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RS SERIES



Read and save these instructions.
This manual to be left with the equipment.

OPERATION MANUAL

Steam humidifier
Condair **RS II**

Humidification, Dehumidification
and Evaporative Cooling

condair

Thank you for choosing Condair

Installation date (MM/DD/YYYY):
Commissioning date (MM/DD/YYYY):
Site:
Model:
Serial number:

Contact

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1 Introduction

1.1 To the very beginning

We thank you for having purchased the **Condair RS steam humidifier**.

The Condair RS steam humidifier incorporates the latest technical advances and meets all recognized safety standards. Nevertheless, improper use of the Condair RS 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 RS 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 RS steam humidifier in its different versions. The various 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 RS 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 (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 caution symbol in the circle 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.

2 For your safety

General

Every person working with the Condair RS must have read and understood the Condair RS operation manual before carrying out any work.
Knowing and understanding the contents of the operation manual is a basic requirement for protecting personnel against any kind of danger, to prevent faulty operation, and to operate the Condair RS safely and correctly.

All icons, signs and markings applied to the components of the Condair RS 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 authorized by Condair.

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

The Condair RS 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, unless they are supervised by a person responsible for their safety or they received instructions on how to operate the system. Children must be supervised to make sure that they do not play with the Condair RS steam humidifier.

Intended use

The Condair RS steam humidifier is intended exclusively for **air humidification via a steam distributor or a blower pack approved by Condair within the 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 RS becoming dangerous and will void any warranty.
Operation of the equipment in the intended manner requires **that all the information contained in this operation manual are observed (in particular the safety instructions)**.

Danger that may arise from the Condair RS steam humidifier

DANGER!
Danger of electric hazard!

The Condair RS 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 RS out of operation as described in *chapter 4.5* (switch off the unit, disconnect it from the mains and stop the water supply) and secure the unit against inadvertent power-up.

WARNING!
Hot water vapour - Danger of scalding!

The Condair RS 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, blower pack, etc.). If the steam system is leaky set the Condair RS immediately out of operation as described in *chapter 4.5*. Correctly seal the steam system before putting the unit into operation again.

WARNING!
Danger of burning!

During operation the components of the steam system (steam cylinder, steam distributor, etc.) get very hot (up to 212 °F/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 RS out of operation as described in *chapter 4.5*, then wait until the components have cooled down sufficiently thus preventing danger of burning.

Preventing unsafe operation

If it is suspected that **safe operation is no longer possible**, the Condair RS should immediately **be shut down and secured against accidental power-up according to** *chapter 4.5*. This can be the case under the following circumstances:

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

All persons working with the Condair RS 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 RS without the express written consent of Condair.

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

Risk associated with steam bath

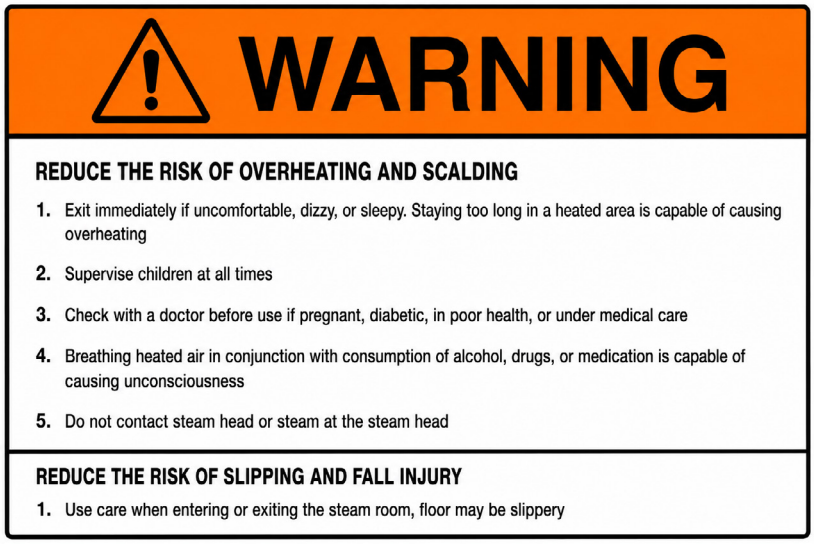
Hyperthermia occurs when the internal temperature of the body reaches a level several degrees above the normal body temperature of 98.6 °F. The symptoms of hyperthermia include an increase in the internal temperature of the body, dizziness, lethargy, drowsiness, and fainting. The effects of hyperthermia include:

– Failure to perceive heat;
– Failure to recognize the need to exit the steambath;
– Unawareness of impending risk;
– Fetal damage in pregnant women;
– Physical inability to exit the steambath; and
– Unconsciousness.

WARNING!

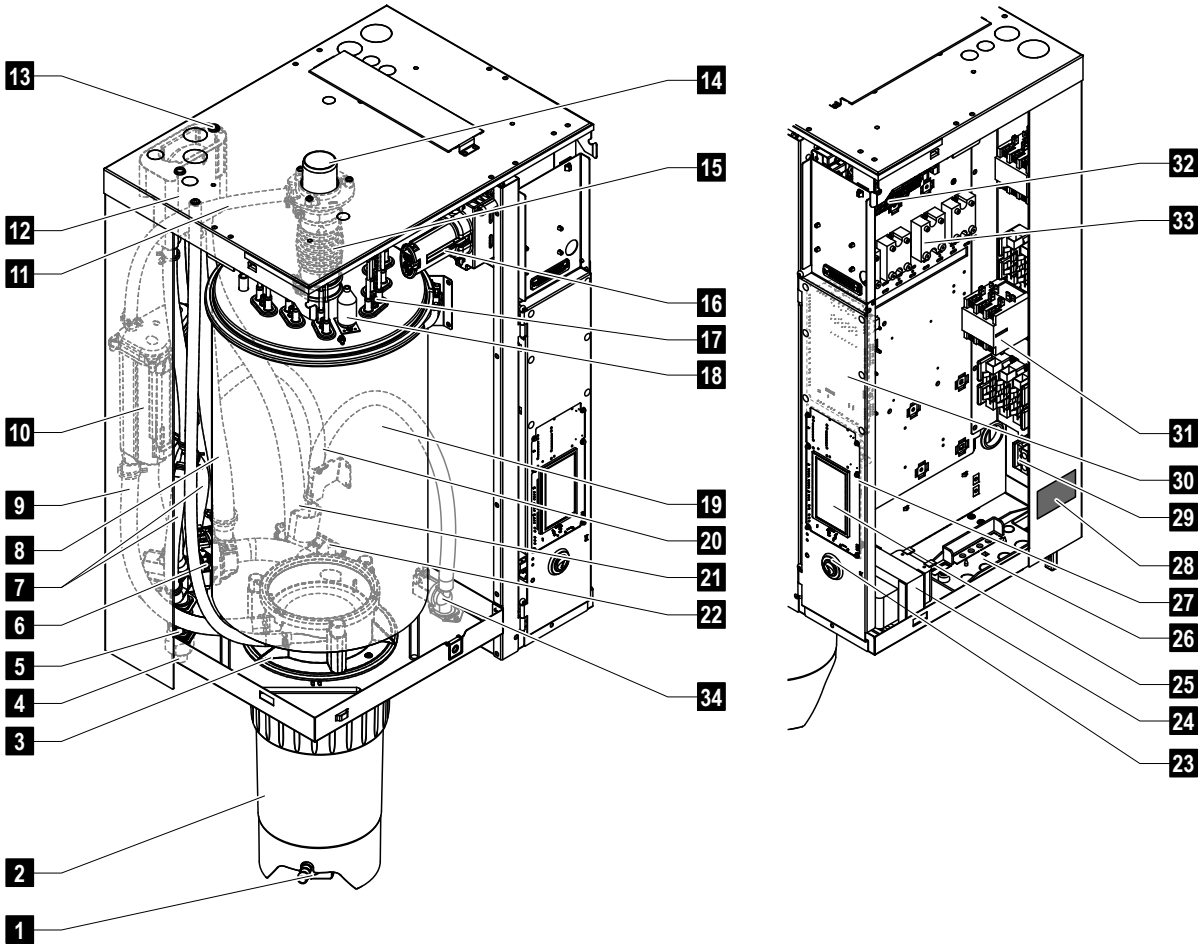
– The use of alcohol, drugs, or medication can greatly increase the risk of hyperthermia
– The wet surfaces of steam enclosures may be slippery. Use care when entering or leaving.
– The steam head is hot. Do not touch the steam head and avoid the steam near the steam head.
– Prolonged use of the steam system can raise excessively the internal human body temperature and impair the body's ability to regulate its internal temperature (hyperthermia).
– Limit your use of steam to 10 – 15 minutes until you are certain of your body's reaction.
– Excessive temperatures have a high potential for causing fetal damage during the early months of pregnancy. Pregnant or possibly pregnant women should consult a physician regarding correct exposure.
– Obese persons and persons with a history of heart disease, low or high blood pressure, circulatory system problems, or diabetes should consult a physician before using a steambath.
– Persons using medication should consult a physician before using a steambath since some medication may induce drowsiness while other medications may affect heart rate, blood pressure and circulation.

The safety label shown below (supplied) must be installed after installation of the Condair RS on the door or wall immediately adjacent to the door of the steam room.



3 Product Overview

3.1 Construction Condair RS steam humidifier



1 Scale collector tank drain valve (optional)
2 Scale collector tank (optional)
3 Coupling sleeve
4 Water supply connector (NPT 1/2")
5 Triple inlet valve with 2 supply valves and one drain water cooling valve (**Standard**) or dual inlet valve with 2 supply valves (with RS-RO option only)
6 Drain pump
7 Water supply hoses
8 Water filling and drain hose
9 Level hose
10 Level unit
11 Pressure equalizing hose
12 Fill cup
13 Condensate connector (to drain)
14 Steam connector 1.77" (ø45 mm)
15 Steam outlet hose
16 Heating cable plug
17 Heating elements
18 Excess temperature switch
19 Steam cylinder
20 Drain water cooling hose
21 Drain hose
22 Drain cup with drain connector 1.18" (ø30 mm)
23 Unit switch
24 Control voltage transformer
25 Touch screen display
26 Cable feed throughs
27 Control board
28 Specification label
29 Voltage supply terminals
30 Driver board
31 Heating contactor
32 Heating section terminals
33 Solid state relays (SSR's)
34 RS-RO option

Fig. 1: Construction Condair RS steam humidifier (figure shows medium sized unit)

3.2 Functional description

The Condair RS steam humidifier is an atmospheric steam generator. It operates on the resistance heating principle and is designed for direct room air humidification (with blower pack) and indirect humidification (with steam distributor) in ventilating and air-conditioning systems.

Water supply

On units operated with potable water the water is supplied via a (filter) valve (by others) to the steam humidifier. On units operated with RO water the water is supplied via the RO-E pure water system or equivalent.The supply water (potable water or RO-water) reaches the steam cylinder via the 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 cylinder 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 cylinder 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 between the steam connection and the level unit ensures that the water levels are the same in the steam cylinder and the level unit.

Steam generation regulation

The steam is produced in the steam cylinder by several resistance heating elements. Either an external, or the integrated continuous controller, control the steam production fully variably from 0 to 100 %.
Alternatively the Condair RS can be controlled also via an On/Off controller.

Flushing

The evaporation process increases the concentration of minerals in the water of the steam cylinder. A suitable volume of water must be flushed out of the steam cylinder 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 RS consists of the following two forms of flushing:

– **Automatic flushing** takes place as soon as the water in the steam cylinder exceeds the upper operating level (e.g. by foaming of the water).
– **Flushing dependent on time** performs the flushing process at preselected time intervals.

Automatic or time-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 cylinder has reached the normal working level again. If the lowest operating level is not reached, the inlet valve is closed.

Drain water cooling

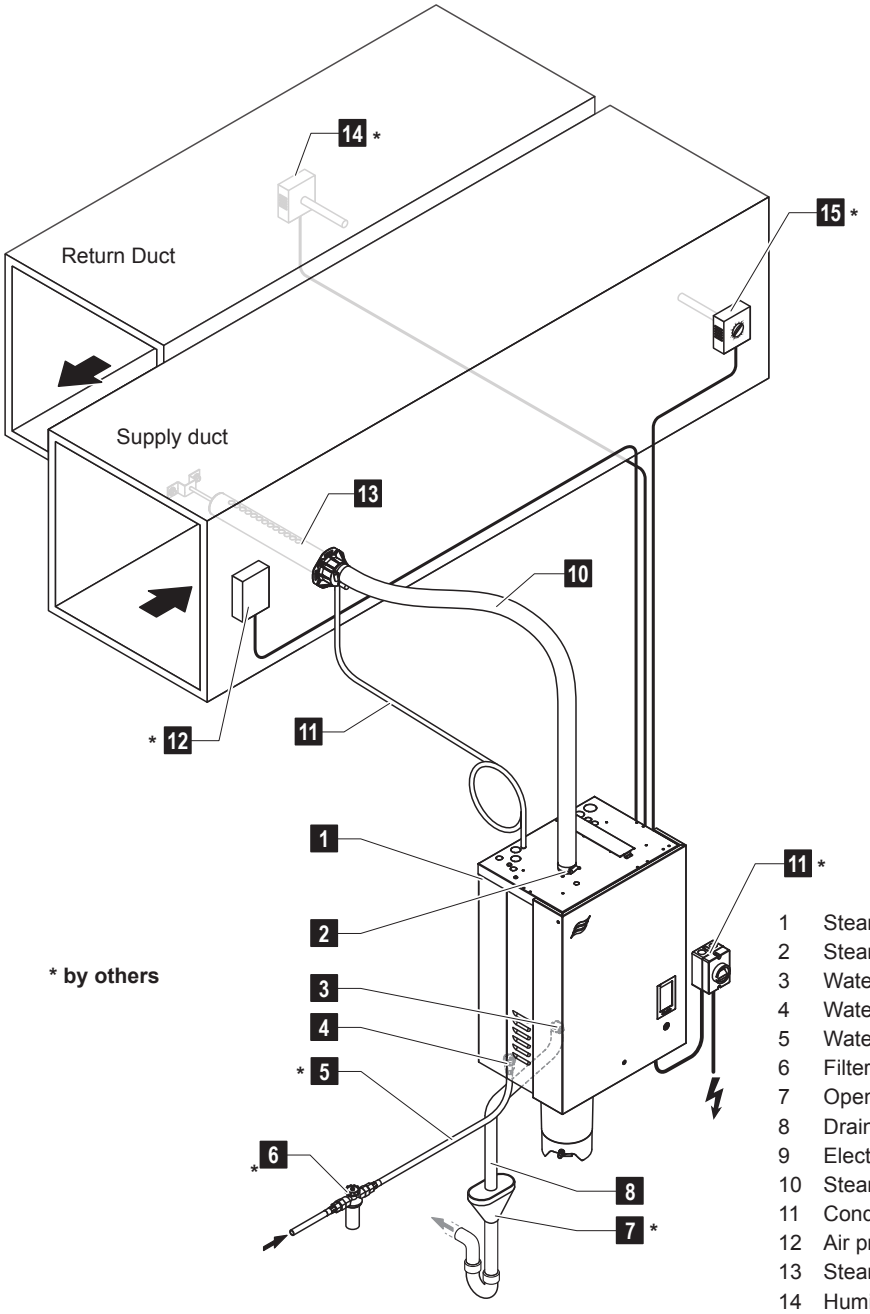
For units operated with potable water the drain water is cooled down via the triple inlet valve. On units equipped with the RS-RO option the drain water is cooled down via an additional potable water supply connected to the optional secondary inlet valve.

Scale collector tank

The minerals precipitated by the evaporation process sink down in the steam cylinder and accumulate in the scale collector tank, thus extending the service intervals and reducing the maintenance work.

Units designed for operation with water from a RO system or with de-ionized water do not require a scale collector tank as RO water and de-ionized water contains only small amounts of minerals.

3.3 System overview Condair RS for duct humidification

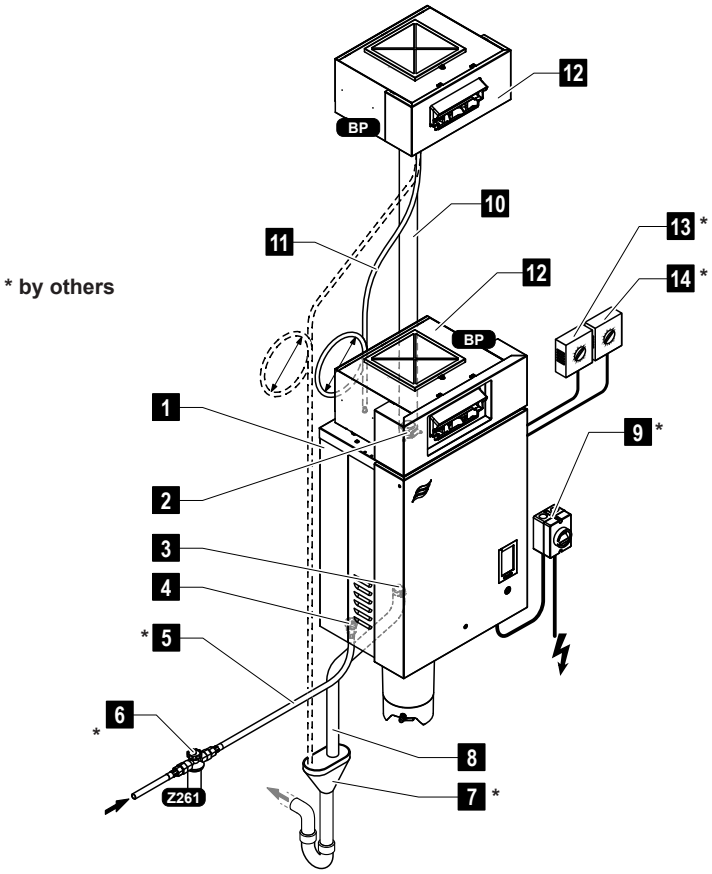


1 Steam humidifier
2 Steam outlet connector
3 Water drain connector
4 Water supply connector
5 Water supply line
6 Filter valve (recommended)
7 Open funnel with water trap
8 Drain hose (supplied)
9 Electrical isolator voltage supply
10 Steam line
11 Condensate line
12 Air proving switch
13 Steam distributor
14 Humidity controller or humidity sensor
15 High limit humidistat

Fig. 2: System overview Condair RS for duct humidification

Note: For units equipped with RS-RO option, refer to *Fig. 4*.

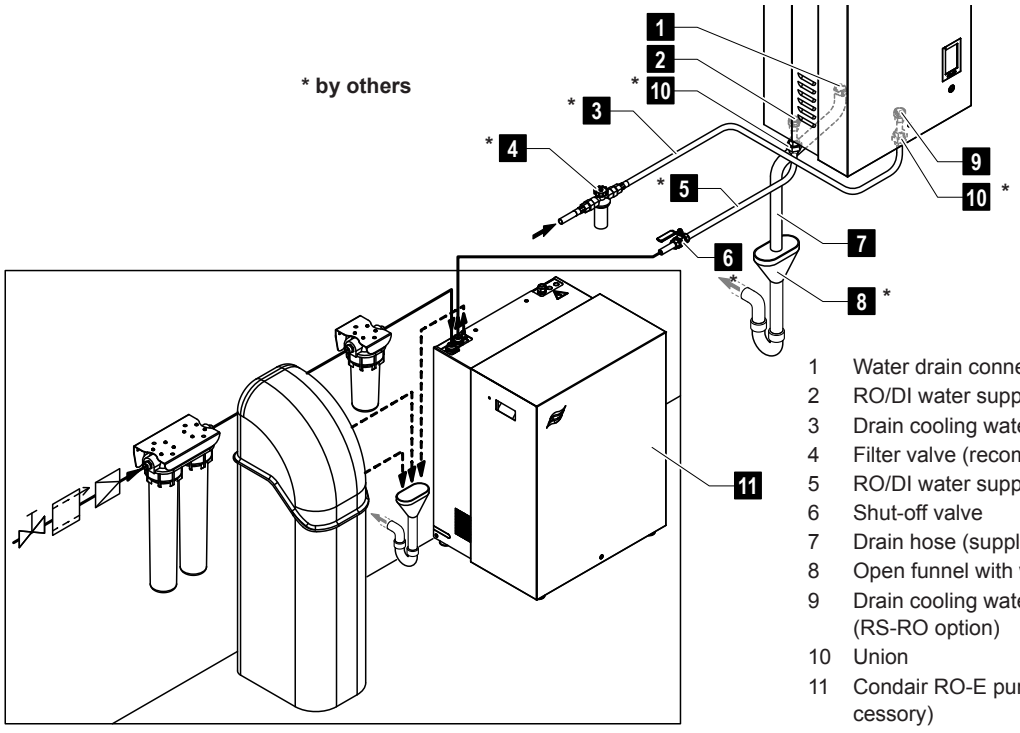
3.4 System overview Condair RS for direct room humidification



1 Steam humidifier
2 Steam outlet connector
3 Water drain connector
4 Water supply connector
5 Water supply line
6 Filter valve (recommended)
7 Open funnel with water trap
8 Drain hose (supplied)
9 Electrical isolator voltage supply
10 Steam line
11 Condensate line
12 Blower Pack
13 Humidity controller or humidity sensor
14 High limit humidistat

Fig. 3: System overview Condair RS for direct room humidification (blower pack shown in "built on" and "remote" configurations)

Note: For units equipped with RS-RO option, refer to *Fig. 4*.



1 Water drain connector
2 RO/DI water supply connector
3 Drain cooling water supply line
4 Filter valve (recommended)
5 RO/DI water supply connector
6 Shut-off valve
7 Drain hose (supplied)
8 Open funnel with water trap
9 Drain cooling water supply connector (RS-RO option)
10 Union
11 Condair RO-E pure water system (Accessory)

Fig. 4: Water supply connections for units installed with RS-RO option

4 Operation

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

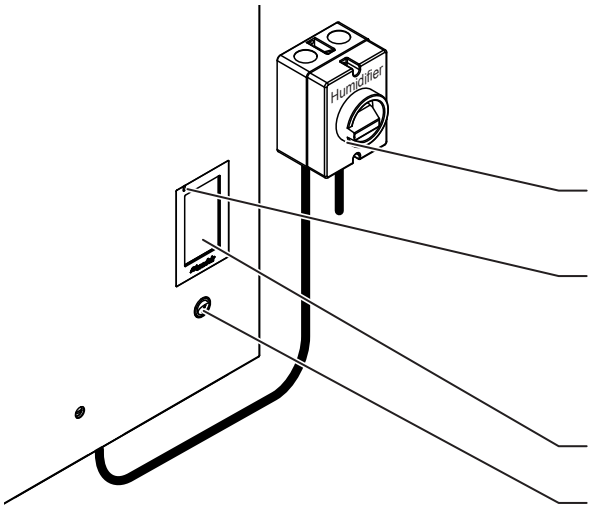
4.1 First-time commissioning

The first-time commissioning must always be done by a service technician of your Condair representative or a well trained and authorized 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 the water supply line(s).
- Configuring the control or the Condair RS, respectively.
- Carrying out test runs including checking of the control and monitoring devices.
- Filling in the commissioning protocol.

4.2 Display and operating elements



External electrical isolator for mains voltage supply (not included in the delivery, must be installed in the mains supply line by client)

Status LED
– green: Condair RS is humidifying
– green pulsing: Condair RS is in standby operation
– yellow: Warning present or maintenance due
– red: Fault present

Touchscreen

Unit switch

Fig. 5: 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 RS. **Therefore, before opening the unit the steam humidifier must be always separated from the mains supply via the electrical isolator.**

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 RS has been configured accordingly.

1. When putting the steam humidifier into operation the first time or 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. To do this proceed as follows:
   - Remove the front door (on the steam cylinder side) of the Condair RS.
   - Undo the upper hose clamp of the steam hose in the unit with a screwdriver and pull the hose down to remove it from the steam connection.
   - Start up the ventilation system and check whether the pressure on the open steam connector corresponds to the pressure in the ventilation system.

   DANGER!

   A steam line that is reduced in cross section or completely closed will cause an excessive increase in pressure in the steam cylinder when the unit is operating and could lead to the risk of scalding accidents!

   Therefore: If no draught or only a slight one can be detected the steam line must be checked for blockages and reductions in cross section before continuing with commissioning and you must ensure that the steam line is open across the entire length and through the whole cross section.
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. Mount side panels and front door(s) of the unit and lock front door(s).
4. Open the filter valve / shut-off valve in the water supply line(s).
5. If applicable: Start RO-E pure water system according to the separate Condair RO-E installation and operation manual.
6. Switch on the electrical isolators in the mains supplies (heating and control voltage).
7. Switch on the unit switch of the steam humidifier.

   The steam humidifier carries out an automatic system test (initializing). If a fault is detected during the function check on the level unit, a corresponding fault message is shown *chapter 7.2*).

   If the initialization is successful, the steam cylinder fills up and a function check on the level unit is carried out. If a fault is detected during the function check on the level unit, a corresponding fault message is shown (see *chapter 7.2*).

   If the function check on the level unit is successful, the Condair RS will be in **normal operating mode** and the **home screen** is shown. The heating current switches on as soon as the humidity controller/ humidistat **demands humidity**. The LED lights green and steam is produced after a short delay.

Note: Further information on the operation of the Condair RS control software can be found in *Section 5*.

