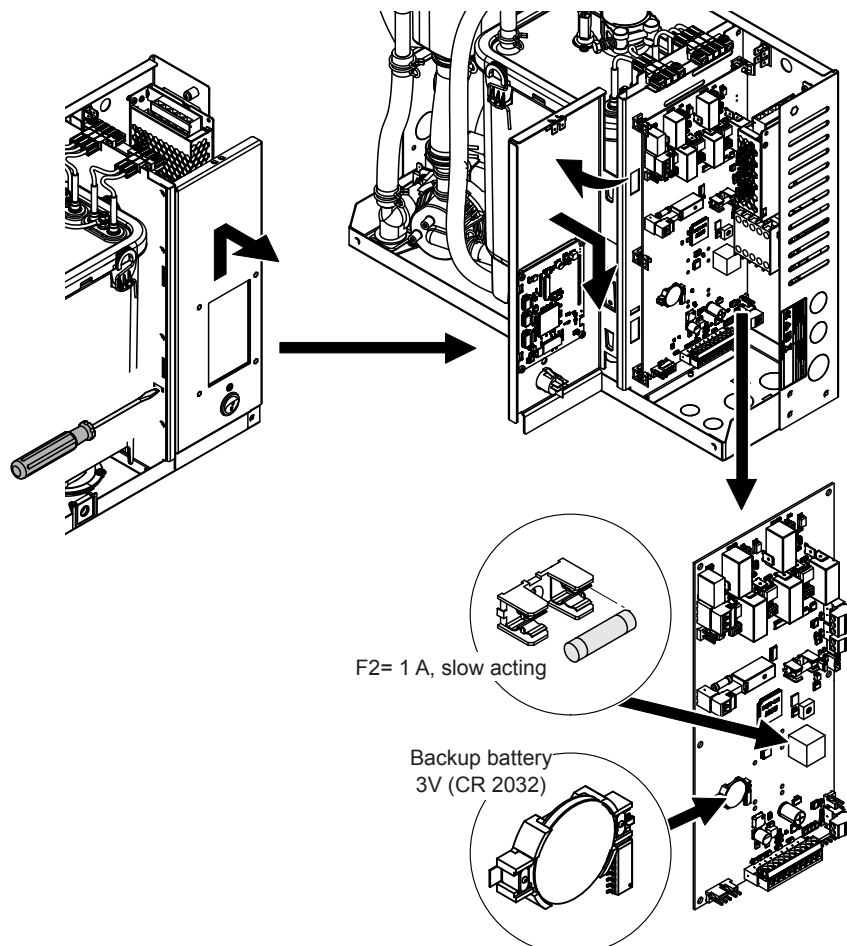


Fig. 17: Position of the backup battery and the fuses on the control board

5. Push the swivel plate with the RM Display upwards until it comes to a stop and remove it from the openings in the housing. Turn swivel plate 90° inwards and hang it into the corresponding openings in the housing, then push swivel plate downwards until the locking lug engages.
6. Relocate unit cover and lock it with the retaining screw.
7. Reconnect Condair RM to the mains by switching on the electrical isolator in the mains supply line.

8.6 Switching the heating channels

If a heating channel has reached the maximum switching cycles (10 million), warning 164 appears. If there are still heating channels that have not yet reached the maximum switching cycles, the heating channels can be switched as described below.