4.4 Notes on operation

4.4.1 Inspections during operation

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

- the water and steam installation for any leakage.
- the steam 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 RS out of operation as described in *chapter 4.5*. Then, contact your Condair representative.

4.4.2 Remote operating and fault indication

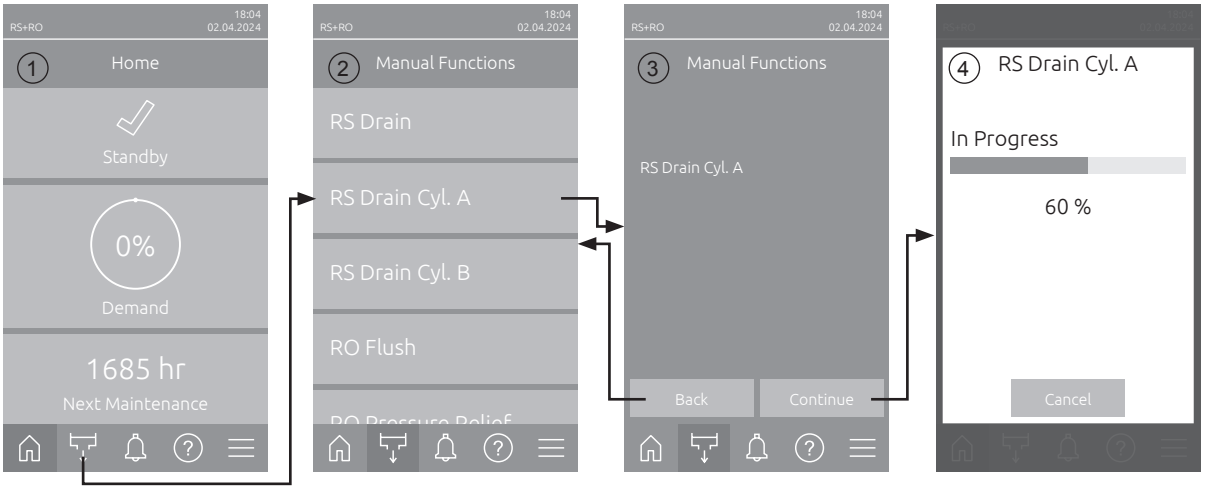
Via the relays on the optional operating and fault indication board the following operating status are indicated:

Activated remote indication relay	**When?**
"Error"	An error is present, operation is stopped, or further operation is possible for a limited period of time only.
"Service"	The control software has detected that the small or the large maintenance is due. The unit must be serviced according to the maintenance section in this manual (see *chapter 6*).
"Running"	Demand present/humidification
"Unit on"	The humidification system is switched on and under voltage
"Furnace"	This relay is activated when the optional "Furnace Fan" is in operation. Note: Requires that the optional "Furnace Fan" is activated and configured in the Condair RS control software.

4.4.3 Draining the steam cylinder(s)

Note: Depending on the steam humidifier model you can drain an individual steam cylinder (A or B) or both steam cylinder at the same time.

To perform a draining of the steam cylinder(s) proceed as follows:



1. Press on the **<Manual Functions>** button in the home screen (1).
2. The "Manual Functions" menu (2) appears. Here, press on the desired drain function button **<RS Drain>**, **<RS Drain Cyl. A>** or **<RS Drain Cyl. B>**.
   Note: The buttons **<RS Drain>** and **<RS Drain Cyl. B>** appear only on large and double units. With the **<RS Drain>** button you can drain both steam cylinders at the same time.
3. The confirmation display of the selected drain function appears (3). Here, press on the **<Continue>** button to start the selected drain function. A possible running humidification process is interrupted, then the drain pump starts and empties the steam cylinder(s).
4. The drain progress display appears (4) and shows the current status of the drain cycle. After drain cycle has finished the home screen is shown again.

   In order to stop the drain cycle, press the **<Cancel>** button in the drain progress window. The drain cycle is stopped, and the home screen is shown again.
5. If you have to carry out work on the Condair RS, switch off steam humidifier via the unit switch. Otherwise the steam cylinder(s) is/are immediately filled again.

Note: If the Condair RS is operated together with a Condair RO-E pure water system, further RO-E specific functions are available in the "Manual functions" menu. Please refer to the operating instructions for the Condair RO-E pure water system.

4.5 Taking the unit out of operation

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

1. Close the shut-off valve in the water supply line.
2. If applicable: Stop the RO-E pure water system according to the separate Condair RO-E installation and operation manual.
3. If you have to carry out maintenance work on the steam cylinder and/or on the scale collector tank perform a cylinder draining (see *chapter 4.4.3*).
4. Switch off unit switch of the steam humidifier.
5. **Disconnect steam humidifier 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.
6. If you have to carry out maintenance work on the steam cylinder, empty the scale collector tank via the drain valve.

WARNING!
Danger of burning!

The temperature of the water in the scale collector tank can be up to 203 °F (95 °C).

Therefore: wear isolating gloves and open the drain valve carefully.

If no water flows out from the open drain valve, the drain inside the scale collector tank is clogged and the scale collector tank may not be emptied. If this is the case, wait until the temperature indication adhesive on the scale collector tank indicates a temperature below "<122 °F" (<50°C) before dismantling the tank (since the scale collector tank is filled with water).

5 Operating the Condair RS control software

5.1 Home screen

After switching on the Condair RS and the automatic system test has been passed the Condair RS is in normal operating mode and the home screen is shown.
Note: The appearance of the home screen depends on the current device and error status and the configuration of the humidity/temperature control of the system. It can deviate from the display shown below.

The home screen is structured as follows:

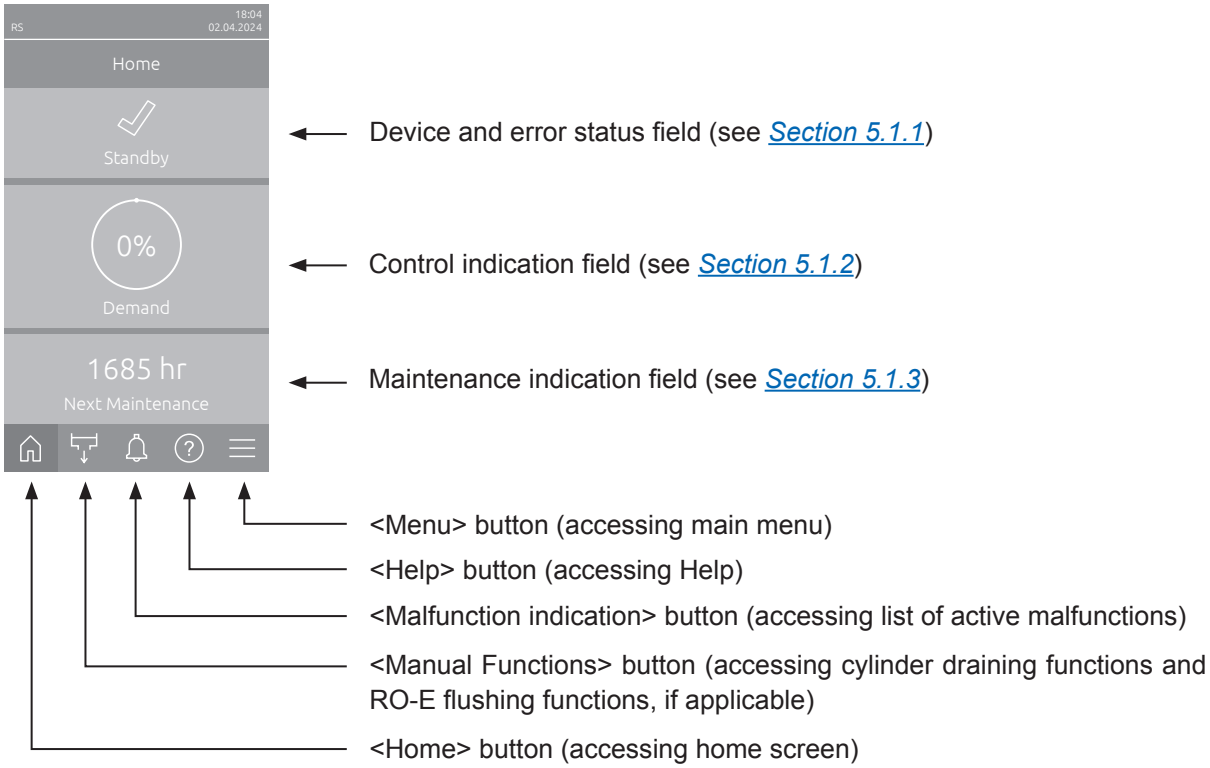
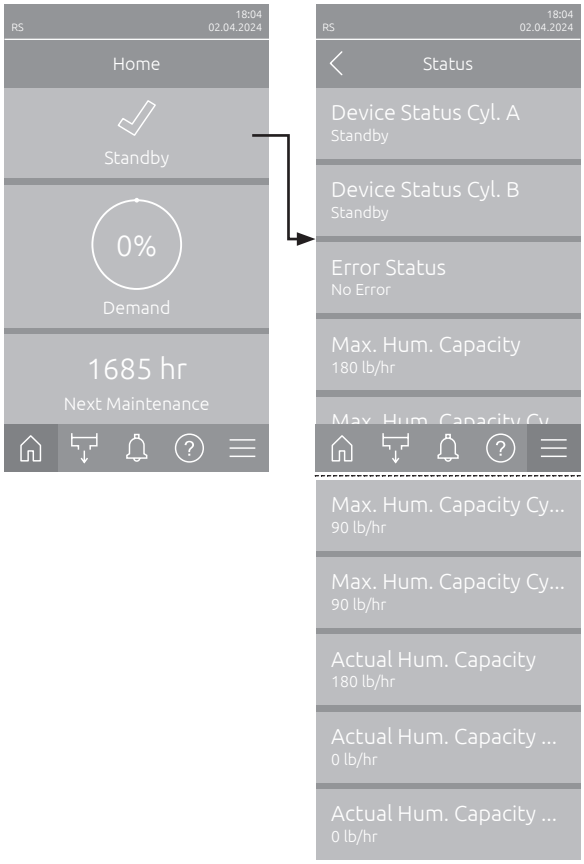


Fig. 6: Home screen

5.1.1 Device and error status indication field

If you press the device and error status field in the home screen, a window appears with further information on the device and error status.



- **Device Status Cyl. A/B**: Shows the current status of steam cylinder A and B of the Condair RS.
  Note: Device Status Cyl. B only appears on large and double units.
- **Error Status**: Shows the current error status ("No Error", "Warning" or "Error").
- **Max. Hum. Capacity**: Shows the maximum humidification output of the Condair RS in lb/hr.
- **Max. Hum. Capacity Cyl. A/B**: Shows the maximum humidification output of steam cylinder A/B of the Condair RS in lb/hr.
  Note: Max. Hum. Capacity Cyl. B only appears on large and double units.
- **Actual Hum. Capacity**: Shows the current humidification output of the Condair RS in lb/hr.
- **Actual Hum. Capacity Cyl. A/B**: Shows the current humidification output of steam cylinder A/B of the Condair RS in lb/hr.
  Note: Actual Hum. Capacity Cyl. B only appears on large and double units.

The following error status symbols may be shown:

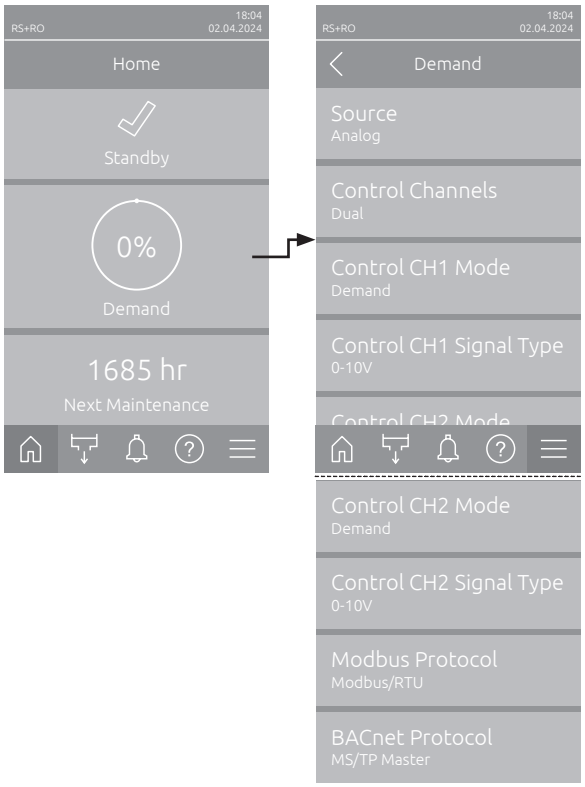
Error status symbol	Description
	The Condair RS works perfectly.
	Indication that a "Warning" has occurred.
	Indication that an "Error" has occurred. Depending on the error, the operation of the Condair RS is stopped, or it continues to work to a limited extent.

The following device status indications may appear:

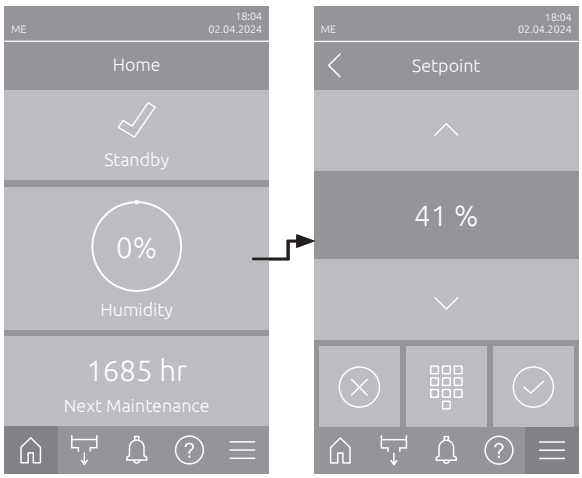
Device status	Description
Initializing	The control is initializing.
Stopped	The Condair RS was stopped due to a malfunction that makes it impossible to continue operation.
Standby	No humidity demand for more than 60 minutes the Condair RS is in standby mode.
Humidifying	The Condair RS is producing steam (humidifying).
Draining	The Condair RS is draining the steam cylinder.
Filling	The Condair RS is filling the steam cylinder.
Keep Warm	The Condair RS is in standby mode and the keep warm function is activated
Level Test	The Condair RS is performing a float check of the level unit.
Softstart	The Condair RS is starting with reduced power.
Remote Off	The Condair RS was stopped via the external enable switch.

5.1.2 Control indication field

If you press the control indication field in the home screen, a window appears with further information on humidity control (control mode: "On/Off" or "Demand") or the humidity setpoint input (control mode: "RH P" or "RH PI"), depending on the current control mode.



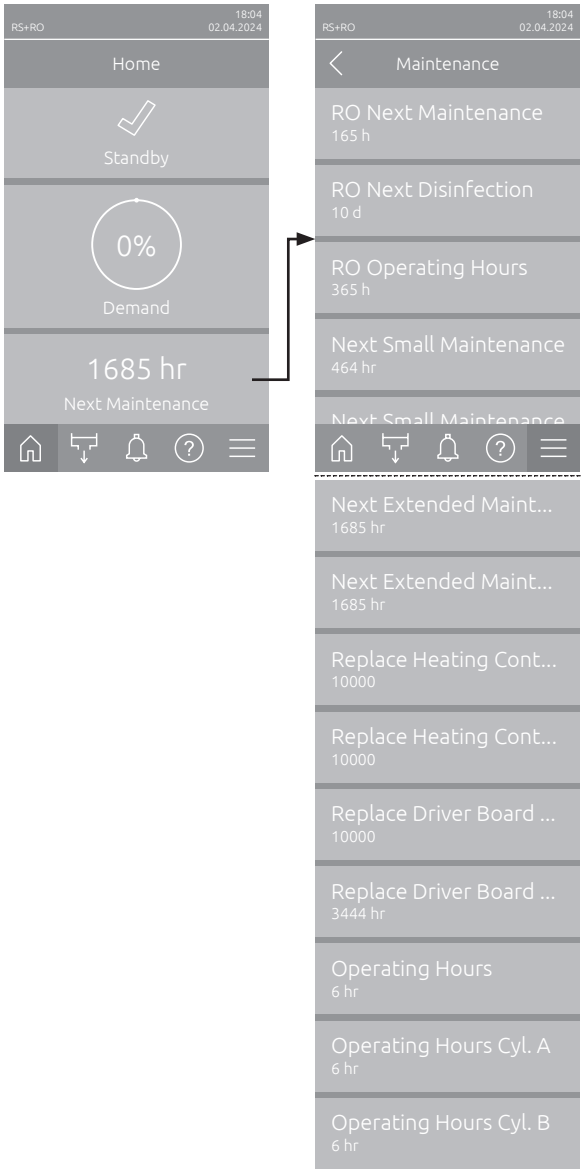
- **Source**: Shows the source of the control signal ("Analog", "Modbus", "BACnet" or "IoT").
- **Control Channels**: Shows whether the Condair RS is controlled with a control signal only ("Single") or a control and a limiter signal ("Dual").
- **Control CH1 Mode**: Shows the current control mode of control channel 1 ("On/Off", "Demand", "RH P" or "RH PI").
- **Control CH1 Signal Type**: Shows the type of control signal used for control channel 1.
  Note: This setting only appears if signal source is set to "Analog".
- **Control CH2 Mode**: Shows the current control mode of control channel 2 ("On/Off", "Demand", "RH P" or "RH PI").
- **Control CH2 Signal Type**: Shows the type of control signal used for control channel 2.
  Note: This setting only appears if signal source is set to "Analog".
- **Modbus Protocol**: Shows the selected Modbus protocol or whether the Modbus communication is switched off.
  Note: This setting appears if signal source is set to "Modbus".
- **BACnet Protocol**: Shows the selected BACnet protocol or whether the BACnet communication is switched off.
  Note: This setting appears if signal source is set to "BACnet".



- **Setpoint**: Setting of the desired humidity setpoint value in %rh.

5.1.3 Maintenance indication field

If you press the Maintenance indication field in the home screen, a window appears with further information on maintenance.



- **RO Next Maintenance** [1]: Shows the remaining time in hours until the next maintenance of the Condair RO-E is due.
- **RO Next Disinfection** [1]: Shows the remaining time in days until the next disinfection of the Condair RO-E unit is due.
- **RO Operating Hours** [1]: Shows the number of operating hours of the Condair RO-E since initial commissioning.
- **Next Small Maintenance Cyl. A/B** [2]: Shows the remaining time in hours until the small maintenance of steam cylinder A/B of the Condair RS is due.
- **Next Extended Maintenance Cyl. A/B** [2]: Shows the remaining time in hours until the extended maintenance of steam cylinder A/B of the Condair RS is due.
- **Replace Heating Contactor Cyl. A/B in** [2]: Shows the remaining switching cycles until the heating contactor 1 of the steam cylinder A/B of the Condair RS must be replaced.
- **Replace Driver Board Cyl. A/B in** [2]: Shows the remaining remaining switching cycles until the driver board of the steam cylinder A/B of the Condair RS must be replaced.
- **Operating Hours**: Shows the number of operating hours of the Condair RS since initial commissioning.
- **Operating Hours Cyl. A/B** [2]: Shows the number of operating hours of steam cylinder A/B of the Condair RS since initial commissioning.

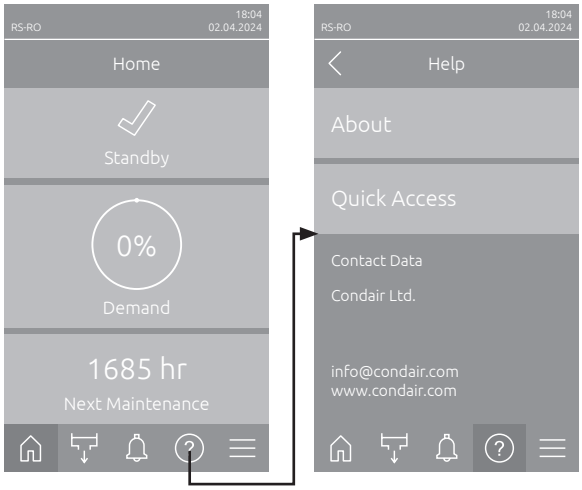
[1] These parameters only appear if the optional Condair RO-E pure water system is installed and activated in the Engineering level of the control software.

[2] The respective parameters for "Cylinder B" only appear large units with two steam cylinders.

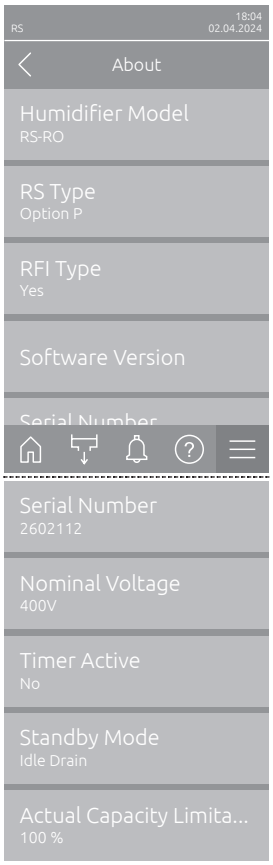
5.2 Information functions in the "Help" Menu

5.2.1 Accessing the "Help" menu

Press the <Help> button in the home screen. The help menu with the contact details appears.



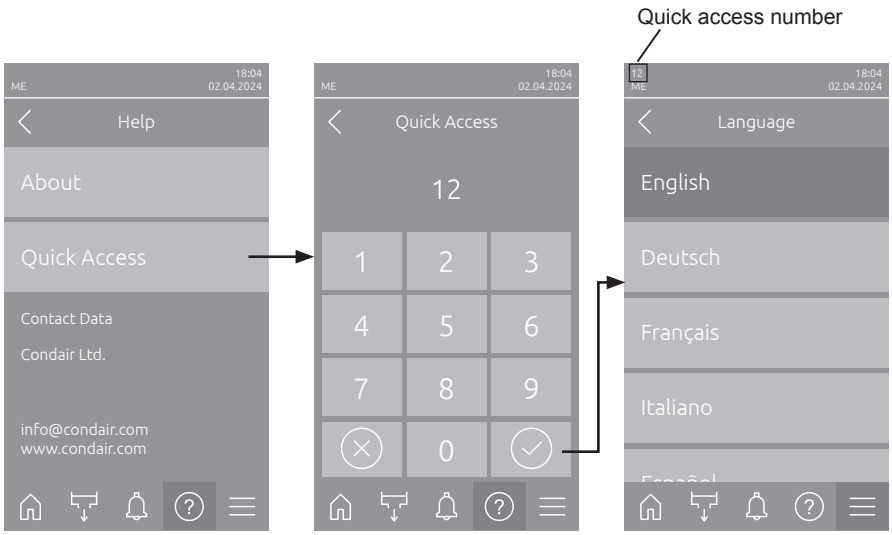
5.2.2 Query operating states in the "About" submenu



- **Humidifier Model**: Shows the humidifier model selected ("RS" = Condair RS only or "RS-RO" = Condair RS with optional Condair RO-E pure water system).
- **RS Type**: Shows that Condair RS is configured as process unit ("Option P").
- **RFI Type**: Shows whether the optional remote operating and fault indication board is installed and activated ("Yes") or not ("No").
- **Software Version**: Actual software versions of the control board ("Device FW Version" and "Bootloader FW Version") and driver boards ("Driver Board Cyl. A", "Driver Board Cyl. B" (if applicable) and "RFI Board").
- **Serial Number**: Shows the serial number of the Condair RS.
- **Nominal Voltage**: Shows the nominal heating voltage of the Condair RS.
- **Timer Active**: Shows the whether timer controlled operation is active ("Yes") or not ("No").
- **Standby Mode**: Shows the currently selected standby mode ("Idle Drain", "Keep Warm" or "Standby").
- **Actual Capacity Limitation**: Shows the currently set capacity limitation in % of the maximum capacity of the Condair RS.

5.2.3 Quick access to setting parameters in the "Quick Access" submenu

Press the <Quick Access> button in the "Help" menu. Then enter the quick access number of the desired setting parameter. You will find this number in the top left corner in the setting window of the corresponding parameter. Confirm the entry and the setting dialog for the corresponding parameter appears.
Note: If the parameter is password protected, after entering the quick access number, the password "8808" must first be entered before the setting dialog for the parameter appears.

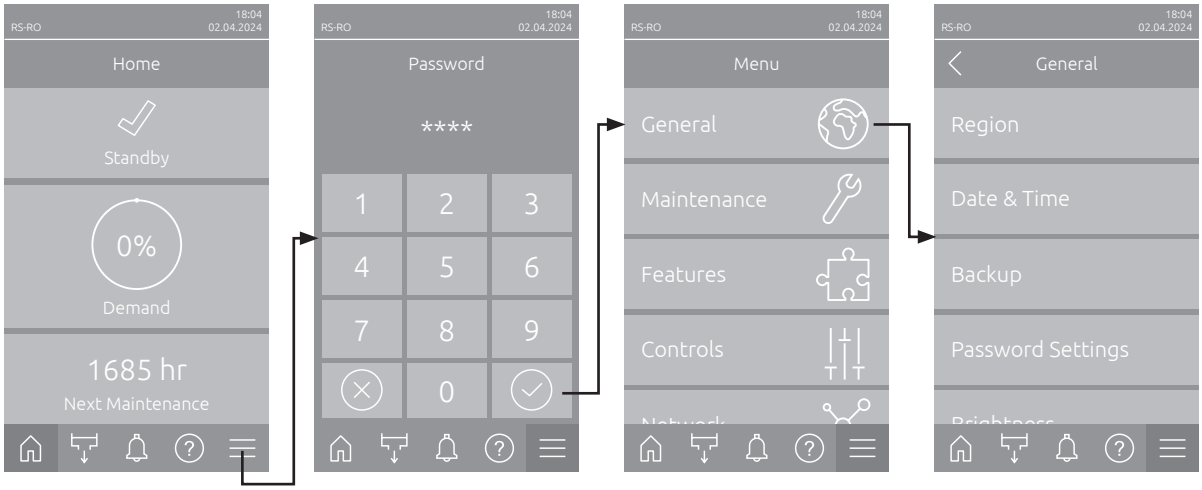


5.3 Configuration

5.3.1 Settings and features in the "General" submenu

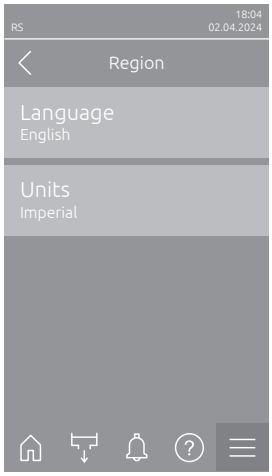
5.3.1.1 Accessing the "General" submenu

Access the "General" submenu as shown below.



Password: **"8808"**

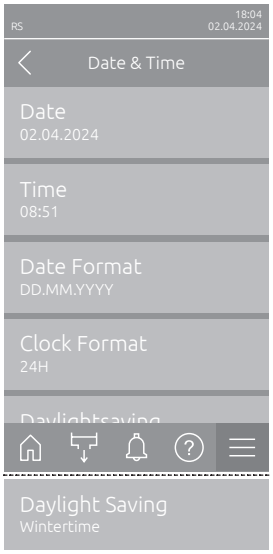
5.3.1.2 Determine language and system of units in the "Region" submenu



– **Language**: With this setting you determine the language.
  Factory setting: **depending on the country**
  Options: **different languages**
– **Units**: With this setting you determine the desired unit system.
  Factory setting: **depending on the country**
  Options: **Metric** or **Imperial**

5.3.1.3 Date and time settings in the "Date & Time" submenu

Note: The date and time must be entered correctly, as these are used for the entries in the malfunctions and maintenance history list.



– **Date**: With this setting you determine the current date in the set format ("MM/DD/YYYY" or "DD.MM.YYYY").
  Factory setting: **01.01.2020**
– **Time**: With this setting you set the current hour of the day in the set time format ("12H" or "24H").
  Factory setting: **12**:**00**
– **Date Format**: With this setting you determine the desired date format.
  Factory setting: **DD.MM.YYYY**
  Options: **DD.MM.YYYY** or **MM/DD/YYYY**
– **Clock Format**: With this setting you determine the desired time format.
  Factory setting: **24H**
  Options: **24H** (24 hours, display 13:35) or
  12H (12 hours, display: 01:35 PM)
– **Daylight Saving**: With this setting you determine the daylight saving time summer time / winter time).
  Factory setting: **Wintertime**
  Options: **Summertime** or **Wintertime**

5.3.1.4 Read in parameter settings in the "Backup" submenu



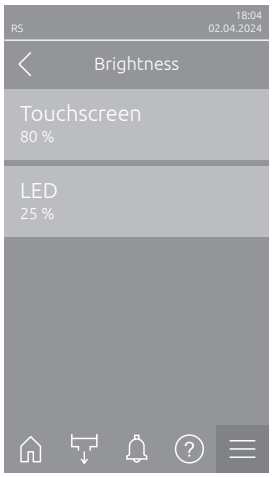
– **Load Parameters from USB**: With this function you can read in parameter settings that were previously saved on a FAT32 formatted USB stick. To do this, the USB stick with the parameter settings must be inserted into the USB interface on the control board. After pressing the selection field, a confirmation dialog appears in which you have to confirm the loading of the parameter settings again.

5.3.1.5 Activate/Deactivate password protection in the "Password Settings" submenu



– **Password Protection**: With this function you can protect the access to the main menu with the user password "**8808**" against unauthorized access ("On") or not ("Off").
  Factory setting: **On**
  Options: **Off** or **On**

5.3.1.6 Set the brightness of the touchscreen and the LED in the "Brightness" submenu

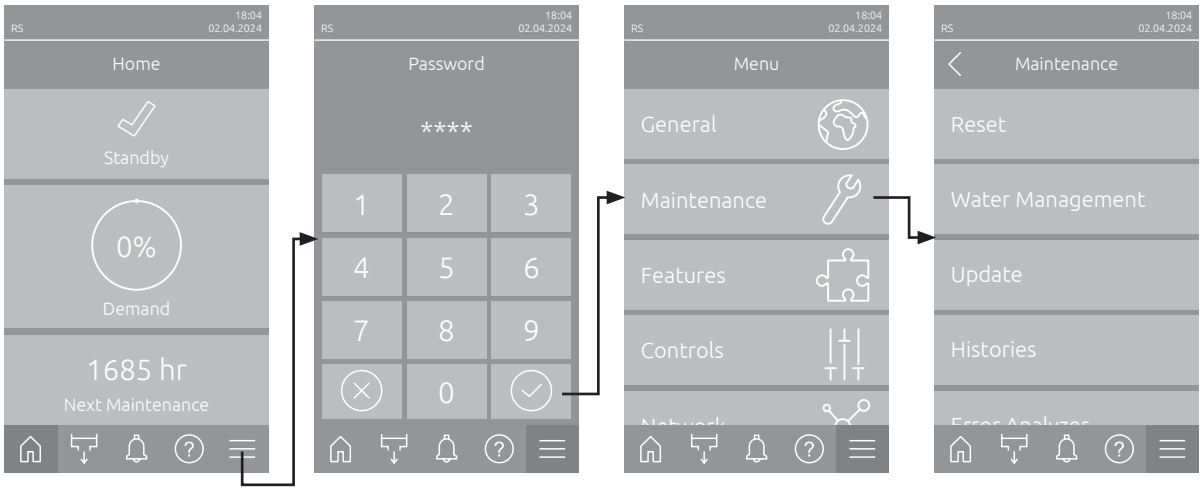


– **Touchscreen**: With this setting you determine the desired value for the display brightness.
  Factory setting: **80 %**
  Settings range: **15 ... 100 %**
– **LED**: With this setting you determine the desired value for the brightness of the status LED.
  Factory setting: **25 %**
  Settings range: **25 ... 100 %**

5.3.2 Settings and features in the "Maintenance" submenu

5.3.2.1 Accessing the "Maintenance" submenu

Access the "Maintenance" submenu as shown below.



Password: **"8808"**

5.3.2.2 Reset functions in the "Reset" submenu



- **Small Maintenance Cyl. A Reset**: With this function you can reset the maintenance counter for the small maintenance of steam cylinder A after the maintenance has been carried out. After pressing the selection field, a confirmation dialog appears in which you have to confirm the reset again.
- **Extended Maintenance Cyl. A Reset**: With this function you can reset the maintenance counter for the extended maintenance of steam cylinder A after the maintenance has been carried out. After pressing the selection field, a confirmation dialog appears in which you have to confirm the reset again.
- **Small Maintenance Cyl. B Reset**: With this function you can reset the maintenance counter for the small maintenance of steam cylinder B after the maintenance has been carried out. After pressing the selection field, a confirmation dialog appears in which you have to confirm the reset again. Note: This menu item only appears on double devices and large devices with two steam cylinders.
- **Extended Maintenance Cyl. B Reset**: With this function you can reset the maintenance counter for the extended maintenance of steam cylinder B after the maintenance has been carried out. After pressing the selection field, a confirmation dialog appears in which you have to confirm the reset again.
  Note: This menu item only appears on double devices and large devices with two steam cylinders.
- **Error/Warning Reset**: With this function you can reset pending errors/ warnings after eliminating the malfunction(s). After pressing the selection field, a confirmation dialog appears in which you have to confirm the reset again. The Condair RS then restarts.

– **Reset Settings**: With this function you can reset the parameter setting values of the control software to the last saved values. After pressing the selection field, a confirmation dialog appears in which you have to confirm the reset again.

5.3.2.3 Settings in the "Water Management" submenu



– **Water Mode**: With this setting you determine whether the flushing interval time and the maintenance interval time for the small and the extended maintenance are calculated automatically on the basis of parameters water quality and water hardness (Setting: "Calculated") or whether the flushing interval time and the maintenance interval time for the small and the extended maintenance can be set manually (Setting: "Manual").

  Factory setting: **Manual**
  Options: **Manual** or **Calculated**

The following settings appear only, if **"Water Mode"** is set to **"Manual"**.
Note: The settings for the parameters to be selected depend on the supply water quality and the steam capacity of the unit and must be set in accordance with the following table. It may have to be adapted to the actual circumstances during operation.



– **Maintenance Mode**: With this parameter you can set the maintenance mode for the Condair RS ("Small+Extended" or "Extended").

  Factory setting: **Small+Extended**
  Options: **Small+Extended** or **Extended**

– **Interval Small Maintenance**: With this parameter you can set the maintenance interval for the small maintenance in hours.
  Note: This parameter only appears if the "Maintenance Mode" is set to "Small+Extended".

  Factory setting: **600 hr**
  Setting range: **100 ... 3000 hr**

– **Interval Extended Maintenance**: With this parameter you can set the maintenance interval for the extended maintenance in hours.

  Factory setting: **1200 hr**
  Setting range: **100 ... 6000 hr**

– **Reduction**: With this setting you can activate ("On") or deactivate ("Off") the automatic water reduction function.
  CAUTION: Deactivating the water reduction function when using drinking water can lead to heavy scaling of the steam cylinder!

  Factory setting: **On**
  Options: **On** or **Off**

– **Reduction Interval Time**: With this setting you determine the interval time in minutes for the automatic flushing cycle.
  Note: This setting only appears if the "Reduction" function is activated ("On").

  Factory setting: **dependent on the steam capacity**
  Setting range: **5 ... 720 minutes**

– **Float Check Time**: With this setting you determine the time of day when the daily float check will be performed.
  Note: This parameter only appears if the "Daily Float Check" function in the Engineering level is activated ("On").

  Factory setting: **23:59**
  Setting range: **00:00 - 23:59**

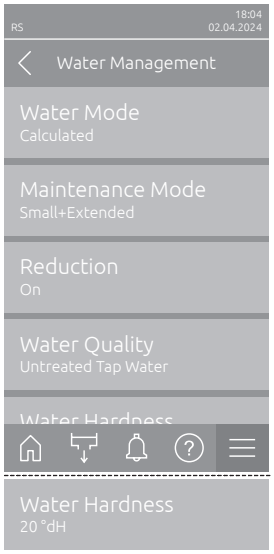
Standard settings dependent on the water quality

Steam capacity	Water reduction time		
	Potable water *	RO water **	DI water ***
10.0 (4.5)	120 min	180 min	360 min
15.0 (6.8)	60 min	180 min	360 min
20.0 (9.0)	60 min	180 min	360 min
30.0 (13.6)	30 min	180 min	360 min
45.0 (20.4)	20 min	180 min	360 min
65.0 (29.5)	10 min	180 min	360 min
90.0 (40.8)	10 min	180 min	360 min
130.0 (59.0)	10 min	180 min	360 min
180.0 (81.6)	10 min	180 min	360 min

Maintenance interval time			
Small Maintenance		Extended Maintenance	
Potable water *	RO water ** DI water ***	Potable water *	RO water ** DI water ***
800 h	3000 h	1600 h	3000 h
750 h	3000 h	1500 h	3000 h
750 h	3000 h	1500 h	3000 h
700 h	3000 h	1400 h	3000 h
600 h	3000 h	1200 h	3000 h
500 h	3000 h	1500 h	3000 h
400 h	3000 h	1200 h	3000 h
500 h	3000 h	1500 h	3000 h
400 h	3000 h	1200 h	3000 h

* The default settings for untreated potable water refer to a water hardness of 210 ppm (12 °dH or 12.5 grains/gal, respectively).
** Default settings for water from a reverse osmosis system (RO water) >5 ... ≤ 30 µS/cm
*** Default settings for de-ionized water (DI water) ≤ 5 µS/cm

The following settings appear only, if **"Water Mode"** is set to **"Calculated"**.
Important: the water quality and the water hardness of the supply water must be known. Using wrong values for these two parameters may lead to increased maintenance work and operating malfunctions.



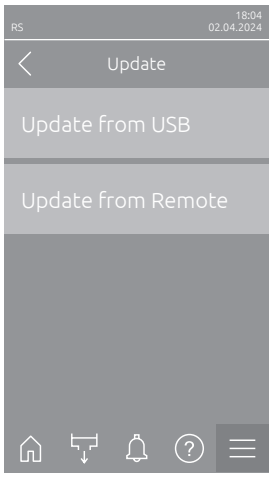
– **Maintenance Mode**: With this parameter you can set the maintenance mode for the Condair RS ("Small+Extended" or "Extended").
  Factory setting: **Small+Extended**
  Options: **Small+Extended** or **Extended**

– **Reduction**: With this setting you can activate ("On") or deactivate ("Off") the automatic water reduction function.
  CAUTION: Deactivating the water reduction function when using drinking water can lead to heavy scaling of the steam cylinder!
  Factory setting: **On**
  Options: **On** or **Off**

– **Water Quality**: With this setting you determine the water quality of the supply water.
  Factory setting: **Untreated Tap Water**
  Options: **Untreated Tap Water** (untreated water from tap water network)
  RO water < 5µS (RO water with a conductivity < 5 µS/cm)
  RO water > 5µS (RO water with a conductivity >5 µS/cm)

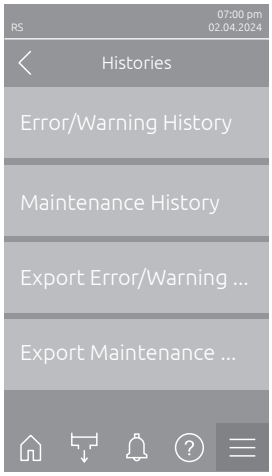
– **Water Hardness**: With this setting you determine the water hardness of the supply water in °dH (german hardness degree).
  Factory setting: **20.0 °dH**
  Setting range: **1.0 ... 30.0 °dH**

5.3.2.4 Software update in the "Update" submenu



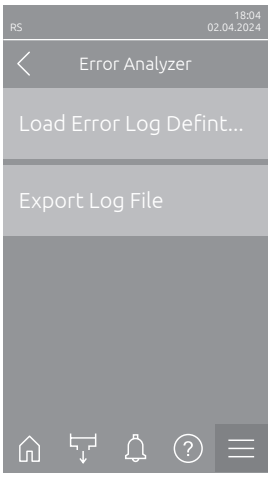
– **Update from USB**: With this function you can update the control software. The software is downloaded directly from the USB stick and then installed. Please note the information in *Section 6.8*.
– **Update from Remote**: With this function you can update the control software. The software must already be downloaded before the update can be started. Please note the information in *Section 6.8*.

5.3.2.5 View and export malfunctions and maintenance histories in the "Histories" submenu



– **Error/Warning History**: With this function you can view the error and warning history list.
– **Maintenance History**: With this function you can view the maintenance history list.
– **Export Error/Warning History**: With this function you can save the error and warning history list on a USB stick.
Note: Before you carry out this function, you must insert a FAT32 formatted USB stick into the USB interface on the control board.
– **Export Maintenance History**: With this function you can save the maintenance history list on a USB stick.
Note: Before you carry out this function, you must insert a FAT32 formatted USB stick into the USB interface on the control board.

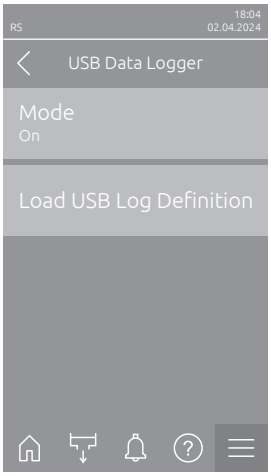
5.3.2.6 Load and export the error log file in the "Error Analyzer" submenu



– **Load Error Log Definition** (carried out ex works): With this function you can load an "Error Log Definition file" available from Condair on a USB stick for recording malfunctions. Once the "Error Log Definition file" has been loaded, an error log file is created as soon as an error occurs during operation. This file can then be saved on a USB stick using the "Export Log File" function.
Note: Before you carry out this function, you must insert a USB stick with the "Error Log Definition" file into the USB interface on the control board.

– **Export Log File**: With this function you can save an error log file created by the control on a USB stick and send it to Condair for further analysis.
Note: Before you carry out this function, you must insert a FAT32 formatted USB stick into the USB interface on the control board.

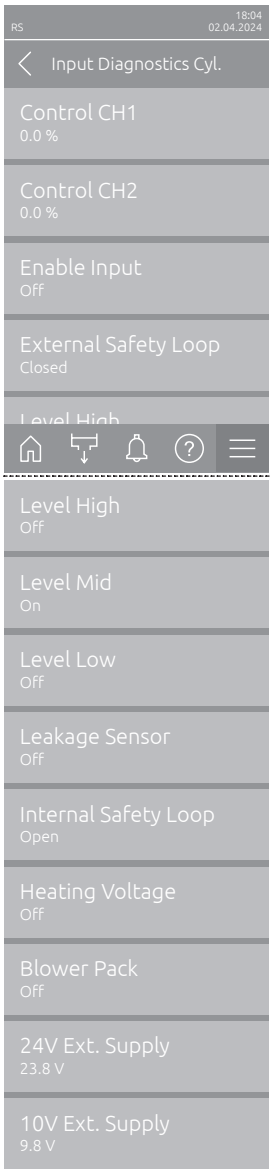
5.3.2.7 Start operating data recording in the "USB Data Logger" submenu



– **Mode**: With this function you can switch the operating data recording on a USB stick on or off. A new csv file is created for each day and stored on the USB stick.
Note: Before you carry out this function, you must insert a FAT32 formatted USB stick into the USB interface on the control board.
Factory setting: **Off**
Options: **Off** or **On**

– **Load USB Log Definition** (carried out ex works): With this function you can load a "USB log Definition file" available from Condair on a USB stick. This file determines which parameters are recorded via the USB data logger as soon as data logging is started with the "Mode" parameter.
Note: Before you carry out this function, you must insert a USB stick with the "USB log Definition file" into the USB interface on the control board.

5.3.2.8 View operating states in the submenu "Diagnostics > Input Diagnostic Cyl. A/B"

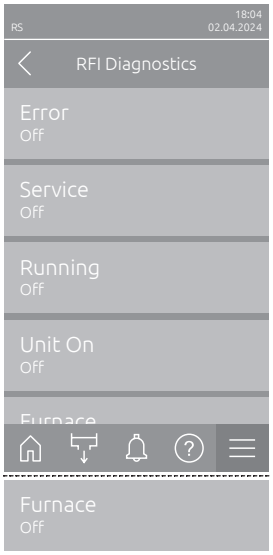


- **Control CH1**: Shows set humidity setpoint in %rh for humidity control.
- **Control CH2**: Shows set humidity setpoint in %rh for supply air limitation.
- **Enable Input**: Shows the actual status of the enable input "X11" on the driver board ("Off"= input or connected enable switch open, "On"= jumper wire connected to input or connected enable switch closed).
- **External Safety Loop**: Shows actual status of the external safety loop ("Open"= safety loop open, "Closed"= safety loop closed).
- **Level High**: Shows actual status of the "Level High" detection ("Off"= Level is not high, "On"= Level is high).
- **Level Mid**: Shows actual status of the "Level Mid" detection ("Off"= Level is not in the middle, "On"= Level is in the middle).
- **Level Low**: Shows actual status of the "Level Low" detection ("Off"= Level is not low, "On"= Level is low).
- **Leakage Sensor**: Actual status of the optional leakage monitoring device ("Off"= no leakage present, "On"= leakage detected).
- **Internal Safety Loop**: Shows issue with either the excess temperature switch or ground leakage board (GFI) ("Open"= Excess temperature switch and/or ground leakage board has triggered, "Closed"= no issues).
- **Heating Voltage**: Shows actual status of the heating voltage supply ("Off"= heating voltage not activated, "On"= heating voltage activated).
- **Blower Pack**: Shows actual status of the blower pack security loop ("On" = blower pack connected and supplied with power, "Off" = blower pack not connected or not supplied with power).
  Note: When no blower pack is connected, a jumper wire must be installed in the blower pack security loop, and the status should show "Off".
- **24V Ext. Supply**: Shows actual voltage of the external 24 V supply.
- **10V Ext. Supply**: Shows actual voltage of the external 10 V supply.

Note: If the Condair RS is operated together with a Condair RO-E pure water system, an additional submenu with input diagnostic functions is available for the RO-E pure water system. Please refer to the information in the separate operation manual for the Condair RO-E pure water system.

5.3.2.9 Checking the relays of the remote operating and fault indication board in the "Diagnostics > RFI Diagnostics" submenu

Note: This submenu is only accessible if the remote operating and fault indication board has been installed and activated in the Engineering level of the control software.

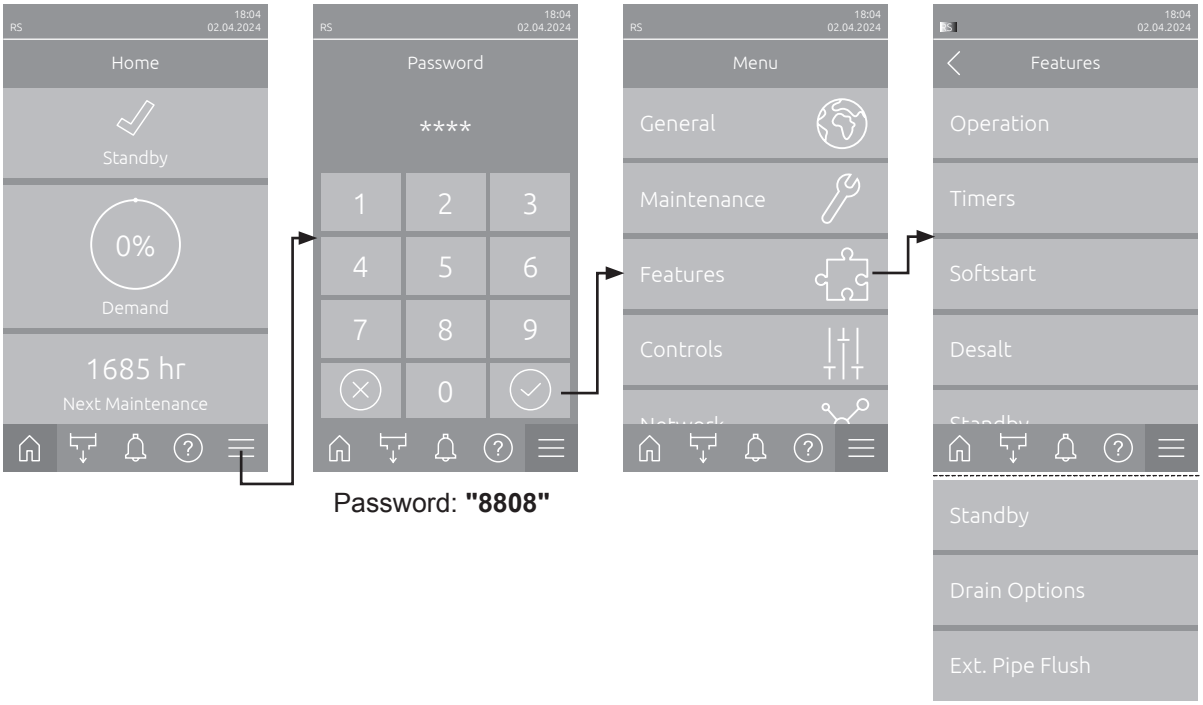


- **Error**: Activation and deactivation of the "Error" relay.
- **Service**: Activation and deactivation of the "Service" relay.
- **Running**: Activation and deactivation of the "Running" relay.
- **Unit On**: Activation and deactivation of the "Unit On" relay.
- **Furnace**: Activation and deactivation of the "Furnace" relay.

5.3.3 Settings and features in the "Features" submenu

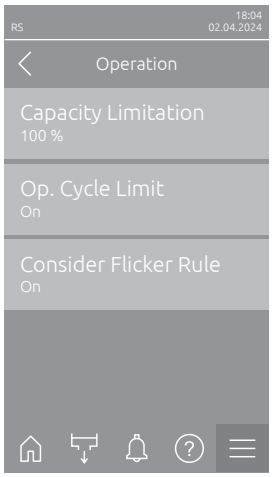
5.3.3.1 Accessing the "Features" submenu

Access the "Features" submenu as shown below.



Password: **"8808"**

5.3.3.2 Set the power limitation in the "Operation" submenu



– **Capacity Limitation**: With this setting you determine the capacity limitation in relation to maximum capacity in %.

  Factory setting: **100 %**
  Setting range: **20 ... 100 %**

– **Op. Cycle Limit**: With this setting you determine whether the On/Off switching delay is set to optimise the lifetime of the heating contactors ("On") or whether the On/Off switching delay is reduced to optimise the precision of control ("Off" – reduced life of heating contactors).
  Note: This menu item appears only on units with normal control accuracy.