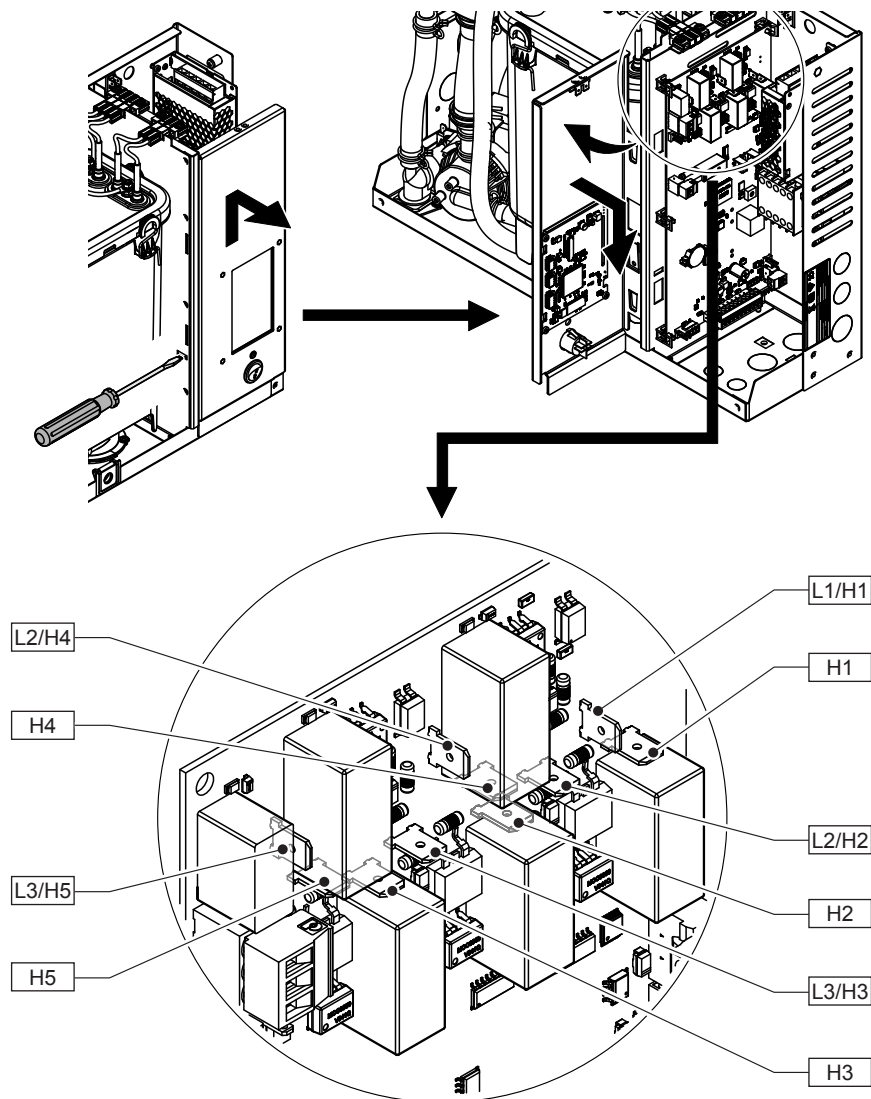
WARNING!

The reconnection of the wires of the heating channels on the control board of the Condair RM may only be carried out by authorized specialists (e.g. trained electricians, Condair service technicians).

To switch the heating channels, proceed as follows:

1. First switch the heating channels in the control software (path: "Service > Steam Generator > Hardware > Heating Channel"). After correct switching, Warning 164 will be reset automatically.
Note: Make sure that heating channels are selected which have not yet reached the maximum switching cycles (10 million). The switching cycles of the individual heating channels can be seen under "Service > Steam Generator > Hardware > Switching cycles".
2. Disconnect the Condair RM from the mains by switching off the electrical isolator in the mains supply line and secure electrical isolator in "Off" position against inadvertent switching on.
3. Undo the retaining screw of the unit cover, then remove the unit cover.
4. From the left side release the locking lug of the swivel plate with the RM Display using a screw driver. Then, push swivel plate upwards until it comes to a stop and remove it from the openings in the housing. Turn swivel plate 90° outwards and hang it into the corresponding openings in the housing.

- Reconnect the input wires (white plugs) and output wires (black plugs) of the heating channels to the corresponding input and output connection tabs, as configured under point 1. Refer to [Fig. 18](#). **Important:** Make sure that on the inputs (L1/H1, L2/H2, L3/H3, L2/H4, L3/H5) only wires white plugs and on the outputs (H1, H2, H3, H4, H5) only wires black plugs are connected. All unused connection tabs must be provided with the existing insulating plugs.



Heating channel	Input (white plugs)	Output (black plugs)
1	L1/H1	H1
2	L2/H2	H2
3	L3/H3	H3
4	L2/H4	H4
5	L3/H5	H5

Fig. 18: Positions of the heating channel connections

- Push the swivel plate with the RM Display upwards until it comes to a stop and remove it from the openings in the housing. Turn swivel plate 90° inwards and hang it into the corresponding openings in the housing, then push swivel plate downwards until the locking lug engages.
- Relocate unit cover and lock it with the retaining screw.
- Reconnect Condair RM to the mains by switching on the electrical isolator in the mains supply line.

9 Taking out of service/Disposal

9.1 Taking out of service

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

1. Take the Condair RM out of operation as described in [chapter 4.6](#).
2. Have the Condair RM (and if applicable other system components) unmounted by a qualified service technician.

9.2 Disposal/Recycling

Exhausted filter cartridges can be disposed of in accordance with local waste disposal regulations with domestic waste.

All other components of the Condair RM must be disposed of in accordance with local regulations at the authorised collecting point.

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

Thank you for your contribution to environmental protection.