  Factory setting: **On**
  Options: **On** or **Off**

– **Consider Flicker Rule**: With this setting you determine whether the blocking time of the switching elements (Triac or contactor) are controlled normally ("On") to maintain "Flicker"-regulations or whether the blocking time is reduced to optimise the precision of the control ("Off").

  Factory setting: **On**
  Options: **On** or **Off**

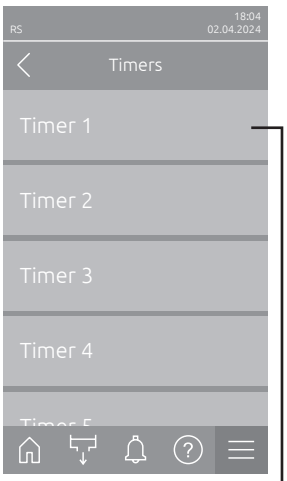
5.3.3.3 Setup operation timers in the "Timers" submenu

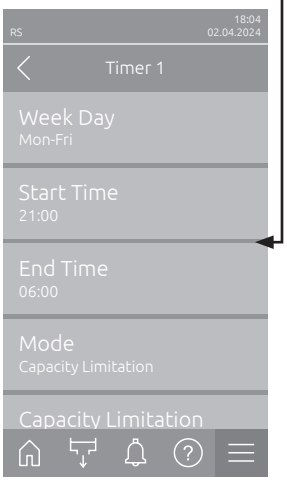
In the "Timers" submenu you can define up to 10 timers for timer controlled operation of the Condair RS. Ex factory all timers are deactivated. You can define timers for:

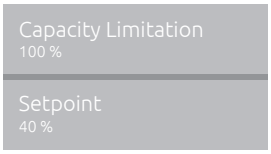
– Off-Time: The Condair RS is switched off
– Capacity Limitation: The Condair RS operates with the desired capacity limitation
– Setpoint: The Condair RS operates with the desired humidity setpoint

Note: The control software checks the plausibility of the timer settings. If timers overlap, a warning message is triggered

Note: Outside the timer controlled operation, the Condair RS continues to operate normally.







– **Timer 1** to **Timer 10**: With this parameters you can select the timer to be configured or modified.

After selecting a timer you can access and configure the following timer settings:

– **Week Day**: With this setting you define the day of the week or weekday range on which the timer should be active or deactivate the timer.

  Factory setting: **Off**
  Options: **Off** (Timer deactivated), **Mon**, **Tue**, **Wed**, **Thu**, **Fri**, **Sat**, **Sun**, **Mon-Fri**, **Sat-Sun** or **Mon-Sun**

– **Start Time**: With this setting you determine the time of day, at which the timer-controlled operation should start.

  Factory setting: **00**:**00**
  Setting range: **00**:**00** to **23**:**59**

– **End Time**: With this setting you determine the time of day, at which the timer-controlled operation should end.

  Factory setting: **00**:**00**
  Setting range: **00**:**00** to **23**:**59**

– **Mode**: With this setting you determine the timer mode.

  Factory setting: **Off-Time**
  Options: **Off-Time** (Condair RS switched Off)
  Capacity Limitation (Condair RS operates with the desired capacity limitation)
  Setpoint (Condair RS operates with the desired humidity setpoint)

  Note: The option "Setpoint" is only accessible if the "Control CH1 Mode" in "Controls > Control CH1" is set to "RH P" or "RH PI"

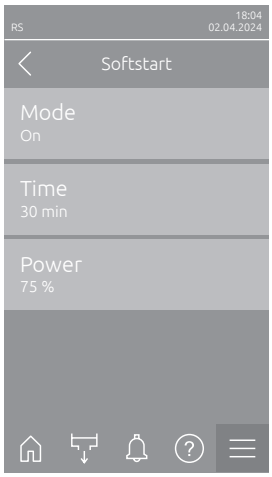
– **Capacity limitation**: With this setting you determine the capacity limitation that should used during the timer operation.
  Note: This setting only appears if the timer mode is set to "Capacity Limitation".

  Factory setting: **100 %**
  Setting range: **20** ... **100 %**

– **Setpoint**: With this setting you determine the humidity setpoint in %rh that should used during the timer operation.
  Note: This setting only appears if the timer mode is set to "Setpoint".

  Factory setting: **40 %rh**
  Setting range: **0** ... **95 %rh**

5.3.3.4 Activate/deactivate the softstart function in the "Softstart" submenu



– **Mode**: With this setting you can activate ("On") or deactivate ("Off") the softstart function.

  Factory setting: **Off**
  Options: **On** or **Off**

  Note: activate the soft start function if you are using softened water or water with a high conductivity.

  Note: If the softstart function is activated the humidification capacity is reduced to a preset value for a selectable period if a demand is present after restarting the steam humidifier or after more than 4 hours in standby operation (settings see parameters below).

  The following settings appear only, if **"Softstart Mode"** is set to **"On"**.

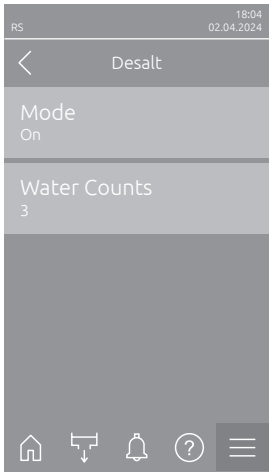
  – **Time**: With this setting you determine how long the softstart functions should remain activated in minutes.

    Factory setting: **30 minutes**
    Setting range: **10 ... 120 minutes**

  – **Power**: With this setting you determine the capacity limitation for the softstart function in % of the maximum capacity of the humidifier.

    Factory setting: **75 %**
    Setting range: **4 ... 100 %**

5.3.3.5 Activate/deactivate the demineralisation function in the "Desalt" submenu



– **Mode**: With this setting you can activate ("On") or deactivate ("Off") the demineralisation mode.

  Factory setting: **Off**
  Options: **On** or **Off**

  Note: enable the demineralization mode if you are using softened water or water with a high conductivity.

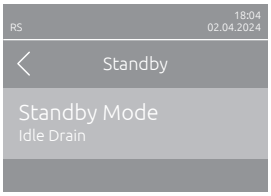
  Note: if desalting mode is activated the steam cylinder is drained after the set foam detection counts (see following parameter "Water Counts") within an hour is reached. Thus preventing the formation of foam in the steam cylinder.

  The following setting only appears, if **"Mode"** is set to **"On"**.

  – **Water Counts**: With this setting you determine how many times the maximum level in the steam cylinder can be reached within one hour (foam detection) before a time-controlled flushing cycle will be initiated.

    Factory setting: **3**
    Setting range: **1 ... 8**

5.3.3.6 Settings in the "Standby" submenu



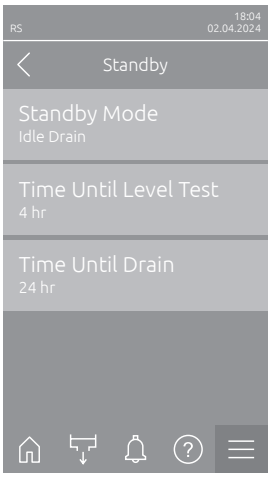
– **Standby Mode**: With this setting you determine the operational behaviour of the Condair RS in standby operation.

  Factory setting: **Idle Drain**

  Options: **Idle Drain** (the steam cylinder is drained and re-filled after a set time in standby operation)

  Keep Warm (the water in the steam cylinder is kept on a set temperature in standby operation)

  Standby (Standby only without active function)



The following settings appear only, if **"Standby Mode"** is set to **"Idle Drain"**.

– **Time Until Level Test**: With this setting you determine, after which time in the standby operation a level test is triggered.

  Factory setting: **4 hr**

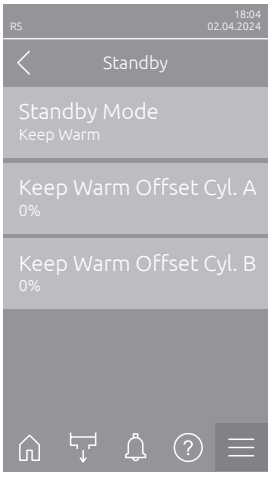
  Setting range: **1 ... 72 hr**

– **Time Until Drain**: With this setting you determine, after which time in the standby operation the steam cylinder(s) is/are completely drained and refilled again.

  Note: If the SV option (total drain valve) is activated, the steam cylinder(s) will not be refilled after a complete drain until a request is present.

  Factory setting: **24 hr**

  Setting range: **1 ... 100 hr**



The following settings appear only, if **"Standby Mode"** is set to **"Keep Warm"**.

Note: If the keep warm function for standby operation is activated the temperature of the water in the steam cylinder(s) is held on 60 °C (at 20 °C ambient temperature), so that the humidifier can produce steam as fast as possible as soon as a demand is present again. If the ambient temperature is higher or lower than 20 °C the heating power of the heating elements can be increased or decreased via the keep warm offset parameter to hold the keep warm temperature of 60 °C.

– **Keep Warm Offset A**: With this setting you can increase or decrease the heating power of the heating elements of the keep warm function for steam cylinder A by the desired percentage.

  Factory setting: **0 %**

  Setting range: **–5 % ... +5 %**

– **Keep Warm Offset B**: With this setting you can increase or decrease the heating power of the heating elements of the keep warm function for steam cylinder B by the desired percentage.

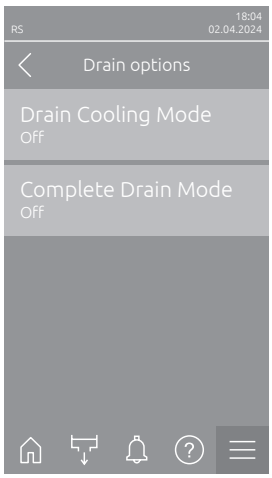
  Note: This menu item only appears on double units or on large units with two steam cylinders.

  Factory setting: **0 %**

  Setting range: **–5 % ... +5 %**

5.3.3.7 Settings in the "Drain Options" submenu

The "Drain Options" submenu only appears, if the drain cooling option and/or the optional drain valve is installed and activated in the Engineering level of the control software.

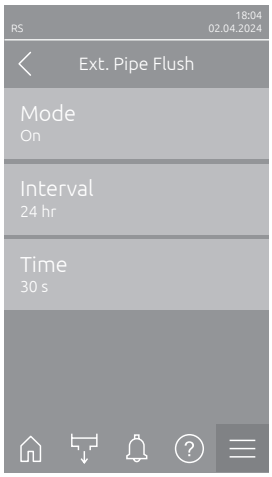


– **Drain Cooling Mode**: With this setting you can activate ("On") or deactivate ("Off") the drain cooling option.
Note: If the drain cooling option is activated, the drain water is cooled down below 60 °C.
Factory setting: **Off**
Options: **Off** or **On**

– **Complete Drain Mode**: With this setting you can activate ("On") or deactivate ("Off") the optional drain valve for the automatic draining of the scale collector tank in standby operation.
Note: if the optional drain valve is activated, the Condair RS is completely drained in standby operation (including scale collector tank) and refilled only after a humidity demand is present again.
Factory setting: **Off**
Options: **Off** or **On**

5.3.3.8 Settings in the "Ext. Pipe Flush" submenu

The "Ext. Pipe Flush" submenu only appears, if the external pipe flushing option is installed and activated in the Engineering level.



– **Mode**: With this setting you can activate ("On") or deactivate ("Off") the external pipe flushing option.
Factory setting: **Off**
Options: **Off** or **On**

The following settings appear only, if **"Mode"** is set to **"On"**.

– **Interval**: With this setting you determine the time interval for the external water supply pipe flushing in hours.
Factory setting: **24 hr**
Setting range: **1 ... 100 hr**

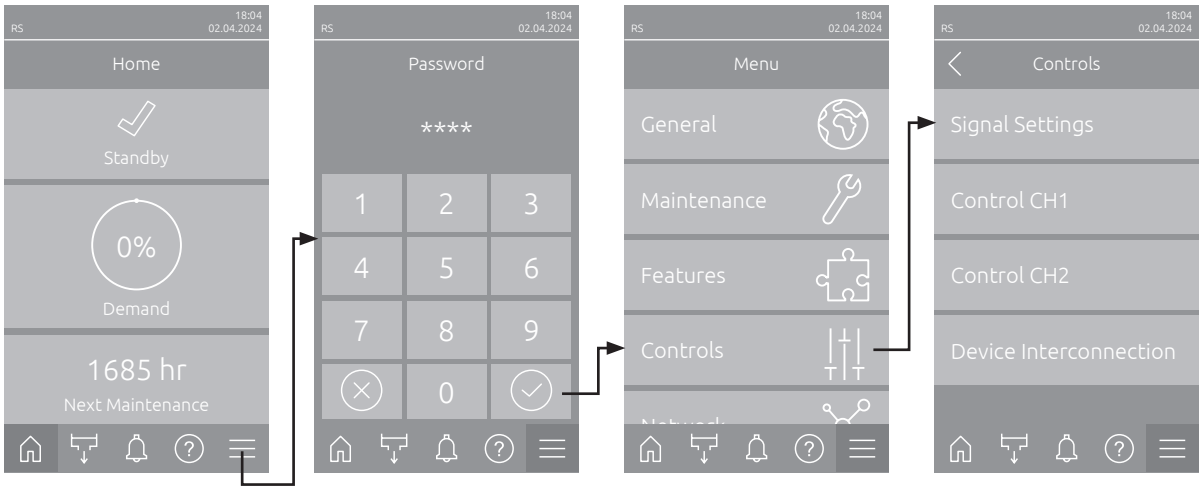
– **Time**: With this setting you determine how long the external water supply pipe is flushed in seconds.
Factory setting: **30 s**
Setting range: **1 ... 600 s**

5.3.4 Settings and features in the "Controls" submenu

In the "Controls" submenu you determine the control settings for the Condair RS. The control settings available depend on the selected signal source and the control mode. Additionally you can determine the parameters for the operation of interconnected devices.

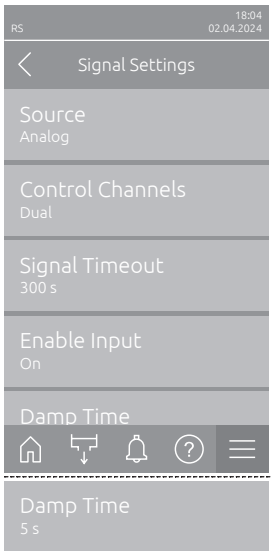
5.3.4.1 Accessing the "Controls" submenu

Access the "Controls" submenu as shown below.



Password: **"8808"**

5.3.4.2 Control settings in the "Signal Settings" submenu



– **Source**: With this setting you determine whether the control signal comes from an analog source "Analog" (humidity sensor, demand signal from an external humidity controller), a BMS (building management system) via "Modbus", "BACnet" or via "IoT".

  Factory setting: **Analog**

  Options: **Analog** (Analog sensor-/humidity signal)
  Modbus (Signal via Modbus)
  BACnet (Signal via BACnet)
  IoT (Signal via IoT)

– **Control Channels**: With this setting you determine, whether the Condair RS is controlled without supply air limitation (set to "Single") or with supply air limitation (set to "Dual").

  Factory setting: **Single**

  Options: **Single** (without supply air limitation) or
  Dual (with supply air limitation)

– **Signal Timeout**: This menu item only appears if the signal source is set to "Modbus", "BACnet" or "IoT". Information on this parameter can be found in the separate Modbus, BACnet or IoT addendum manual.

– **Enable Input**: With this setting you determine whether the enable input on the driver board is evaluated ("On") or ignored ("Off") by the control software.

  Factory setting: **On**

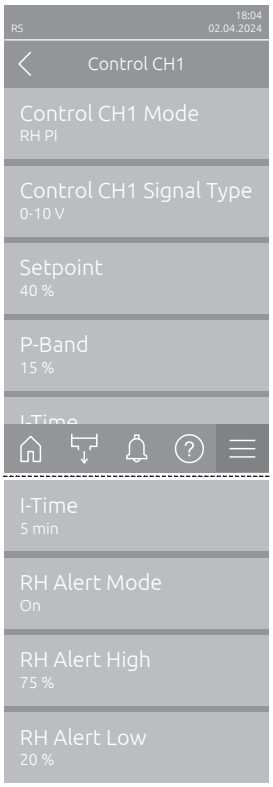
  Options: **On** or **Off**

– **Damp Time**: With this setting you set the time in seconds after which the supply air controller takes over the control of the demand signal.
Note: This setting only appears if the setting "Control Channels" is set to "Dual".

Factory setting: **5 seconds**
Setting range: **1 ... 60 seconds**

5.3.4.3 Control settings in the "Control CH1" and "Control CH2" submenus

The content of the "Control CH1" and "Control CH2" submenu are identical. The "Control CH2" submenu only appears, if the setting "Control Channels" in the signal settings submenu is set to "Dual".



– **Control CH1 Mode / Control CH2 Mode**: With this setting you determine the type of controller used with the Condair RS steam humidifier.

Factory setting: **Demand**
Options: **On/Off** (external On/Off humidistat)
Demand (external continuous controller)
RH P (internal P controller)
RH PI (internal PI controller)

– **Control CH1 Signal Type / Control CH2 Signal Type**: With this setting you determine the control signal with which "Control CH1" / "Control CH2" is controlled.
Note: This setting only appears if "Source" is set to "Analog" and "Control CH1 Mode" / "Control CH2 Mode" is set to "Demand", "RH P" or "RH PI".

Factory setting: **0-10 V**
Options: **0-5 V, 1-5 V**, **0-10 V**, **2-10 V**, **0-16 V**, **3.2-16 V**, **0-20 V, 4-20 V, 0-20 mA**, **4-20 mA**

– **Setpoint**: With this setting you set the humidity setpoint for the internal P/PI controller in % relative humidity.
Note: This setting only appears if the "Control CH1 Mode" / "Control CH2 Mode" is set to "RH P" or "RH PI".

Factory setting: **40 %rh**
Options: **5 ... 95 %rh**

– **P-Band**: With this setting you set the proportional range for the internal P/PI controller in % relative humidity.
Note: This setting only appears if the "Control CH1 Mode" / "Control CH2 Mode" is set to "RH P" or "RH PI".

Factory setting: **15 %rh**
Options: **6 ... 65 %rh**

– **I-Time**: With this setting you set the integral time for the internal P/PI controller.
Note: This setting only appears if the "Control CH1 Mode" / "Control CH2 Mode" is set to "RH PI".

Factory setting: **5 min**
Options: **1 ... 60 min**

– **RH Alert Mode**: With this setting you can activate ("On") or deactivate ("Off") the "RH Alert Mode". If enabled a sensor interruption message (Error "E41") is triggered if the relative humidity value measured by the humidity sensor exceeds the set upper or drops below the set lower limit (see following settings).
Note: This setting only appears if the "Control CH1 Mode" / "Control CH2 Mode" is set to "RH P" or "RH PI".

  Factory setting: **On**
  Options: **On** or **Off**

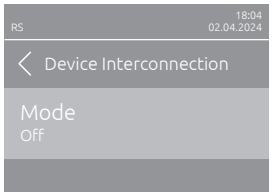
– **RH Alert High**: With this setting you set the upper signal limit value in % of the maximum signal value of the humidity sensor, if exceeded a sensor interruption message (Error "E32") is triggered.
Note: This setting only appears if "Control CH1 Mode" / "Control CH2 Mode" is set to "RH P" or "RH PI" and "RH Alert Mode" is activated ("On").

  Factory setting: **75 %**
  Options: **20 ... 95 %**

– **RH Alert Low**: With this setting you set the lower signal limit value in % of the maximum signal value of the humidity sensor, if undershot a sensor interruption message (Error "E32") is triggered.
Note: This setting only appears if "Control CH1 Mode" / "Control CH2 Mode" is set to "RH P" or "RH PI" and "RH Alert Mode" is activated ("On").

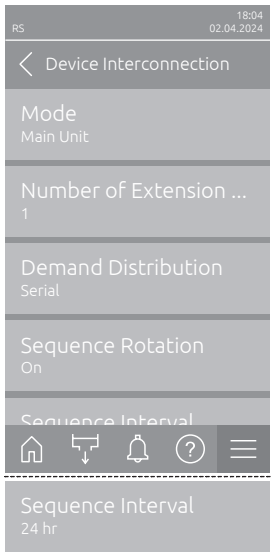
  Factory setting: **20 %**
  Options: **20 ... 95 %**

5.3.4.4 Settings in the "Device Interconnection" submenu



– **Mode**: With this setting you determine whether the unit is part of a device interconnected system and acts as main unit ("Main Unit") or extension unit ("Extension Unit") or whether the unit is not part of a device interconnected system ("Off").
Note: The master unit must be set always to "Main Unit". The further units in the device interconnected system must be set to "Extension Unit".

  Factory setting: **Off**
  Options: **Off** (no device interconnected system)
  Main Unit (unit functions as a main unit)
  Extension Unit (unit functions as an extension unit)



The following menu items appear only if **"Mode"** is set to **"Main Unit"**.

– **Number of Extension Units**: With this setting you determine the number of extension units in the device interconnected system.

  Factory setting: **1**
  Setting range: **1 ... 6**

– **Demand Distribution**: With this setting you determine how the demanded capacity is to be divided on the individual units of the device interconnected system.

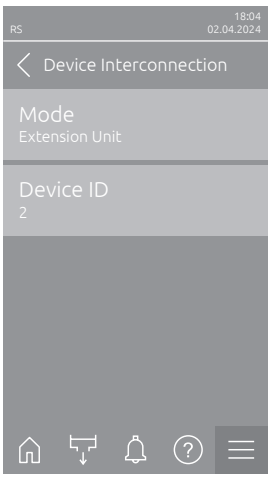
  Factory setting: **Parallel**
  Options: **Parallel** (even distribution of the demand on all devices of the device interconnected system)
  Serial (serial distribution of the demand: first main unit up to 100 %, then extension unit 1 up to 100 %, then extension unit 2 up to 100 %, etc.)

– **Sequence Rotation**: With this setting you determine whether the cylinder with the lowest number of operating hours is started first ("On") or not ("Off") if serial distribution of the demand is activated
Note: This setting appears only, if "Demand Distribution" is set to "Serial".

  Factory setting: **On**
  Options: **On** or **Off**

– **Sequence Interval**: With this setting you determine the interval time the control system compares the operating hours of the cylinders in order to change the starting order if sequential cylinder rotation activated.
Note: This setting appears only, if the "Sequence Rotation" function is activated ("On").

  Factory setting: **24 hours**
  Setting range: **24 ... 1000 hours**



The following setting appears only, if **"Mode"** is set to **"Extension Unit"**.

– **Device ID**: With this setting you determine the device ID of the extension unit in ascending order (first extension unit is 2).

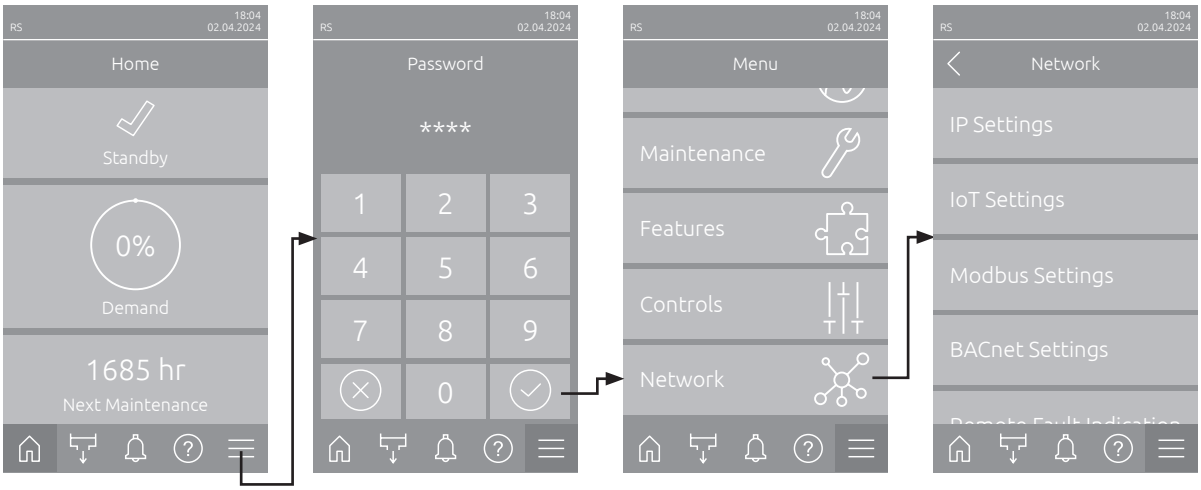
  Factory setting: **2**
  Setting range: **2 ... 7**

5.3.5 Communication settings in the "Network" submenu

In the "Network" submenu you determine the parameters for digital communication protocols.

5.3.5.1 Accessing the "Network" submenu

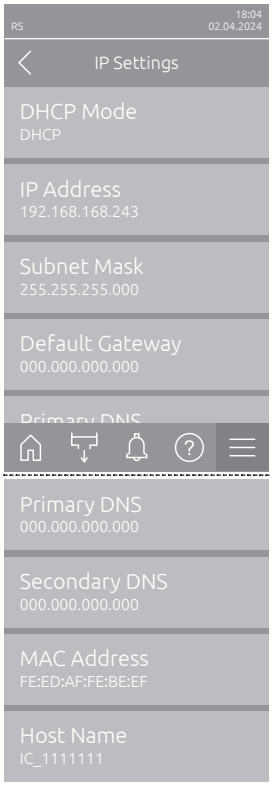
Access the "Network" submenu as shown below.



Password: **"8808"**

5.3.5.2 Settings in the "IP Settings" submenu

The following network settings are used only for the communication via the integrated BACnet IP, Modbus TCP or IoT interface.



– **DHCP Mode**: With this setting you determine whether you want to assign the IP Address, the Subnet Mask, the Standard Gateway as well as the Primary and Secondary DNS address as fixed values or whether these should be dynamically assigned via a DHCP server.
Note: If no address can be assigned via a DHCP server when "DHCP Mode" is set to "DHCP", an APIPA (Automatic Private IP Addressing) is automatically assigned. This is in the range from 169.254.1.0 to 169.254.254.255. The subnet mask is set to 255.255.0.0 and the standard gateway remains 0.0.0.0.

  Factory setting: **DHCP**
  Options: **DHCP** (dynamic assignment)
  Fixed (fixed assignment)

– **IP Address**: This field shows the actual IP address of Condair RS assigned manually or assigned by a DHCP server.
If the parameter "DHCP Mode" is set to "Fixed", the IP address of Condair RS can be set via this field. If the parameter "DHCP Mode" is set to "DHCP", the IP address of Condair RS is assigned by a DHCP server.

– **Subnet Mask**: This field shows the actual subnet mask of the IP network assigned manually or assigned by a DHCP server.
If the parameter "DHCP Mode" is set to "Fixed", the subnet mask can be set via this field. If the parameter "DHCP Mode" is set to "DHCP", the subnet mask is assigned by a DHCP server.

– **Default Gateway**: This field shows the actual IP address of the default gateway assigned manually or assigned by a DHCP server.
If the parameter "DHCP Mode" is set to "Fixed", the IP address of the default gateway can be set via this field. If the parameter "DHCP Mode" is set to "DHCP", the IP address of the default gateway is assigned by a DHCP server.

– **Primary DNS**: This field shows the actual IP address of the primary domain name server (DNS) assigned manually or assigned by a DHCP server.
If the parameter "DHCP Mode" is set to "Fixed", the IP address of the primary domain name server can be set via this field. If the parameter "DHCP Mode" is set to "DHCP", the IP address of the primary domain name server is assigned by a DHCP server.

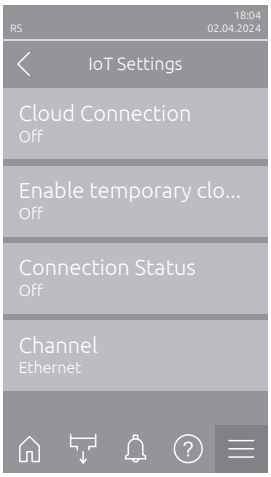
– **Secondary DNS**: This field shows the actual IP address of the secondary domain name server (DNS) assigned manually or assigned by a DHCP server.
If the parameter "DHCP Mode" is set to "Fixed", the IP address of the secondary domain name server can be set via this field. If the parameter "DHCP Mode" is set to "DHCP", the IP address of the secondary domain name server is assigned by a DHCP server.

– **MAC Address**: Factory set MAC Address (Media Access Control) of Condair RS. Not modifiable.

– **Host Name**: Host Name of Condair RS automatically generated by the control. Format: "IC_"+"Serial number of Condair RS". Not modifiable.

5.3.5.3 Settings in the "IoT Settings" submenu

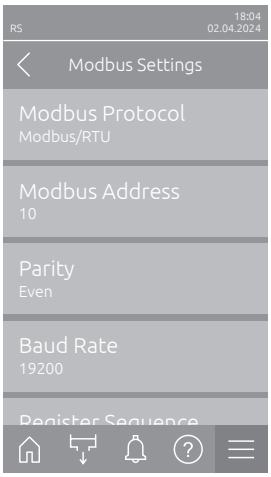
The following settings are only required for communication via IoT.



- **Cloud Connection**: ---
- **Enable temporary cloud write access**: ---
- **Connections Status**: ---
- **Channel**: ---

Important: **Regarding the setting of the individual IoT parameters, please observe the instructions in the separate IoT addendum manual. For further information on IoT solutions, please contact your Condair representative.**

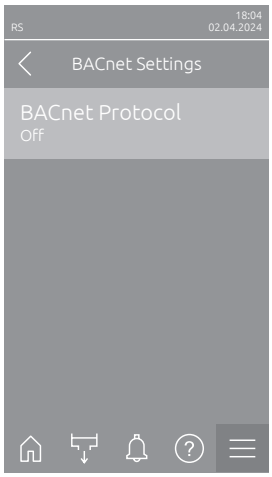
5.3.5.4 Settings in the "Modbus Settings" submenu



- **Modbus Protocol**: With this setting you can activate "**Modbus/RTU**" or "**Modbus/TCP**" communication via a Modbus network or deactivate ("Off") Modbus communication.
  Factory setting: **Modbus/RTU**
  Options: **Off**, **Modbus/RTU** or **Modbus/TCP**

  Important: **regarding the setting of the individual Modbus parameters as well as the wiring of the Condair RS for the Modbus communication, please observe the instructions in the separate Modbus addendum manual. This manual can be requested from your Condair representative.**

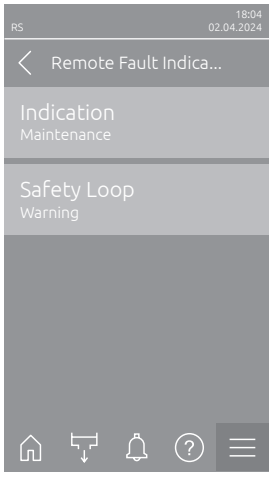
5.3.5.5 Settings in the "BACnet Settings" submenu



– **BACnet Protocol**: With this setting you can activate ("BACnet MS/TP" or "BACnet/IP") or deactivate ("Off") the communication via the integrated BACnet interfaces.
  Factory setting: **Off**
  Options: **Off** (BACnet interface deactivated)
  MS/TP Master (BACnet MS/TP Master via RS 485 interface)
  MS/TP Slave (BACnet MS/TP Slave via RS 485 interface)
  BACnet/IP (BACnet/IP via RJ45 interface)

Important: **regarding the setting of the individual BACnet parameters as well as the wiring of the Condair RS for the BACnet IP or BACnet MS/TP communication, please observe the instructions in the separate BACnet addendum manual. This manual can be requested from your Condair representative.**

5.3.5.6 Settings in the "Remote Fault Indication" submenu



– **Indication**: With this setting you determine whether maintenance messages ("Maintenance") only or all Warning messages ("Warning") are outputted via the service relay of the remote operating and fault indication board.
  Factory setting: **Maintenance**
  Options: **Maintenance** or **Warning**

– **Safety Loop**: With this setting you determine whether an Error ("Error") or a Warning ("Warning") is triggered when the external safety loop is open.
  Factory setting: **Warning**
  Options: **Warning** or **Error**

6 Maintenance

6.1 Important notes on maintenance

Qualification of personnel

All maintenance work must be carried out only by **well qualified and trained personnel authorized 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 covers. Please note the following:

DANGER!
Danger of electric hazard!

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

Prevention: Before carrying out any maintenance work set the Condair RS out of operation as described in *chapter 4.5* (switch off the unit, disconnect it from the mains and stop the water supply) and secure the unit against inadvertent power-up.

CAUTION!

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

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

WARNING!
Danger of burning!

The water in the steam cylinder and in the scale collector tank can be hot up to 203 °F (95 °C). There is danger of burning when the steam cylinder(s) and the scale collector tank(s) is/are dismounted shortly after steam has been produced.

Prevention: Before carrying out any work on the steam system set the Condair RS out of operation as described in *chapter 4.5* , then wait until the components have cooled down sufficiently (see temperature indication adhesive on the scale collector tank) thus preventing danger of burning.

6.2 Maintenance intervals

To maintain operational safety the Condair RS steam humidifier must be maintained at regular intervals. The control software of the Condair RS features two maintenance counters one for the "Small maintenance" (Cleaning of the scale collector tank, only for units equipped with a scale collector tank) and one for the "Extended maintenance" (Cleaning of the steam cylinder and other components of the steam and water system). The maintenance counters are set at the initial commissioning based on the water condition on site, however the maintenance counters can be adjusted at any time later to the actual operational conditions.

If one of the maintenance counters has elapsed, a maintenance message is triggered indicating that the corresponding maintenance must be carried out.

"W28 - Small maintenance"

The maintenance counter for the "Small maintenance" has elapsed.
Carry out the "Small maintenance" and reset afterwards the maintenance counter in the "Maintenance" submenu.

"W29 - Extended maintenance"
The maintenance counter for the "Extended maintenance" has elapsed.
Carry out the "Extended maintenance" and reset afterwards the maintenance counter in the "Maintenance" submenu.

Important! Independently of the maintenance counters the **"Small maintenance"** and the **"Extended maintenance" are to be carried out at least once a year**.

6.3 Maintenance list

Adjacent you can find an overview of the maintenance work to be carried out on "Small maintenance" and "Extended maintenance".

Components	Small maintenance	Extended maintenance	Work to be done
Scale collector tank	X	X	Remove and clean.
Connection ring scale collector tank		X	Inspect, replace if necessary.
Steam cylinder		X	Remove, disassemble and clean, replace defective components if necessary.
Steam cylinder receptacle		X	Inspect, clean if necessary.
Drain pump		X	Remove, disassemble (see *chapter 6.4.6*) and clean, replace if necessary.
Inlet valve		X	Remove and clean filter insert, replace if necessary.
Filling cup		X	Inspect, clean if necessary.
Level unit		X	Inspect, clean if necessary.
Drain cup		X	Inspect, clean if necessary.
Drain pipe and siphon		X	Inspect, clean if necessary (decalcify and rinse out).
Steam installation		X	Inspect steam and condensate hoses for cracks and ensure that they are correctly attached, replace defective hoses.
Water installation		X	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		X	Have all cables in the unit checked by an electrician that they are correctly fixed and that the insulation is not damaged
Heating elements		X	Perform the Megger test (insulation test of heating elements) at every major service. The acceptable values must be 1 MΩ or higher. Heating elements with the values below 1 MΩ must be replaced. Visually inspect the elements for pitting, burn marks, corrosion, crack. Replace the defective elements immediately.
Contactors		X	Have the contactors be replaced by an electrician every 5 years or when the warning for contactor replacement appears. Contactors must be purchased from Condair.
Check screws	X	X	Check the screws on all high-voltage components to ensure they are tightened to the specified torque rating. Refer to the installation manual for detailed specifications. If the installation manual is not available, please contact your Condair representative.

6.4 Removing and installing components for maintenance

6.4.1 Preparing the Condair RS for the removal of components

Before starting any removal work set the Condair RS out of operation and drain the steam cylinder and the scale collector tank (if applicable). Proceed as follows:

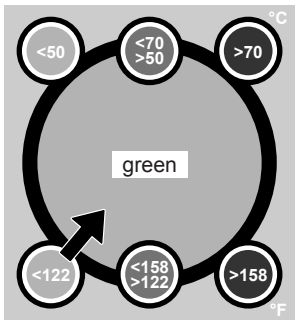
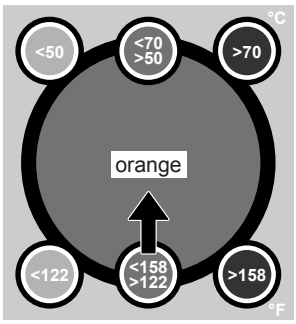
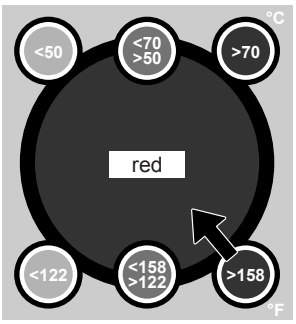
1. Condair RS must be switched on. Perform a draining of the steam cylinder (see *chapter 4.4.3*). Note: On units equipped with the optional drain valve for the scale collector tank, the scale collector tank is drained simultaneously when performing a manual draining of the steam cylinder.
2. Set the steam humidifier out of operation as described in *chapter 4.5*.
3. This step must be carried out only on units equipped with a scale collector tank:
   - Place a sufficient large container with a capacity of approx. 2.6 gal (10 litres) below the scale collector tank.
   - Carefully open the drain valve on the bottom of the scale collector tank, then wait until no water flows out of the drain valve.

   WARNING!
   Danger of burning!

   The temperature of the water in the scale collector tank can be up to 203 °F (95 °C) shortly after steam has been produced.
   Therefore: wear isolating gloves and open the drain valve carefully.

   If no water flows out from the open drain valve, the drain inside the scale collector tank is clogged and the scale collector tank may not be emptied. If this is the case, wait until the temperature indication adhesive on the scale collector tank indicates a temperature below <122 °F (<50°C) before dismantling the tank (since the scale collector tank is filled with water).

   Note: On units equipped with the optional drain valve for the scale collector tank, close drain valve on the scale collector tank and remove hose from the connector.
4. Wait until the temperature indication adhesive on the scale collector tank indicates a temperature "<122 °F" (<50°C) (temperature field on the temperature indication adhesive is green).

Temperature <122 °F (<50°C) **OK**	Temperature >122 °F (>50°C) **Wait**	
		

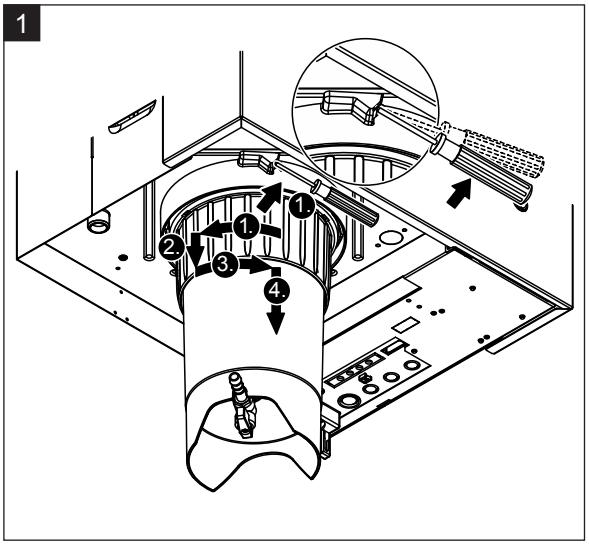
6.4.2 Removal and installation of the scale collector tank

Removal

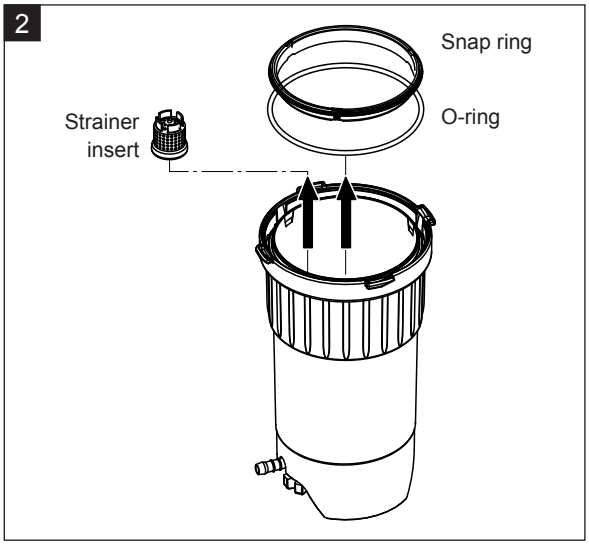
WARNING!
Danger of burning!

Before removal of the scale collector tank ensure it is empty and the temperature indication adhesive on the scale collector tank indicates a temperature <122 °F (<50°C).

1



2

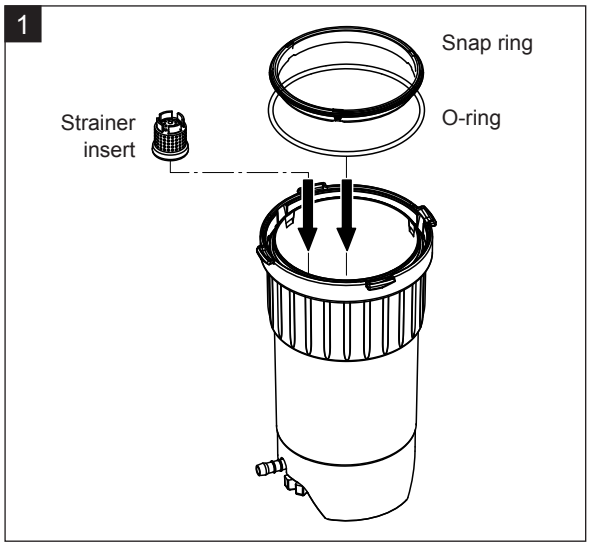


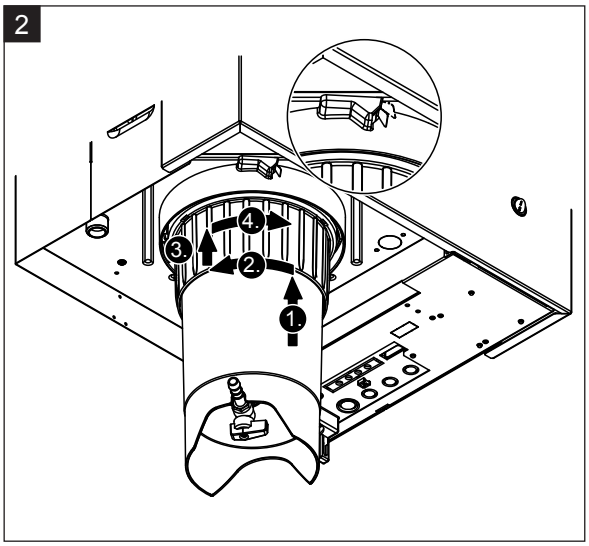
1. Use a screw driver to press the latch of the spring-actuated lock at the scale collector tank to the top, then turn locking ring of the scale collector tank clockwise until it comes to a stop (1). Pull locking ring downwards until it comes to a stop (2). Then turn locking ring counterclockwise until it comes to a stop (3) and remove scale collector tank downwards (4).
2. Remove O-ring, snap ring and strainer insert.

Installation

Prior to the installation:

- Check scale collector tank, O-ring, snap ring and strainer insert for damages and replace defective components if necessary. We recommend to replace the sealings of the scale collector tank with each maintenance.
- Remove any dirt inside the retaining ring on the bottom of the unit and clean it with a clean rag.





CAUTION!

Under no circumstances use grease to install the scale collector tank! If necessary, only use hand soap to lubricate the O-ring, the snap ring and the grooves on the connection ring.

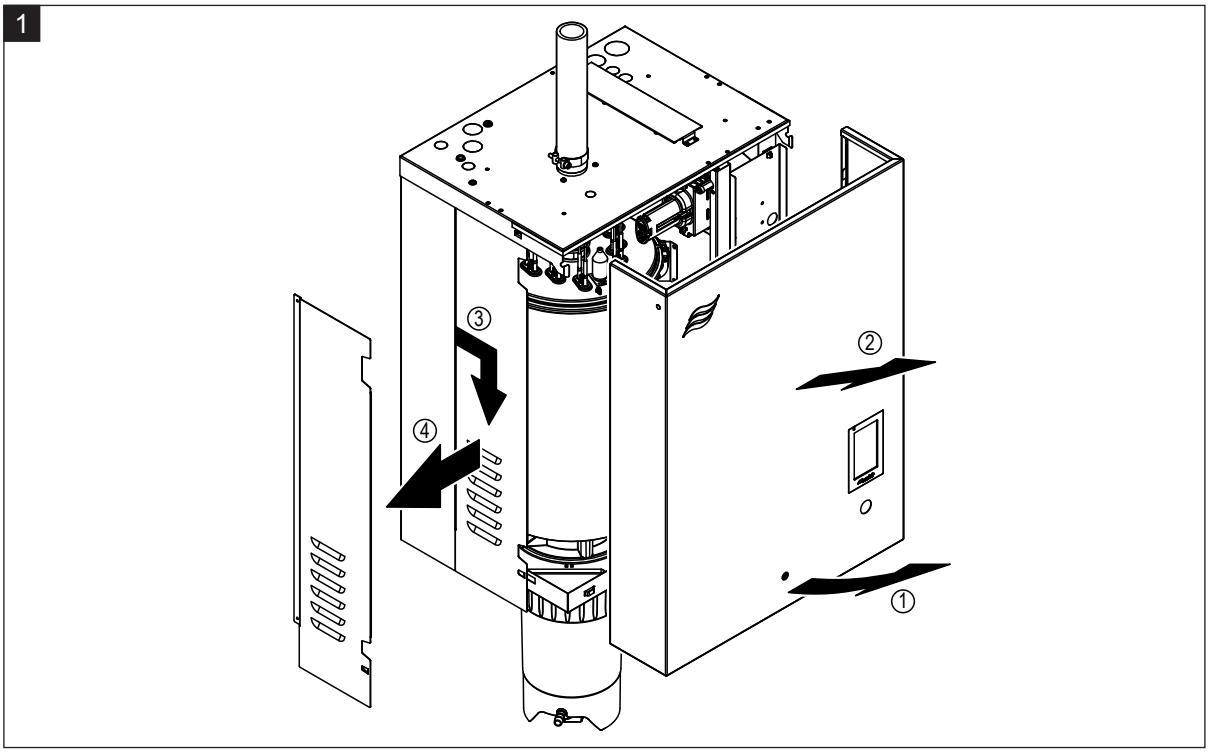
1. Insert the strainer insert into the corresponding receptacle inside the scale collector tank and press it down until it locks. Then, attach O-ring and Snap ring to the locking ring of the scale collector tank.
2. Align locking ring to the grooves of inside retaining ring. From the bottom push the scale collector tank into the retaining ring until it comes to a stop (1). Turn locking ring clockwise until it comes to a stop (2), then, push locking ring upwards until it comes to a stop (3) and turn it counterclockwise until it locks inside the spring-actuated lock (4).
3. Close drain valve on the bottom of the scale collector tank.

6.4.3 Removal and installation of the steam cylinder

WARNING!
Danger of burning!

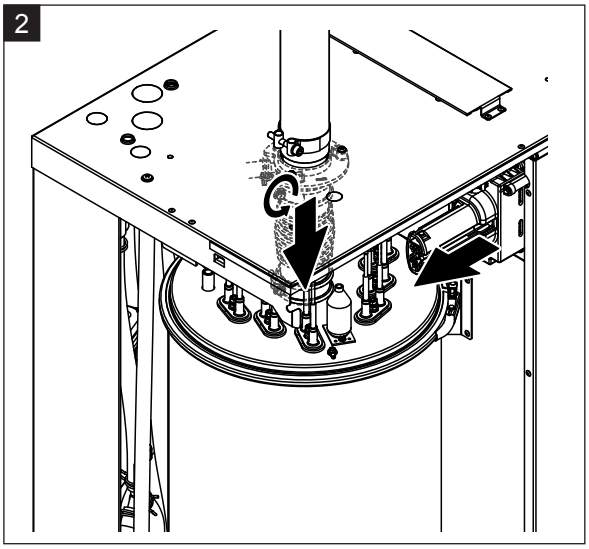
Before removal of the steam cylinder ensure the steam cylinder is empty and has cooled down, that no more burning danger exists.

1

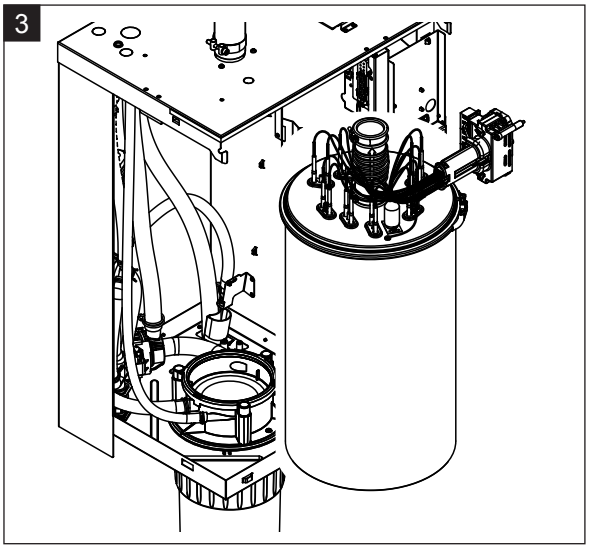


1. Loosen retaining screw on front door or on left front door (for large units) of the unit using a screwdriver, then remove the front door. Pull left side panel to the front and then downwards and remove side panel.

2



3

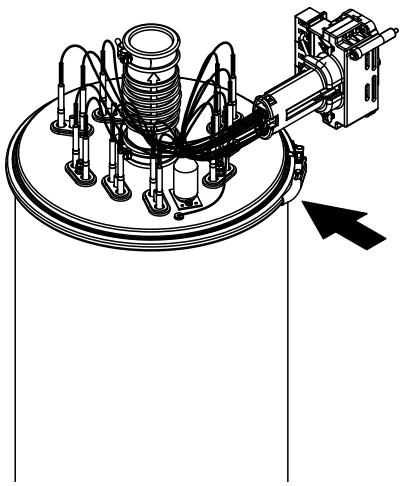


2. Free the upper hose clamp of the steam outlet hose using a screwdriver and pull the hose downwards from the steam connector. Then, loosen the two screws fixing the heating cable plug to the plug socket and remove heating cable plug from the plug socket.
3. Carefully lift the steam cylinder out of steam cylinder receptacle and remove it towards the front of the unit.