10 Product specification

10.1 Performance data / Fuses "F6" voltage 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 AL min. in mm ²	Fuses "F6" in A, quick acting (gR)	Max. steam capacity in kg/h	PN max. in kW	IN max. in A	Cable cross section AL min. in mm ²	Fuses "F6" in A, quick 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

10.2 Operating data

	Condair RM			
	2	4	6	8
Supply voltage	230 V/1~/50...60 Hz			
	---		400 V/3~/50...60 Hz	
Number of heating elements	1	2	2	2
Max. steam capacity	2 kg/h	4 kg/h	6 kg/h	8 kg/h
Admissible control signals	0-5 V, 1-5 V, 0-10 V, 2-10 V, 0-20 V, 0-16 V, 3-16 V, 0-20 mA, 4-20 mA, On-Off			
Admissible ambient temperature	1...40 °C			
Admissible ambient humidity	1...75 %rh (non-condensing)			
Admissible water supply temperature	1...40 °C			
Admissible water supply pressure	1...10 bar			
Water drain temperature	max 90 °C			
Protection class	IP20			

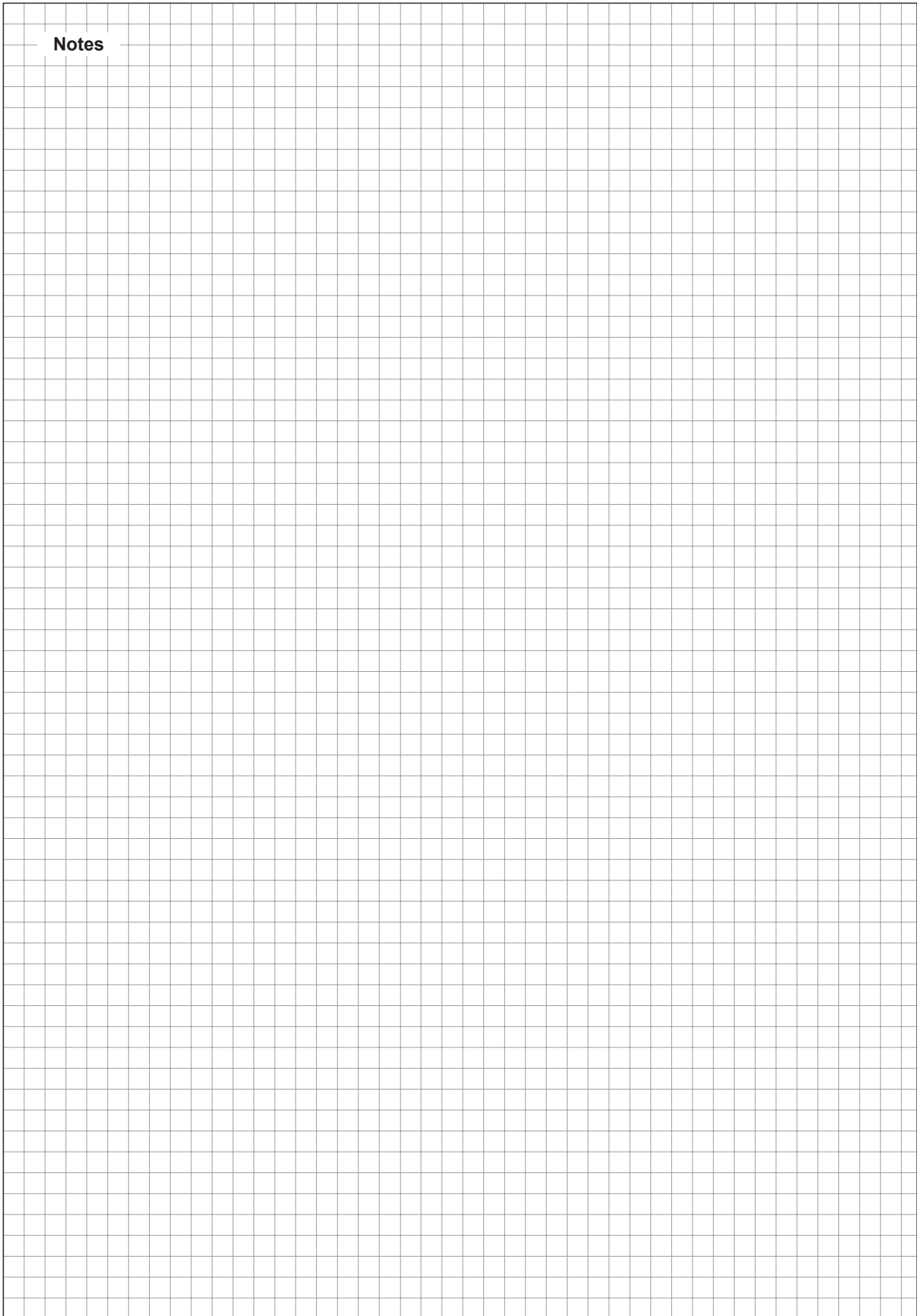
10.3 Connections/Dimensions/Weights

	Condair RM			
	2	4	6	8
Water supply connector	G 3/4" external thread			
Water drain connector	bottom drain: ø30 mm side drain (option): ø40 mm			
Steam outlet connector	ø29 mm			
Unit dimensions (HxBxT)	470 x 350 x 150			
Net weight	10.6 kg			
Operating weight	12.9 kg			