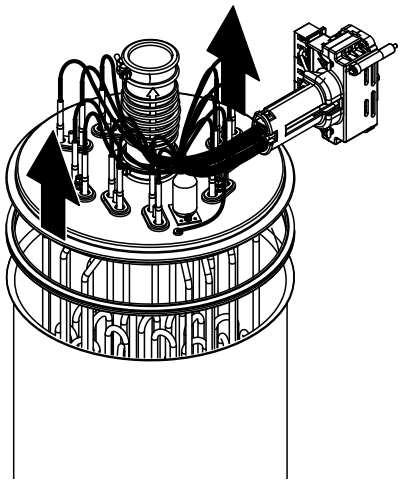
CAUTION!

Set down the steam cylinder carefully to ensure the funnel on the bottom side of the cylinder is not damaged!

4



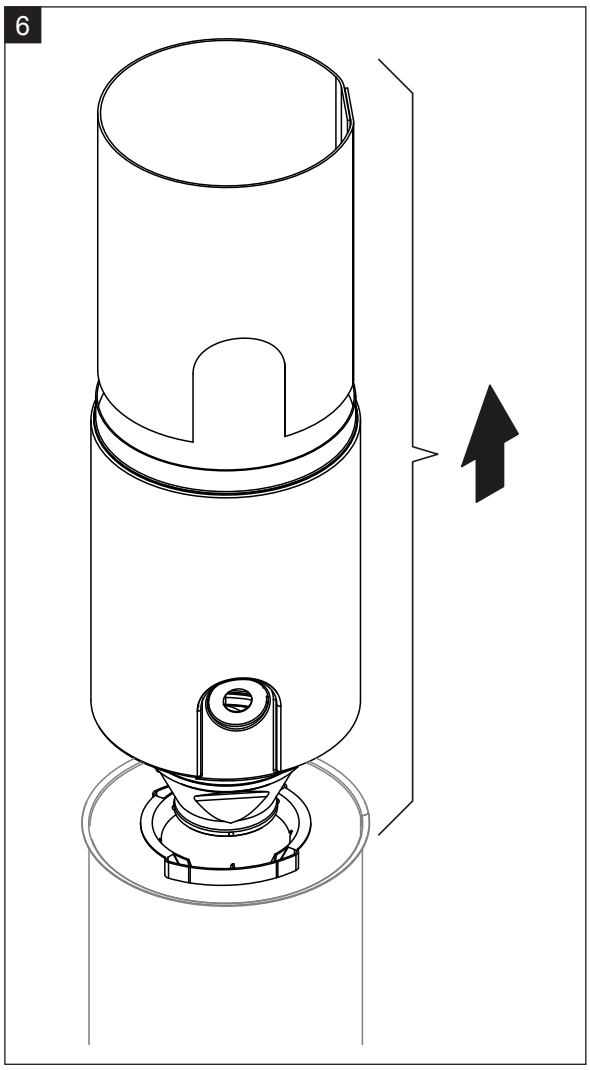
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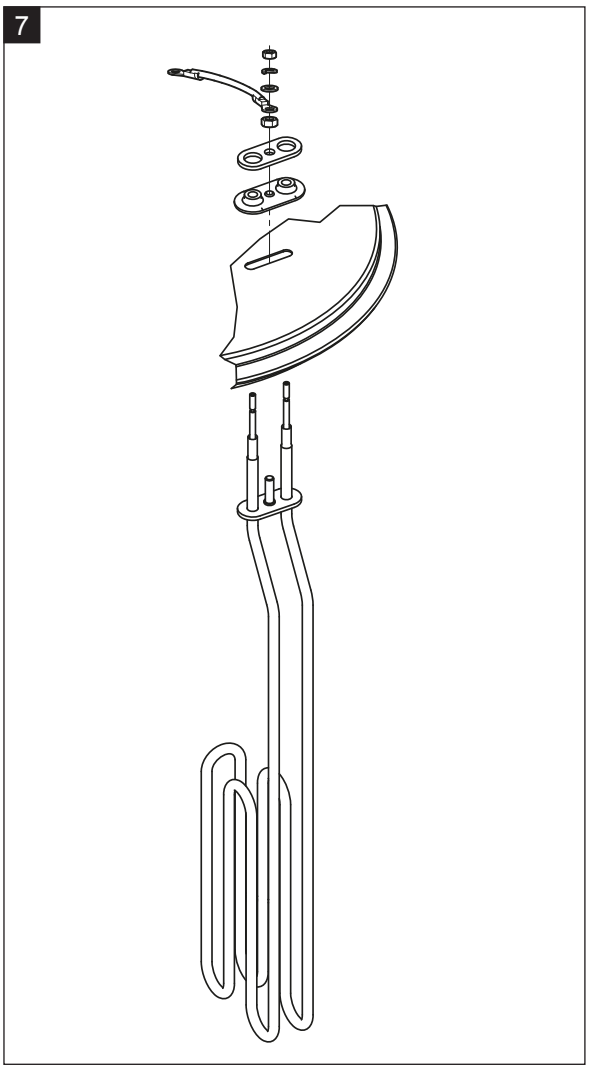


4. Undo the steam cylinder cover clamping ring.
5. Carefully lift off the cover with the heating elements.

CAUTION!

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





6. If necessary, loosen the funnel insert by lightly rotating it in either direction and lift it together with baffle from the steam cylinder. Then, remove the screen insert from the funnel insert.
7. If during maintenance one or more heating elements must be replaced:
    - First note position of the connecting cables inside the heating cable plug.
    - Then, loosen the corresponding cable inside the heating cable plug and remove.
    - Undo nuts on the fixing flange of the appropriate heating element and remove heating element.
    - Install new heating element and connect connecting cables to the heating cable plug according with the notes of step 1.

Assembly and installation of the steam cylinder

Assembly of the steam cylinder 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. Please take care that the heating elements are correctly positioned and the cables are correctly connected (according to your notes).

– Before installation of the steam cylinder cover place the cylinder lid gasket around the edge of the cover. The cylinder lid gasket must be clean and undamaged (replace if necessary).

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

– Moisten the O-ring of the steam cylinder receptacle with water (do not use grease or oil), then insert steam cylinder into the steam cylinder receptacle and push it down to the stop.

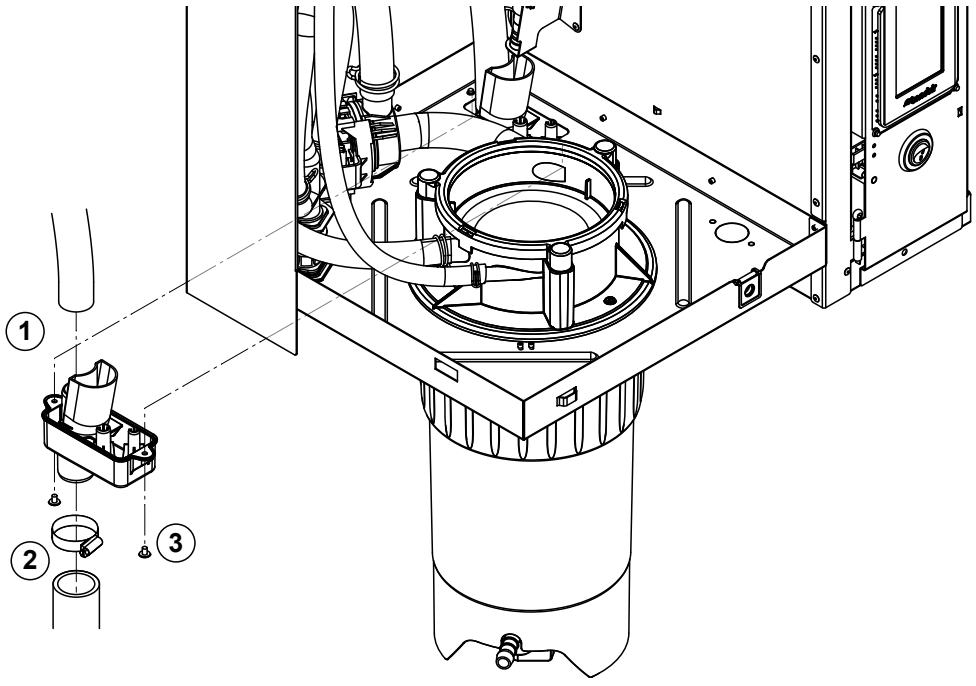
– Insert steam cylinder in the unit correctly and fasten with clamping ring.

– Connect steam outlet hose to steam connector and fasten with hose clamp. A leaky steam outlet hose can cause damp damage in the interior of the unit.

– Plug in heating cable plug into the plug socket and secure it with the two fixing screws.

6.4.4 Removal and installation of the drain cup

For removing the drain cup the steam cylinder must be removed first (see *chapter 6.4.3*).

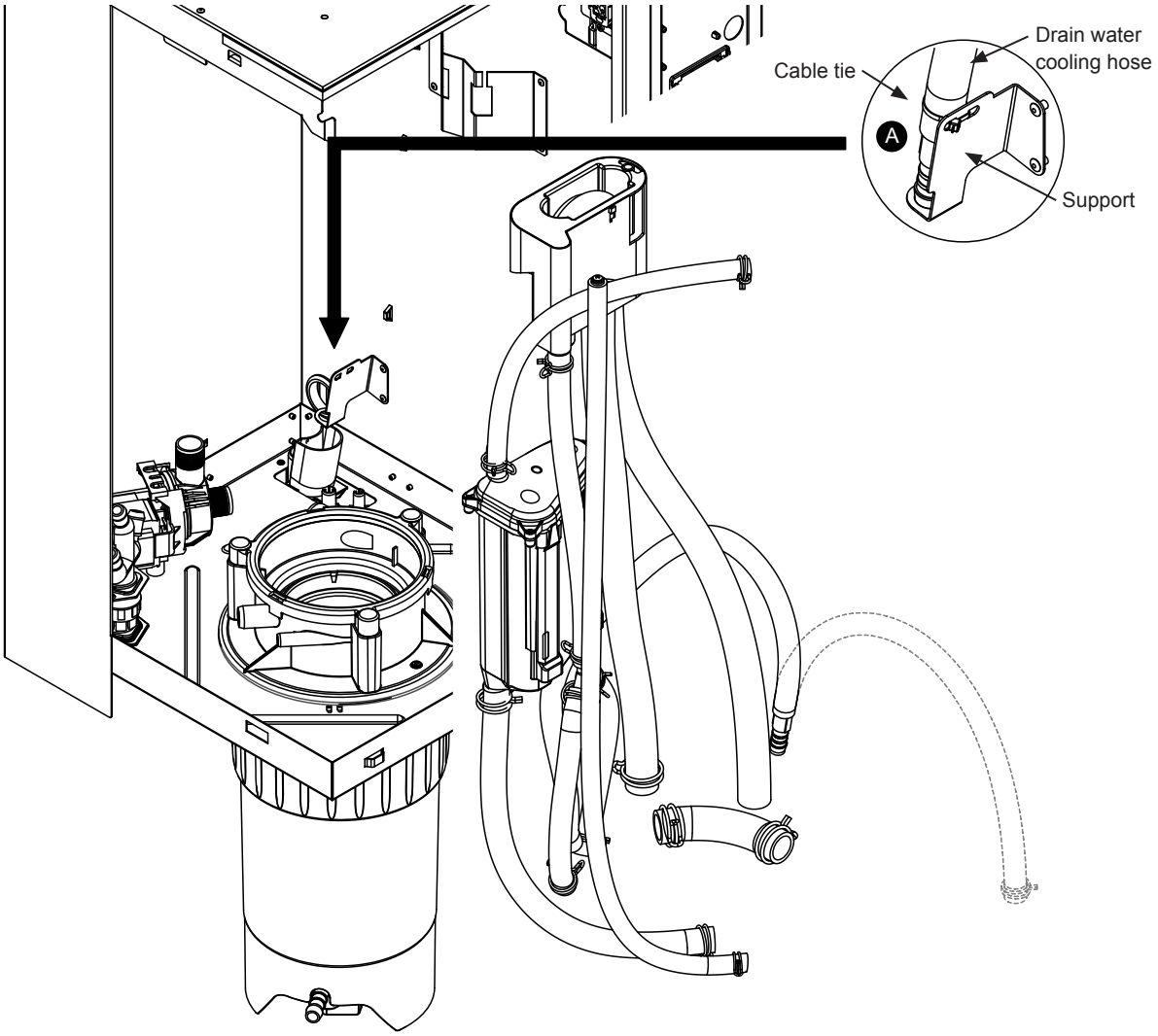


1. Remove drain hose from the connector on the drain cup.
2. Release the hose clamp, then remove water drain hose from the connector on the drain cup.
3. Undo the two screws fixing the drain cup to the unit using a screwdriver, then remove the drain cup downwards.

Installation of the drain cup follows the reverse sequence of the removal.

6.4.5 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 cylinder must be removed first (see *chapter 6.4.3*).



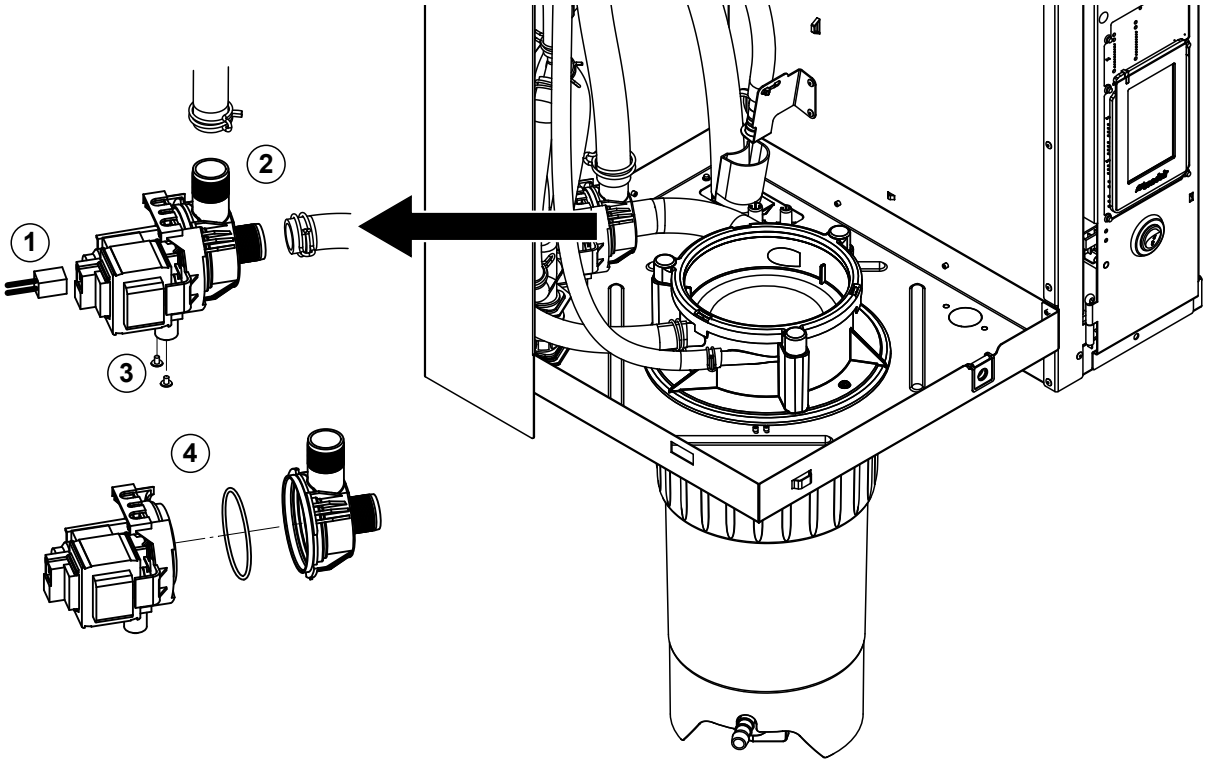
1. Release hose clamps, then disconnect all hoses from the corresponding connectors and remove the hoses.
   Note: The hoses connected to the filling cup and the level unit may also be removed together with the filling cup and the level unit (see illustration) and then disconnected from the connectors outside the unit.
2. Cut cable tie and remove drain water cooling hose.
3. **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.
4. **Carefully** remove the two control boards (left control board with LED's) from the level unit. Then, **carefully** pull fixing clip of the filling cup to the front, then push filling cup upwards until it comes to a stop and remove it to the front.

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 water hoses to the connectors with the hose clamps, align the hoses in a way that they are not twisted.

Important: Fix drain water cooling hose with a cable tie to the support again (see detail "A" in figure above).

6.4.6 Removal and installation of the drain pump

For removing the drain pump the steam cylinder must be removed first (see *chapter 6.4.3*).

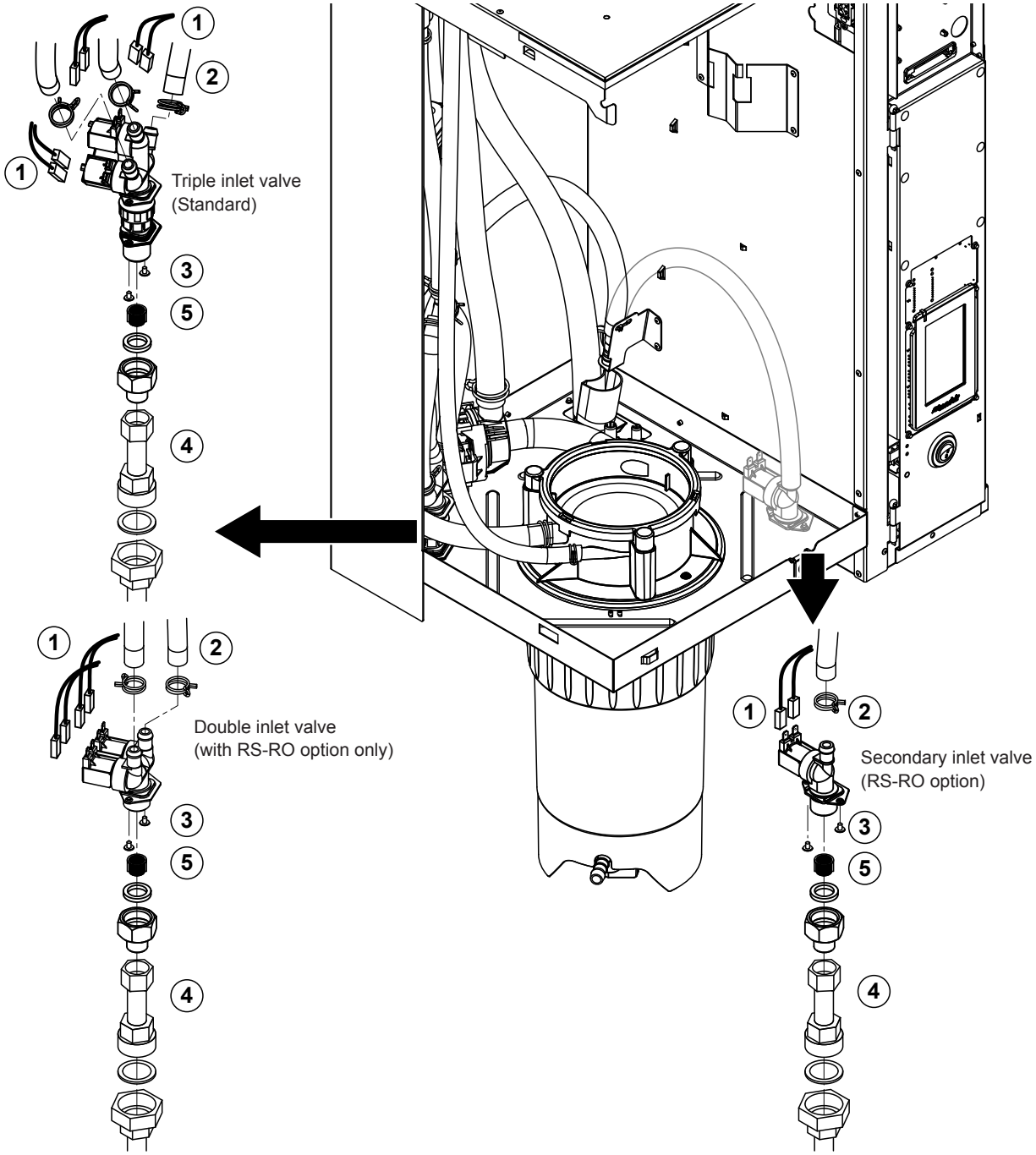


1. Detach electric cables (polarity of the cables must not be observed).
2. Release hose clamps and remove the hoses from the connectors.
3. Undo the two screws on the bottom of the housing with Phillips screwdriver, then remove drain pump.
4. Separate the electric motor from the pump body: release the 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.

6.4.7 Removal and installation of the inlet valve and the optional secondary inlet valve

For removing the inlet valve the steam cylinder must be removed first (see *chapter 6.4.3*).

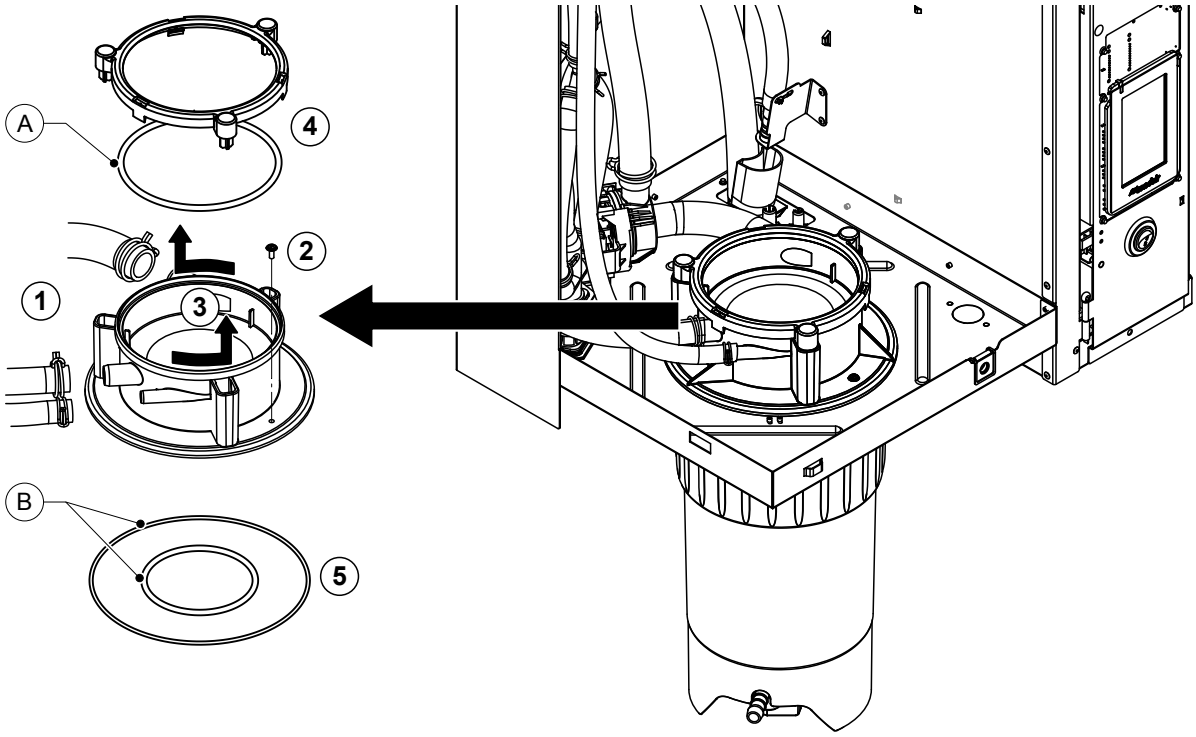


1. Detach electric cables from the inlet valve(s). Note: Cables are not sensitive to polarity. Important: on double or triple inlet valves (units with increased control accuracy) ensure to reconnect the connecting cables to same valve (note position).
2. Release hose clamp(s) and remove the hose(s) from the connector(s).
3. Undo water supply pipe and remove.
4. Undo the two screws on the bottom of the housing with Phillips screwdriver, then remove 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

6.4.8 Removal and installation of the steam cylinder receptacle

For removing the steam cylinder receptacle the steam cylinder must be removed first (see *chapter 6.4.3*).

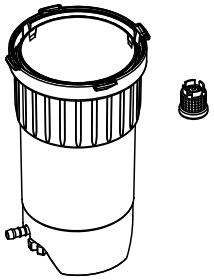
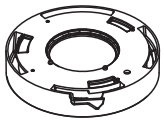
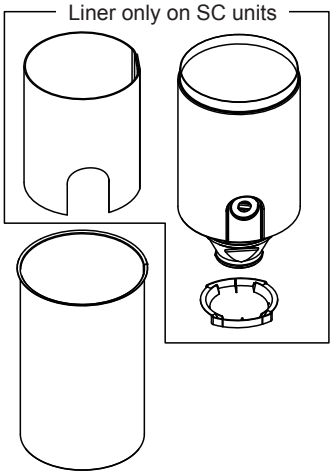
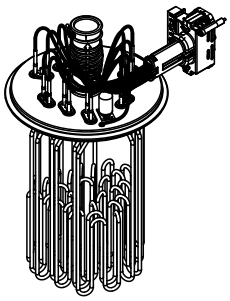


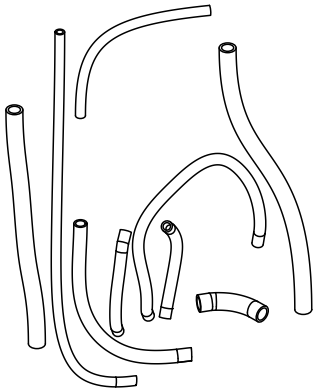
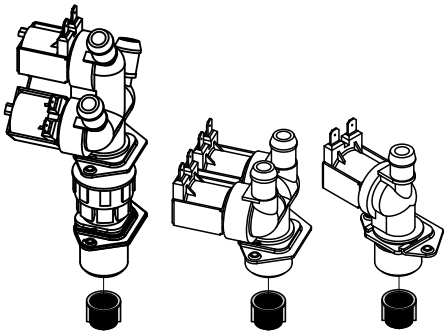
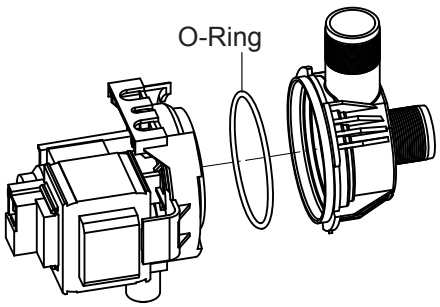
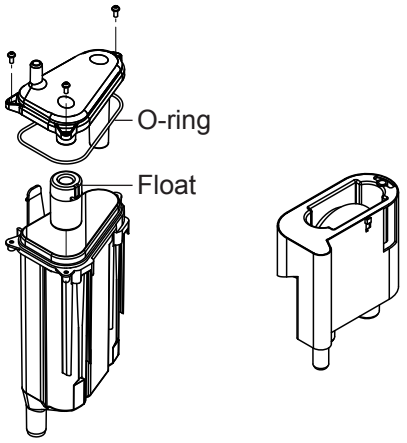
1. Release hose clamps and remove hoses from the connectors.
2. Undo the screw fixing cylinder receptacle to the bottom of the housing with Phillips screwdriver.
3. Turn cylinder receptacle counterclockwise to the stop and remove cylinder receptacle upwards.
4. Remove snap ring and O-ring.
5. Remove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

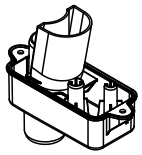
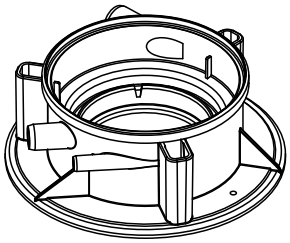
The **installation** of the steam cylinder receptacle follows the reverse sequence of the removal. Before mounting the steam cylinder receptacle, check O-rings and snap ring for damage and replace if necessary.

Note: Do not grease PTFE coated O-ring "A". But we recommend to grease the O-rings "B" with silicone free grease to ease the mounting of the steam cylinder receptacle.

6.5 Notes on cleaning the unit components

Unit component	What to clean and how to clean
Scale collector tank 	• Dump any lime in scale collector tank, then carefully remove any limescale inside scale collector tank and on the strainer insert using a soft bristled brush (do not use a wire brush). • Wash scale collector tank with a lukewarm soap solution, then rinse well with tap water.
Connection ring scale collector tank 	• Wipe off any limescale with a damp cloth without detergent. • Check the connection ring for cracks and replace if necessary.
Steam cylinder / steam cylinder insert 	• Carefully remove any limescale using a soft bristled brush (do not use a wire brush). • Wash components with a lukewarm soap solution, then rinse well with tap water.
Heating elements 	• Carefully remove any scale coating on the heating elements using a soft bristled brush (do not use a wire brush). 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.

Unit component	What to clean and how to clean
Hoses 	• Loosen any limescale in the hoses by carefully twisting and flexing the hoses, then flsuh out the hoses thoroughly with hot water.
Inlet valve  Strainer insert	• Carefully remove any limescale inside the inlet valve(s) and on the strainer(s) 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. Let the inlet valve dry before reinstallation!
Drain pump 	• 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. Let the drain pump dry before reinstallation!
Level unit and Filling cup 	• Disassemble level unit and filling cup. • Remove the level PCB's from the level unit and check for any traces of limescale or corrosion on the back. Replace if necessary. • Carefully remove any limescale from the level unit and the filling cup and its connectors using a soft bristled brush (do not use a wire brush). • Wash level unit and filling cup with a lukewarm soap solution and rinse well with tap water. • Reassemble level unit with level PCB's and filling cup.

Unit component	What to clean and how to clean
Drain cup 	• Carefully remove any limescale from the drain cup and its connectors using a soft bristled brush (do not use a wire brush). • Wash the drain cup and the receptacle on the bottom side of the unit with a lukewarm soap solution, rinse the parts well with tap water.
Steam cylinder receptacle 	• Carefully remove any limescale from the cylinder receptacle and its connectors using a soft bristled brush (do not use a wire brush). • Wash the cylinder receptacle with a lukewarm soap solution and rinse well with tap water.
Interior of the unit (water side only)	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!

6.6 Notes on cleaning agents

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.

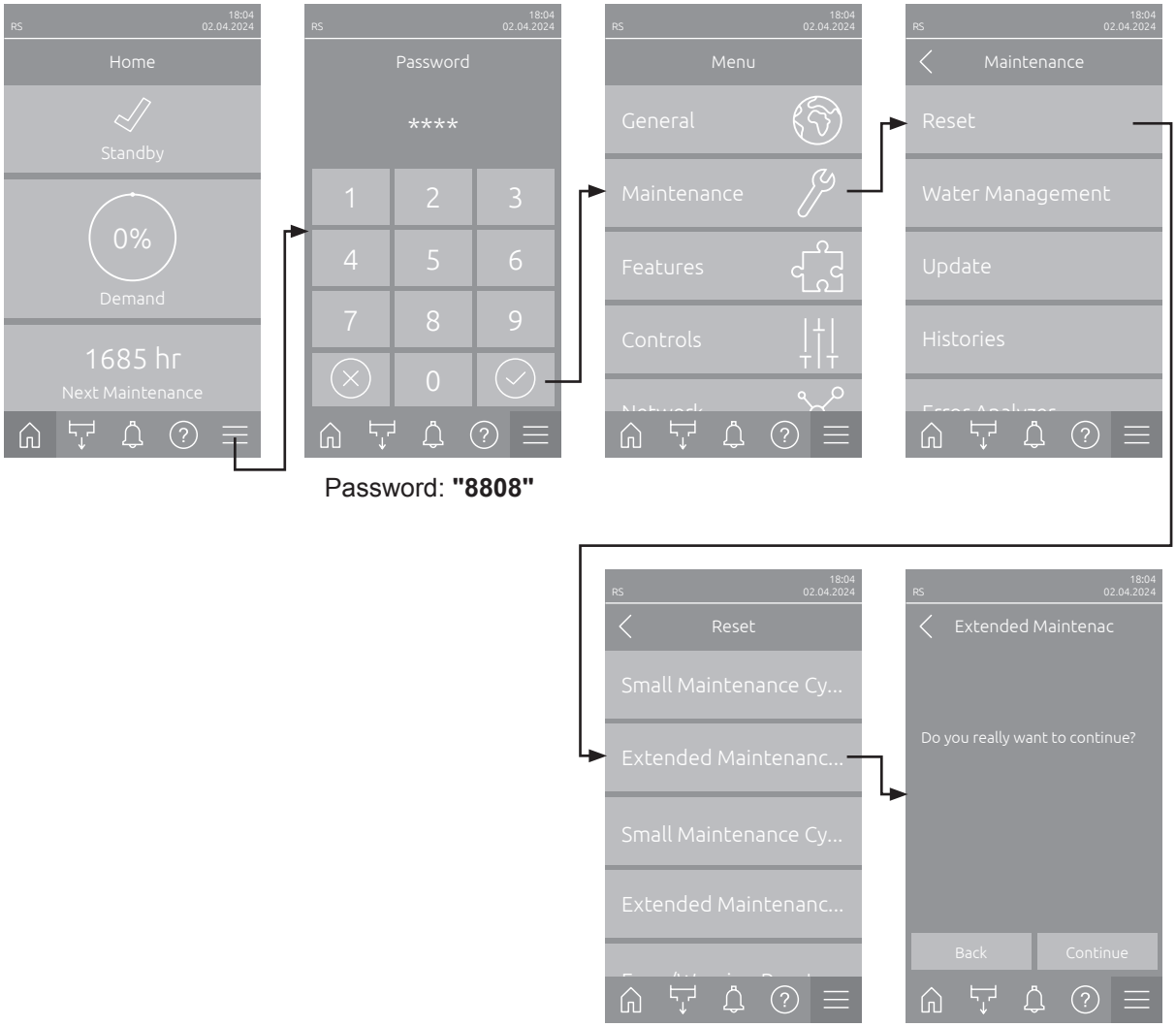
CAUTION!

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

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

6.7 Resetting the maintenance counter

After completing the "Small maintenance" or the "Extended maintenance", the corresponding maintenance indication or maintenance counter (for module A or module B or for both), respectively must be reset. Proceed as follows to reset the maintenance counter:



1. Select in the "Reset" submenu (Path: "Menu > Password: 8808 > Maintenance > Reset"). Then select the corresponding reset function ("Extended Maintenance Cyl. A Reset", "Extended Maintenance Cyl. B Reset" "Small Maintenance Cyl. A Reset" or "Small Maintenance Cyl. B Reset").
2. The reset confirmation dialog appears:
   - Press the **<Continue>** button to reset the corresponding maintenance counter ("Extended Maintenance Cyl. A Reset", "Extended Maintenance Cyl. B Reset" "Small Maintenance Cyl. A Reset" or "Small Maintenance Cyl. B Reset"). The maintenance counter and the maintenance indication are reset.
   - Press the **<Back>** button if the maintenance work has not been completed and you want to abort the reset procedure. The control unit returns to the "Reset" submenu.

6.8 Performing a software update

To update the control software or the driver board firmware, proceed as follows:

1. Set the On/Off switch on the front side of the steam humidifier to the Off position, then switch off the voltage supply to the steam humidifier via the external electrical isolator and secure switch in the off position to prevent it from inadvertent power up.
2. Unlock the front cover of the steam humidifier and remove it (for large units with two front covers: remove the front cover on the control compartment side).
3. Swivel control panel assembly 90°outwards.
4. Carefully insert FAT32 formatted USB memory stick containing the software updates into the USB port on the control board. Make sure that the maximum length of the memory stick does exceed 75 mm (3").
   Note: in order to update the control software or the firmware of the driver board a USB stick with a valid software update (the update files must be on the highest level outside of any folder) must be connected to the USB port on the control board. Otherwise, an appropriate fault message appears when starting the software update.
5. Close control panel assembly, then relocate the removed front cover and lock it with the screw.
6. Remove the lock and tag from the external disconnect switch. Then, switch on external disconnect switch to restore power to the humidifier.
7. Set the On/Off switch on the front side of the steam humidifier to the On position.
8. When the home screen appears, select the **<Menu>** button, then enter the password (8808) to login.
9. Select the function "Update" (Path: "Menu > Password. 8808 > Maintenance > Update". See also *Section 5.3.2.4*.
10. The software update confirmation screen appears. Press the **<Continue>** button.
11. An information window appears after a few minutes with information on the software update. Press the **<Reboot>** button to start the software update.

    The update starts. During the update, the display is inactive and the LED is flashing blue. If the update has completed the control returns to the home screen.

CAUTION!

Do not interrupt a software or firmware update once it has started. Wait until updating is completed. Corrupted control software or firmware can render the humidifier unusable.
Note: If software update is accidentally interrupted, the humidifier will not operate, but the software update can be resumed by leaving the USB key inserted in the control board and power cycling the unit. The integrated controller will detect the software was not properly installed, and restart the update.

12. Repeat steps 1 to 3, then carefully remove the USB stick.
13. Close control panel assembly, then relocate the removed front cover and lock it with the screw.
14. Repeat Step 6 and 7 to power up the humidifier.

7 Fault elimination

7.1 Important notes on fault elimination

Qualification of personnel

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

Repair work relating to the electrical installation must be carried out by an electrician or professionals authorized 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 RS set the unit out of operation and disconnect it from the mains (see *chapter 4.5*).

DANGER!

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

CAUTION!

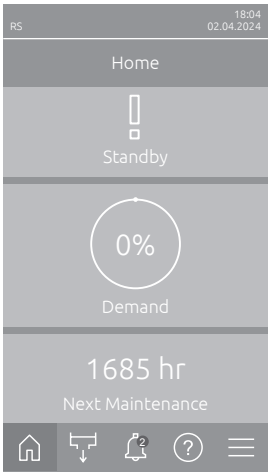
The electronic components inside the control compartment of the Condair RS are very sensitive to electrostatic discharge.

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

7.2 Fault indication

Malfunctions during operation detected by the control software are indicated by a corresponding **Warning** message (Status LED lights up yellow and the exclamation mark symbol is displayed in the device and error status field of the home screen) or **Error** message (Status LED lights up red and the cross symbol is displayed in the device and error status field of the home screen).

Warning



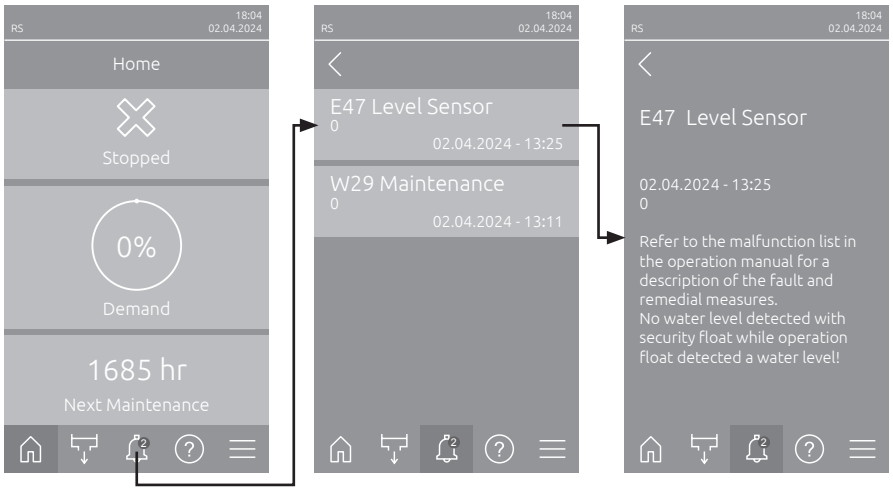
Temporary problems (e.g., water supply interrupted for a short time) or malfunctions which cannot cause damage to the system are indicated with a warning message, additionally the status LED lights up yellow. **If the cause of the malfunction disappears of its own accord within a certain period of time, the warning message will automatically switch off otherwise an error message is triggered.**
Note: Warnings can be indicated also via the service relay of the remote operating and fault indication. Therefore the warning indication via the service relay must be activated in the "Network" submenu of the control software (see *Section 5.3.5.6*).

Error



Malfunctions where further operation is not possible any longer or malfunctions which can damage the system are indicated with an error message, additionally the status LED lights up red. If such a malfunction occurs the operation of the system is limited only, or the system will be stopped automatically.

By pressing on the <Malfunction> button in the home screen the error list shown with all active warning and error messages. By pressing on the corresponding Warning or Error entry additional information regarding the malfunction are displayed (see display on the far right).



7.3 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, humidity control system, etc.).

Note: Remedial measures highlighted in gray in the malfunction list may only be remedied by a Condair service technician or a service center authorized by Condair.

Code		Message	Information	
Warning	**Fault**		**Possible causes**	**Remedy**
W01	**—**	**Smartcard**	No communication with Smartcard.	
			No Smartcard installed.	Contact your Condair representative.
			Smartcard not valid or defective.	
W6	**—**	**Main Missing**	No communication between extension unit and main unit.	
			Connection cable between main unit and extension unit interrupted.	Contact your Condair representative.
			Device interconnection configuration incorrect.	Check device interconnection settings in the control software.
—	**E10**	**Controller Reset**	The control unit (Integrated Controller) has been automatically restarted due to a software problem.	
			The Integrated Controller has performed an automatic restart due to a software problem.	Contact a Condair representative if this occurs regularly.
—	**E15**	**Program Fault**	The Countdown timer has expired.	
			The Countdown timer has expired the Countdown password must be entered.	Contact your Condair representative.

Code		Message	Information	
Warning	Fault		Possible causes	Remedy
W20	E20	Safety Loop	External safety loop is open. Humidification is stopped! Note: as soon as the safety loop is closed again the Condair RS continues to work normally.	
			Ventilation interlock open.	Check/switch on fan of the AHU.
			Air proving switch has triggered.	Check fan/filter of the AHU.
			High limit humidistat has triggered.	Wait, check/replace high limit humidistat.
			Fuse "F2" on the driver board defective.	Contact your Condair representative.
—	E22	Water Missing	Maximum filling time has exceeded. The Condair RS is monitoring the filling process with different levels which have to be reached within a preset time during filling. If a certain level is not reached within the preset time the fault message "Water Missing" is triggered. Note: The inlet valve remains open.	
			Water feed blocked, shut-off valve in the water supply line closed, filter valve closed or blocked). 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 (duct pressure too high, steam line too long or kinked), causing water loss via filling cup.	Check duct pressure, inspect steam installation. If applicable install pressure compensation kit (available as option).
			Water system leaky.	Check/seal water system.
—	E26 **	Contactor jammed	Level in the steam cylinder has dropped, although there is no humidity demand.	
			Contactor jammed.	Contact your Condair representative.
			Leak in the water system of the Condair RS.	Check Condair RS for leaks and seal leaks if required. Check the connection ring and the lime collector tank for cracks.
W28	—	Maintenance	The small maintenance is due. Note: The Condair RS remains operable. The maintenance message is shown until the maintenance counter is reset.	
			"Small maintenance" due.	Perform "Small maintenance" and reset maintenance counter.
W29	—	Maintenance	The extended maintenance is due. Note: The Condair RS remains operable. The maintenance message is shown until the maintenance counter is reset.	
			"Extended maintenance" due.	Perform "Extended maintenance" and reset maintenance counter.
—	E33	Control CH2 signal interrupted	Humidity sensor signal "Control CH2" is out of valid range! Humidification is stopped!	
			Humidity sensor or external limiter controller not or not correctly connected.	Check/correctly connect humidity sensor/external limiter controller.
			Humidity sensor or limiter controller wrong configured (e.g. mA signal instead of V signal set).	Correctly configure humidity sensor/ limiter controller via the configuration menu.
			Humidity sensor / Limiter controller defective.	Contact your Condair representative.

Code		Message	Information	
Warning	Fault		Possible causes	Remedy
W34	E34	**Maximum drain time exceeded**	Maximum drain time has exceeded. Note: The level in the steam cylinder has not dropped to the preset level within the preset time. The Condair RS carries out a level test. This procedure is repeated three times if maximum drain time is exceeded again, then a fault message is triggered and humidification is stopped!	
			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 funnel.
			Hoses to level unit blocked.	Clean or replace hoses.
			Drain pump defective.	Replace drain pump.
W35	E35	**Signal Timeout**	The network (Modbus, BACnet, LonWorks) has stopped sending humidity/ demand updates.	
			Signal cable from BMS not connected correctly or defective.	Contact your Condair representative.
			Interfering signal present.	
			Address conflict with other units in the chain.	Correctly set unit addresses.
—	E41	**Control CH1 signal interrupted**	Humidity sensor signal "Control CH1" is out of valid range! Humidification is stopped!	
			Humidity sensor or external controller not or not correctly connected.	Check/correctly connect humidity sensor/external controller.
			Sensor/controller wrong configured (e.g. mA signal instead of V signal set).	Correctly configure sensor/controller via the configuration menu.
			Humidity sensor/controller defective.	Contact your Condair representative.
W47	E47	**Level Sensor**	No water level detected with security float while operation float detected a water level. Humidification is stopped! Note: As soon as the level is within the valid range again, the Condair RS continuous normal operation.	
			Magnetic field in vicinity of level unit.	Eliminate magnetic field.
			Level unit defective.	Replace level unit
—	E54 **	**Leak Monitoring**	Leak of water detected. The humidification is stopped!	
			A leak has occurred on the Condair RS, the water inlet pipe or outlet pipe	Find and remedy the cause of the leak.
			No leak sensor connected, but the leak sensor is activated in the control software.	Deactivate the leak sensor in the control software.
—	E56 **	**Internal safety loop interrupted**	Internal safety loop is interrupted. Humidification is stopped!	
			Connection between heating cable plug and electronic interrupted.	Contact your Condair representative.
—	E57	**Activation Code**	Activation code has to be entered.	
			Activation code has not been entered yet.	Enter activation code (code available from your Condair representative).
—	E74 **	**Keep Alive**	Communication between control board and driver board interrupted.	
			Driver board not connected.	Contact your Condair representative.
			Wrong driver board installed.	
			Driver board defective.	
	E80	**USB Data Logger**	USB data logger fault.	
			USB data logger not connected or defective.	Check/replace USB data logger.
—	E82 **	**Driver Missing**	Communication with driver board interrupted.	
			RS485 Bus to driver board interrupted.	Contact your Condair representative.

Code		Message	Information	
Warning	Fault		Possible causes	Remedy
——	E83 **	Slave Address	Slave address changed during operation. The control can not differ between Master and Slave.	
			Rotary switch on the driver board of the slave unit set wrong.	Set rotary switch on the driver board of the slave unit to position "1".
——	E84 **	Driver Defective	Unknown fault on driver board.	
			Driver board defective.	Contact your Condair representative.
——	E85 **	Driver ID Wrong	Driver board ID wrong.	
			Wrong driver board connected or SAB address wrong.	Contact your Condair representative.
——	E86 **	Driver Incompatible	Wrong version of driver board.	
			Wrong version of driver board.	Contact your Condair representative.
——	E87 **	Local 24V Supply	Local 24V supply out of valid range!	
			Short circuit on supply module or supply module defective.	Contact your Condair representative.
——	E88 **	Local 5V Supply	Local 5V supply out of valid range!	
			Short circuit on supply module or supply module defective.	Contact your Condair representative.
——	E95	Heating voltage missing	Heating voltage is missing although a demand is present. Note: Once the heating voltage is restored, the Condair RS must be restarted to resume operation.	
			Heating contactor defective.	Contact your Condair representative.
			Phase failure heating voltage supply.	Check/switch on electrical isolator in the mains supply line. Let have fuses in the mains supply line be checked/ replaced by an electrician.
——	E97 **	External 24V Supply	External 24 V supply out of valid range. Voltage too high or too low.	
			Fuse "F1" on the driver board defective.	Contact your Condair representative.
			Short circuit on external connection.	Let have repaired the short circuit by an electrician.
			Overload on external connection.	Disconnect load on terminal X8.
——	E98 **	External 10V Supply	External 10 V supply out of valid range. Voltage too high or too low.	
			Fuse "F1" on the driver board defective.	Contact your Condair representative.
			Short circuit on external connection.	Let have repaired the short circuit by an electrician.
			Overload on external connection.	Disconnect load on terminal X8.
——	E109 **	Fault state of inlet valve 1	The output driver of inlet valve 1 is in fault state.	
			Valve electrically not connected or coil defective.	Contact your Condair representative.
——	E112 **	Fault state of complete drain valve	The output driver of the optional scale collector drain valve is in fault state.	
			Valve electrically not connected or coil defective.	Contact your Condair representative.
——	E117 **	Fault state of inlet valve 2	The output driver of inlet valve 2 is in fault state.	
			Valve electrically not connected or coil defective.	Contact your Condair representative.
W120	E120 **	Minimum fill time	The min. fill time from level 1 to 4 has been undershot. Note: The Condair RS carries out a level test. This procedure is repeated three times if minimum fill time is underrun again, then a fault message is triggered and humidification is stopped!	
			Level unit is scaled.	Clean level unit.
			Hose connections from the level unit to the steam cylinder are clogged.	Check hose connections from the level unit to the steam cylinder and clean if necessary.