10.4 Certificates

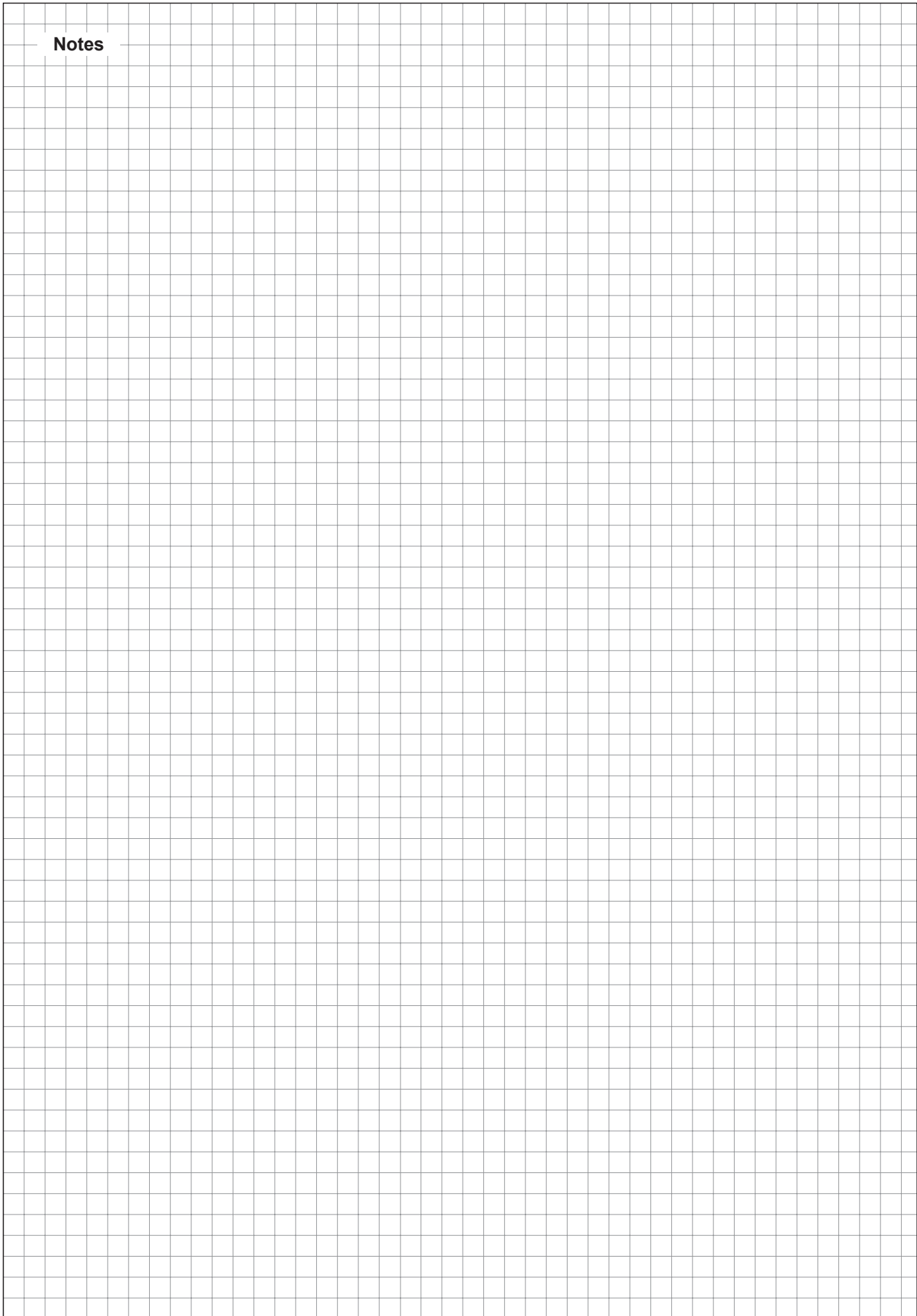
Certificates	CE, DVGW, VDE
--------------	---------------

Notes



Notes

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

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