Code		Message	Information	
Warning	Fault		Possible causes	Remedy
W121	E121 **	**Maximum vaporization time exceeded**	The maximum vaporization time has exceeded. Note: If the maximum vaporization time is exceeded the Condair RS carries out a level test. This procedure is repeated three times if maximum vaporization time is exceeded again, then a fault message is triggered and humidification is stopped!	
			Individual heating elements faulty.	Replace faulty heating elements.
			Fuses on the power board defective.	Let have fuses on the power board be replaced by an electrician.
			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.
			This error may also occur upon a cold start	Enable Soft start function.
—	E139 **	**Fault state of water cooling valve**	The output driver of the optional drain water cooling valve is in fault state.	
			Valve electrically not connected or coil defective.	Contact your Condair representative.
W140	E140	**Safety loop blower pack open**	The blower pack safety loop is open.	
			No voltage supply to blower pack present.	Let the voltage supply and connections be checked by an electrician.
			Operation without blower pack: jumper wire "J1" not connected to terminal block "X12" on driver board.	Connect jumper wire "J1" to terminal block "X12" on driver board.
W141	—	**Humidity signal CH1 below low-level**	Humidity signal of the humidity sensor connected to control CH1 port is below the defined low limit level in the RH alert submenu.	
			Humidity sensor not or not correctly connected.	Let the humidity sensor be checked/ connected correctly by an electrician.
			Sensor/controller wrong configured	Check the set low-level limit in the RH alert submenu of the control software.
W142	—	**Humidity signal CH1 above high-level**	Humidity signal of the humidity sensor connected to control CH1 port is above the defined high limit level in the RH alert submenu.	
			Humidity sensor not or not correctly connected.	Let the humidity sensor be checked/ connected correctly by an electrician.
			Sensor wrong configured.	Check the set high-level limit in the RH alert submenu of the control software.
W143	—	**Humidity signal CH2 below low-level**	Humidity signal of the humidity sensor connected to control CH2 port is below the defined low limit level in the RH alert submenu.	
			Humidity sensor not or not correctly connected.	Let the humidity sensor be checked/ connected correctly by an electrician.
			Sensor wrong configured.	Check the set low-level limit in the RH alert submenu of the control software.
W144	—	**Humidity signal CH2 above high-level**	Humidity signal of the humidity sensor connected to control CH2 port is above the defined high limit level in the RH alert submenu.	
			Humidity sensor not or not correctly connected.	Let the humidity sensor be checked/ connected correctly by an electrician.
			Sensor wrong configured.	Check the set high-level limit in the RH alert submenu of the control software.
W145	—	**Timer Overlap**	At least two time intervals of two timers are overlapping.	
			Timers incorrectly configured.	Check the time interval of all defined timers and ensure, that the timers are defined as considered.
W157	—	**Software download from USB failed**	Software download from USB failed.	
			Connection aborted during software download from USB stick or faulty update file.	Contact your Condair representative.
W158	—	**Software download from Cloud failed**	Software download from Cloud failed.	
			Connection aborted during software download from Cloud or faulty update file.	Contact your Condair representative.

Code		Message	Information	
Warning	Fault		Possible causes	Remedy
—	E162	**Software update failed**	Software update failed.	
			Integrated controller switched off during update process or invalid software version downloaded.	Contact your Condair representative.
W169	—	**Device Interconnection**	A unit in the device interconnected system has an error exception.	
			Check the warning on the concerned unit.	Clear the warning on extension unit in the device interconnected system
			Check the error on the concerned unit.	Clear the error on the extension unit in the device interconnected system
W170	—	**Extension Unit Missing**	The number of configured units does not correspond with the found units in the system.	
			Extension units not correctly connected	Check the connection between the units.
			Quantity of configurated units not correct	Check the configuration on the "Device Interconnection" submenu.
W172	E172 **	**Heating Contactor Replacement**	The maximum number of switching cycles of the heating contactor has been reached. Note: If the heating contactor is not replaced within a certain time after the warning message has appeared, the error message is triggered and humidification is stopped!	
			The maximum number of switching cycles of heating contactor has been reached	Contact your Condair representative.
W174	E174 **	**Driver Board Replacement**	The maximum number of switching cycles of the relays on the driver board has been reached. Note: If the driver board is not replaced within a certain time after the warning message has appeared, the error message is triggered and humidification is stopped!	
			The maximum number of switching cycles of the relays on the driver board has been reached.	Contact your Condair representative.

** These fault messages must be reset via the control software or by switching the Condair RS off and on again (see *Section 7.6*)

7.4 Fault behavior of units in a device interconnected system

Fault in the main unit

If a fault occurs on the main unit that is relevant to the system (e.g. request signal interrupted, external safety chain open, etc.), a fault is displayed on the main unit and all units in the device interconnected system are stopped.

If a fault occurs in the main unit that is not system-relevant (e.g. internal safety loop of ventilation unit open, maintenance due, etc.), a fault is displayed in the main unit and the main unit is stopped depending on the severity of the fault. The remaining units in the device interconnected system continue to humidify normally.

Fault in the extension unit

If a fault occurs in an extension unit (e.g. external safety loop open, service due, etc.), a fault is displayed on the affected extension unit and, depending on the severity of the fault, the affected extension unit is stopped. A warning is displayed on the main unit that an extension unit in the device interconnected system has a fault. The main unit continues to humidify normally.

If a fault occurs in an extension unit (e.g. external safety loop open, service due, etc.), a fault is displayed on the affected extension unit and, depending on the severity of the fault, the affected extension unit is stopped. A warning is displayed on the main unit that an extension unit in the device interconnected system has a fault. The main unit continues to humidify normally.

Units in the device interconnected system cannot be found

If units cannot be found in the device interconnected system (e.g. unit is switched off, connection problems, etc.), a warning is displayed on the main unit that an extension unit cannot be found in the device interconnected system. The main unit continues to humidify normally (unless the unit is switched off).
An error is displayed on the affected extension unit indicating that the main unit cannot be found and humidification is stopped (unless the unit is switched off). The remaining extension units in the device interconnected system continue to humidify normally.

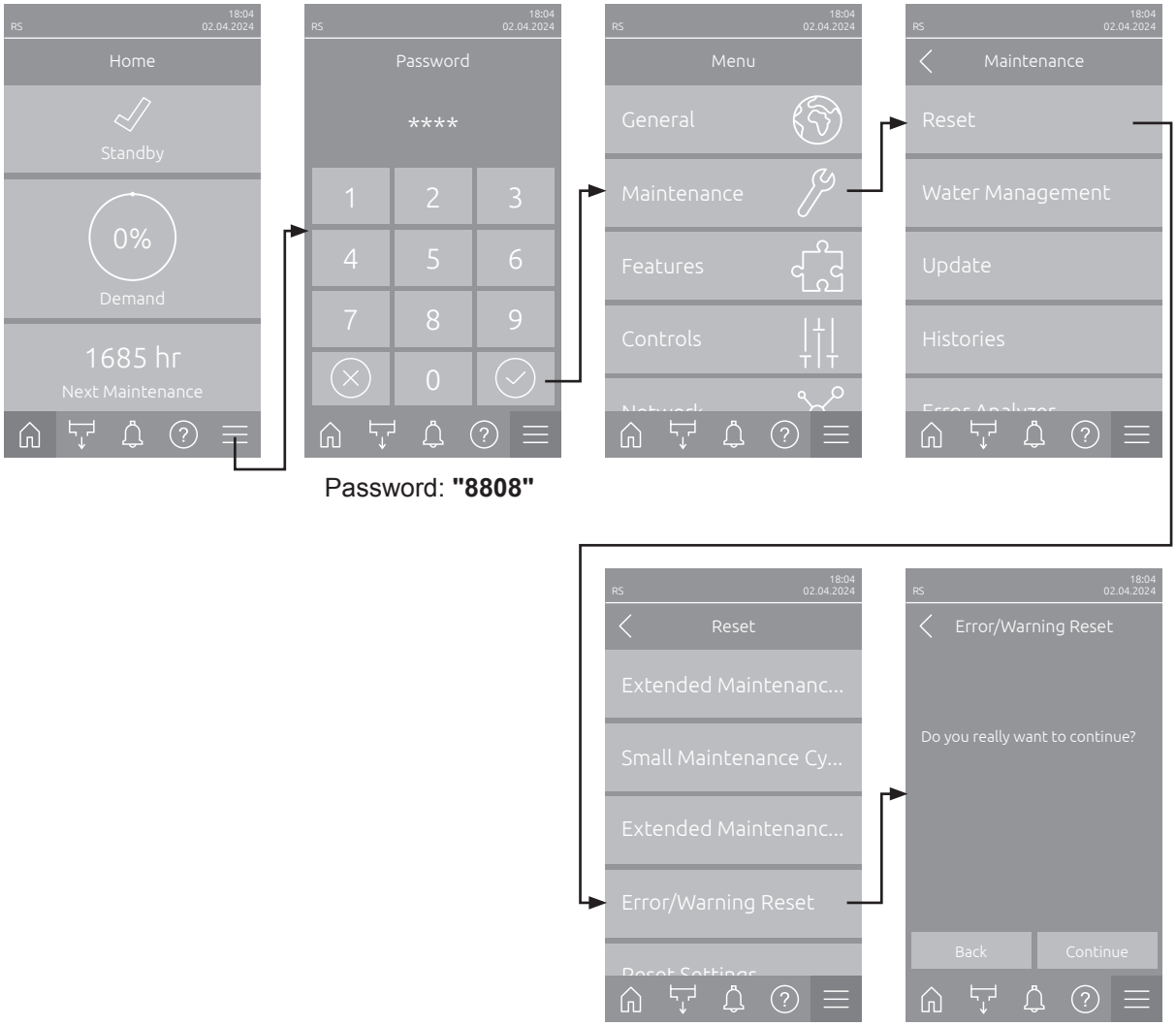
7.5 Saving fault and service histories to a USB memory stick

The fault and service histories of the Condair RS can be saved to a USB memory stick for logging and further analysis. For this purpose proceed as follows:

1. Set the On/Off switch on the front side of the steam humidifier to the Off position, then switch off the voltage supply to the steam humidifier via the external electrical isolator and secure switch in the off position to prevent it from inadvertent power up.
2. Unlock the front cover of the steam humidifier and remove it (for large units with two front covers: remove the front cover on the control compartment side).
3. Swivel control panel assembly 90°outwards.
4. Carefully insert FAT32 formatted USB memory stick into the USB port on the control board. Make sure that the maximum length of the memory stick does exceed 75 mm (3").
5. Close control panel assembly, then relocate the removed front cover and lock it with the screw.
7. Remove the lock and tag from the external disconnect switch. Then, switch on external disconnect switch to restore power to the humidifier.
7. Set the On/Off switch on the front side of the steam humidifier to the On position.
8. When the home screen appears, select the **<Menu>** button, then enter the password (8808) to login.
9. Select "**Maintenance > Fault/Service History Tab > Export History**". The last 40 humidifier fault and service history events are then downloaded to the memory stick as separate .csv files labelled "WARNING_FAULT.csv" and "SERVICE_HISTORY.csv".
   Note: the CSV tables can be processed with a spread-sheet program on a PC
10. Repeat steps 1 to 3, then carefully remove the USB memory stick.
11. Close control panel assembly, then relocate the removed front cover and lock it with the retaining screw.
12. Repeat Step 6 and 7 to power up the humidifier.

7.6 Resetting malfunction indication

To reset the malfunction indication, proceed as follows:



1. Select in the "Error/Warning Reset" function (Path: "Menu > Password: 8808 > Maintenance > Reset > Error/Warning Reset").
2. The reset confirmation dialog appears:
   - Press the **<Continue>** button to reset the malfunction indication(s).
   - Press the **<Back>** button to abort the reset procedure. The control unit returns to the "Reset" submenu.

If the malfunction indication cannot be reset via the control software (e.g., the display hangs), proceed as follows to reset the malfunction indication(s):

1. Switch off the steam humidifier via the **<On/Off>** switch (on the front side of the humidifier) or the electrical isolator.
2. Wait 10 seconds, then switch the control unit back on via the **<On/Off>** switch or the electrical isolator.

Note: If the cause of the malfunction(s) has/have not been eliminated, the malfunction indication(s) reappear(s) after a short while.

7.7 Replacing the fuses and backup battery in the control unit

The fuses of the control unit must be replaced by **authorized personnel only** (e.g. electrician).

Replace fuses of the control unit 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 fuses or the backup battery proceed as follows:

1. Disconnect control unit from the mains by switching off the electrical isolator and secure electrical isolator in "Off" position against inadvertent switching on.
2. Unlock the front cover of the steam humidifier and remove it (for large units with two front covers: remove the front cover on the control compartment side).
3. Swivel control board assembly 90°outwards.
4. Replace desired fuse or the backup battery.

DANGER!

The contact protection of fuse "F2" must mandatory be relocated after the fuse has been replaced.

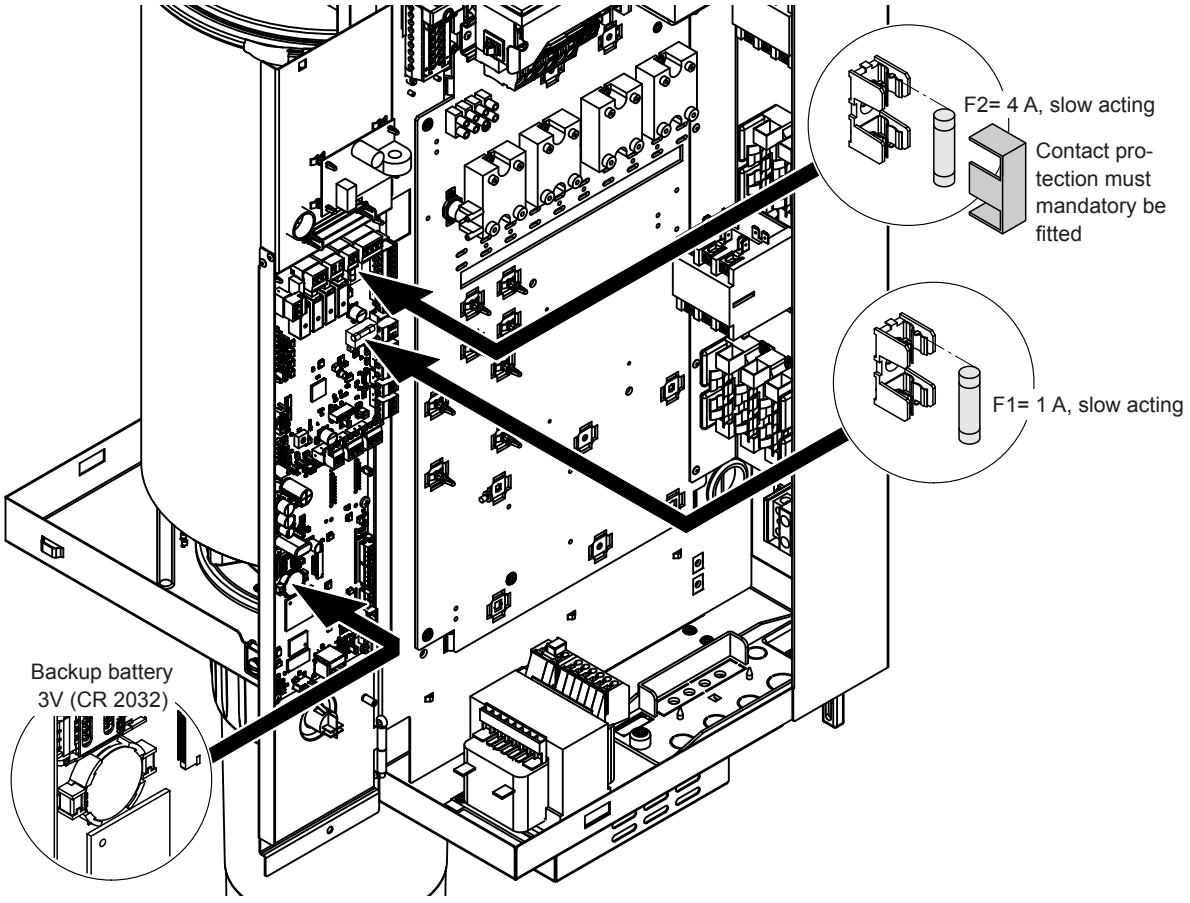


Fig. 7: Position of the backup battery and the fuses on the driver board

5. Swivel control board assembly 90°inwards.
6. Relocate front cover on control unit and lock it with the retaining screw.
7. Reconnect Condair RS to the mains by switching on the electrical isolator..

8 Taking out of service/Disposal

8.1 Taking out of service

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

1. Take the Condair RS out of operation as described in *chapter 4.5*.
2. Have the Condair RS (and if applicable othe system components) unmounted by a qualified service technician.

8.2 Disposal/Recycling

Components not used any more must not be disposed of in the domestic waste. Please dispose of the individual components in accordance with local regulations at the authorized 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.

9 Product specification

9.1 Performance data

	Condair RS	208 V/1~			240 V/1~			480 V/1~			600 V/1~		
		lbs/hr (kg/h)	kW	A	lbs/hr (kg/h)	kW	A	lbs/hr (kg/h)	kW	A	lbs/hr (kg/h)	kW	A
S	**...10...**	10.9 (4.9)	3.7	17.8	10.9 (4.9)	3.7	15.5	9.7 (4.4)	3.3	6.9	11.4 (5.2)	3.9	6.5
	...15...	15.9 (7.2)	5.4	26.0	14.5 (6.6)	4.9	20.6	14.1 (6.4)	4.8	10.0	14.7 (6.7)	5.0	8.3
	...20...	21.2 (9.6)	7.2	34.7	21.2 (9.6)	7.2	30.0	18.8 (8.5)	6.4	13.3	19.6 (8.9)	6.7	11.1
M	**...30...**	31.8 (14.4)	10.8	52.0	31.8 (14.4)	10.8	45.0	31.5 (14.3)	10.7	22.3	31.4 (14.2)	10.7	17.8
	...45...	—	—	—	—	—	—	—	—	—	—	—	—
	...65...	—	—	—	—	—	—	—	—	—	—	—	—
	...90...	—	—	—	—	—	—	—	—	—	—	—	—
L	**...90...**	—	—	—	—	—	—	—	—	—	—	—	—
	...130...	—	—	—	—	—	—	—	—	—	—	—	—
	...180...	—	—	—	—	—	—	—	—	—	—	—	—

	Condair RS	208 V/3~			240 V/3~			480 V/3~			600 V/3~		
		lbs/hr (kg/h)	kW	A	lbs/hr (kg/h)	kW	A	lbs/hr (kg/h)	kW	A	lbs/hr (kg/h)	kW	A
S	**...10...**	10.9 (4.9)	3.7	10.3	10.9 (4.9)	3.7	8.9	11.3 (5.1)	3.8	4.6	11.1 (5.0)	3.8	3.6
	...15...	15.9 (7.2)	5.4	15.0	14.5 (6.6)	4.9	11.9	14.6 (6.6)	5.0	6.0	17.6 (8.0)	6.0	5.8
	...20...	21.2 (9.6)	7.2	20.0	21.2 (9.6)	7.2	17.3	19.4 (8.8)	6.6	7.9	22.8 (10.3)	7.7	7.4
M	**...30...**	28.8 (13.1)	9.8	27.2	31.8 (14.4)	10.8	26.0	31.5 (14.3)	10.7	12.9	31.4 (14.2)	10.7	10.3
	...45...	47.7 (21.6)	16.2	45.0	47.9 (21.7)	16.1	38.7	45.2 (20.5)	15.4	18.5	47.1 (21.4)	16.0	15.4
	...65...	71.6 (32.5)	24.3	67.5	71.9 (32.6)	24.1	58.0	63.0 (28.6)	21.4	25.8	70.6 (32.0)	24.0	23.1
	...90...	—	—	—	—	—	—	94.6 (42.9)	32.1	38.7	94.3 (42.8)	32.0	30.8
L	**...90...**	95.4 (43.3)	32.4	90.0	94.6 (42.9)	32.2	77.4	—	—	—	—	—	—
	...130...	143.2 (65.0)	48.6	135.0	141.8 (64.3)	48.2	116.0	126.0 (57.2)	42.8	51.6	141.2 (64.1)	48.0	46.2
	...180...	—	—	—	—	—	—	189.2 (85.8)	64.2	77.3	188.6 (85.5)	64.0	61.7

9.2 Operating data

Achievable control accuracy	Note: The achievable control accuracy is influenced by the placement of the humidity sensor. Regarding the achievable control accuracy, please refer to chapter 5.6 (humidity control systems/humidity control) and chapter 5.4.2 (placement of the steam distributor) in the Condair RS installation manual.
– Option P unit	±2 % absolute humidity (with RH PI and use of untreated drinking water) ±1 % absolute humidity (with RH PI and use of de-ionized water) Note: When operating the Condair RS with option P with potable water the control accuracy can deviate from the above stated values during the drain cycle. For process air humidification with constant control accuracy the Condair RS with option P must be operated with de-ionized water and the drain cycle can be reduced.
Control steam output	
– active	0…5 VDC, 1…5 VDC, 0…10 VDC, 2…10 VDC, 0…20 VDC, 0…16 VDC, 3.2…16 VDC, 0…20 mADC, 4…20 mADC
– passive	all potentiometric humidity sensors from 140 Ω…10 kΩ
– On/Off control	<2.5 VDC --> Off; ≥2.5 VDC…20 VDC --> On
Duct air pressure	Overpressure max. 6.03" wc (1500 Pa), Underpressure max. 4.02" wc (1000 Pa) (for duct pressures outside these values contact your Condair representative)
Admissible ambient temperature	33.8 ... 104 °F (1...40 °C)
Admissible ambient humidity	1...75 %rh (non-condensing)
Water supply	
– Admissible water supply pressure	30 ... 80 psi (2.0 ... 5.5 bar)
– Admissible Feed temperature	33.8 ... 77 °F (1...25 °C)
– Water quality	Untreated drinking water, RO water, de-ionized water (for operation with softened or partly softened water please contact your Condair representative)
Water drain	
– Drain water temperature	max. 140 °F (60 °C)
Protection class	IP21

9.3 Connections/Dimensions/Weights

Water supply connector	NPT 1/2"
Water supply connector - RO-E secondary valve option	NPT 1/2"
Water drain connector	ø1.18" (ø30 mm)
Steam connector	ø1.77" (ø45.0 mm)
Housing dimensions	
– Small unit (S) - HxWxD	26.38" x 17.83" x 14.57" (670 mm x 453 mm x 370 mm)
– Medium unit (M) - HxWxD	30.71" x 22.17" x 15.98" (780 mm x 563 mm x 406 mm)
– Large unit (L) - HxWxD	30.71" x 40.67" x 15.98" (780 mm x 1033 mm x 406 mm)
Unit weights	
– Small unit (S) - Net weight/operating weight	62.83 lbs / 91.49 lbs (28.5 kg / 41.5 kg)
– Medium unit (M) - Net weight/operating weight	91.49 lbs / 147.71 lbs (41.5 kg / 67.0 kg)
– Large unit (L) - Net weight/operating weight	184.09 lbs / 296.52 lbs (83.5 kg / 134.5 kg)

9.4 Certificates

Certificates	UL

Warranty

Condair Inc. or Condair Ltd. (depending on the entity that supplied the product, and hereinafter collectively referred to as CONDAIR) warrant for a period of two years after installation or 30 months from the manufacturer's ship date, whichever date is earlier, that CONDAIR's manufactured and assembled products, not otherwise expressly warranted, are free from defects in materials and workmanship. Notwithstanding the foregoing, the products listed below have an alternate warranty period:

- GS/GSTC Series heat exchanger(s) are warranted to be free from defects in materials and workmanship for a period of 3 years from installation or 40 months from the manufacturer's ship date, whichever is earlier.
- SAM-e Short Absorption Manifolds, except for the coupling seals, are warranted to be free from defects in materials and workmanship for a total period of 10 years from the manufacturer's ship date.
- Condair RH Connect and Condair RH Classic humidifiers are warranted to be free from defects in materials and workmanship for a period of 5 years from the manufacturer's ship date.
- Spare Parts used for repairs are warranted for the balance of the term of the warranty on the original humidifier or 90 days, whichever is longer.
- No warranty is made against corrosion, deterioration, or suitability of substituted materials used as a result of compliance with government regulations.

CONDAIR's obligations and liabilities under this warranty are limited to furnishing replacement parts to the customer, F.O.B. CONDAIR's factory. The replacement parts are warranted for the balance of the term of the warranty on the original humidifier or 90 days, whichever is longer. Procedure:

1. Customer Requests Warranty as per instructions on the CONDAIR Warranty Form.
2. CONDAIR reviews the warranty claim and will respond in one of two ways:
    a. Warranty Accepted – Replacement Part or credit granted.
    b. Warranty Declined – Response with justification will be provided to the customer.
3. In some cases, CONDAIR may request the part to be returned, freight prepaid by the customer, as part of the warranty acceptance or warranty determination process. Some reasons include:
    a. Part must be analyzed to determine the root cause of failure.
    b. Part must be returned to the supplier for claim/investigation.

    When parts are requested to be returned, replacement parts will be sent by CONDAIR to the customer against an invoice from CONDAIR paid by the customer. The cost of the replacement parts will be reimbursed to the customer with a credit note after the parts are received and analyzed by CONDAIR, if the warranty is accepted.

The warranties set forth herein are in lieu of all other warranties expressed or implied by law. No liability whatsoever shall be attached to CONDAIR until said products have been paid for in full and then said liability shall be limited to the original purchase price for the product. Any further warranty, with the exception of a purchased extended warranty described below, must be in writing, and signed by an officer of CONDAIR.

CONDAIR makes no warranty and assumes no liability unless the equipment is installed in strict accordance with the installation manual in effect at the date of purchase, and by properly qualified and licensed professionals capable of installing such equipment.

CONDAIR makes no warranty and assumes no liability whatsoever for consequential damage or damage resulting directly from misapplication, incorrect sizing, or lack of proper maintenance of the equipment.

CONDAIR makes no warranty and assumes no liability whatsoever for damage to the products, humidifier, supply lines, drain lines, steam distribution systems, or the building as a whole caused by freezing.

CONDAIR reserves the right to change the design, specifications, and performance criteria of its products without notice or obligation.

Extended Warranty

Extended warranties are available to purchase under the conditions listed above. Extended warranties must be purchased at the time of the original equipment order.

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