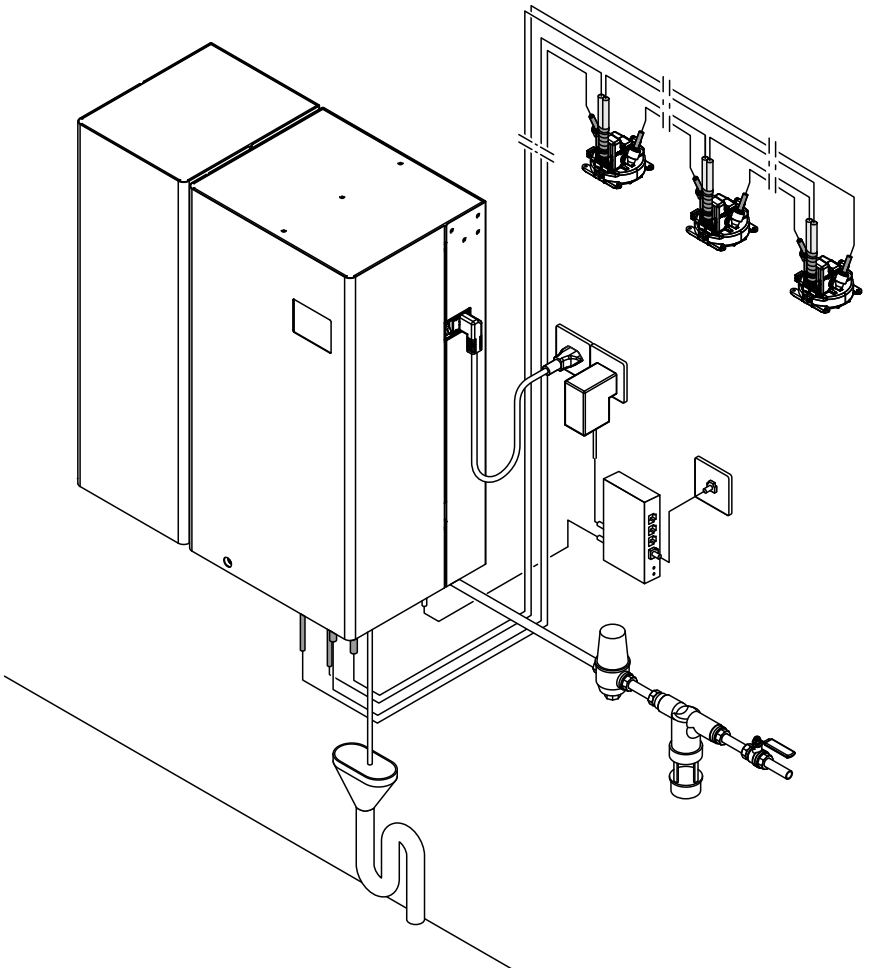
2595331-J EN 2505

MN SERIES



# PLANNING AND INSTALLATION INSTRUCTIONS

**Condair HumiLife - The flexible room solution**
**Condair MN**

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: |

# Contents

# 1 Introduction

## 1.1 First things first!

Thank you for choosing the **Condair MN**.

The Condair MN has been built using state-of-the-art technology and in accordance with the latest safety regulations. However, improper installation and use of the Condair MN may put users and/or third parties at risk and may also cause damage to material assets.

To ensure safe, proper and cost-efficient operation of the Condair MN, please observe and comply with all information and safety instructions in this documentation and in the instructions to the components built into the humidifier system.

Should you have any questions after reading these instructions, please contact your local Condair representative. They will be pleased to help you.

## 1.2 Information about the planning and installation instructions

**Delimitations**

These planning and installation instructions are for the Condair MN in its various configurations. Options and accessories are only described insofar as is necessary for proper planning and installation. Please see the relevant instructions for additional information on the options and accessories.

If the Condair MN system is operated with the optional reverse osmosis system Condair RO-HB, the english version of the installation and operation manual for the reverse osmosis system Condair RO-HB can be downloaded using the following QR code:

The information in these instructions is limited to the planning and preparatory installation of a Condair MN system and is aimed at groups of people who are appropriately trained and sufficiently qualified for the work in question.

These planning and assembly instructions are accompanied by various separate documents which are included with delivery. Where necessary, these instructions may refer to these publications.

**Symbols used in this manual**

**CAUTION!**

The signal word “CAUTION” together with the general hazard symbol, indicates information provided in this documentation which, if ignored, could lead to damage and/or the failure of the device or other equipment.

**WARNING!**

The signal word "WARNING", together with the general hazard symbol, indicates safety and hazard information given in this documentation which, if ignored, could lead to injury to people.

**DANGER!**

The signal word "DANGER", together with the general hazard symbol, indicates safety and hazard information given in this documentation which, if ignored, could lead to serious injury or even death to people.

**Storage**

Keep this documentation in a safe place for further use. If these instructions are lost or if you are unsure whether this documentation is still up to date, please contact your Condair representative.

**Language versions**

This documentation is available in various languages. For more information, please contact your Condair representative.

# 2 For your safety

### General

All persons tasked to perform work on the Condair MN must read and ensure they have understood the planning and installation instructions as well as the operating manual for the Condair MN before starting work.
An understanding of the content of these planning and installation instructions and the operating manual is a basic prerequisite for protecting personnel from danger, avoiding improper installation and operating the device safely and properly.

All pictograms, signs and markings applied to the Condair MN components must be observed and kept in a clearly legible condition.

### Personnel qualifications

All work described in this documentation may only be carried out by trained and suitably qualified staff **authorised by the operator**.
Furthermore, for safety and warranty reasons, interventions may only be undertaken by specialist personnel authorised by Condair.

It is assumed that all persons entrusted to work on the Condair MN are familiar with and abide by the regulations on occupational health and safety and accident prevention.

### Proper use

The Condair MN is intended only for direct air humidification of rooms within the specified operating parameters (see operating manual for the Condair MN). Any other use without the written permission of Condair is deemed to be improper use and can render the Condair MN hazardous.
Proper use also demands that all information in this documentation and the operating manual (in particular, all safety and hazard information) is duly observed.

**Hazards that may arise from the Condair MN:**

**DANGER!**
**Risk of electrocution**

The Condair MN's central unit runs on mains power. **If the central unit is open, live parts may be touched. Touching live parts may cause severe injury or death.**

**That is why the central unit must be switched off and disconnected from the mains power supply (remove the plug from the socket) before the central unit is opened.**

**Warning!**
**UVC radiation**

**A UV lamp is built into the Condair MN's central unit. In principle this should pose no risks, as it is installed in a radiation-proof housing. If the UV lamp is operated outside of this housing, harmful UVC radiation may be released. This may cause damage to the eyes and skin.**

**That is why the UV lamp must never be operated outside of the protective housing. The central unit must be switched off and disconnected from the mains power supply (remove the plug from the socket) before the central unit is opened.**

**Warning!**

**Waste from damaged UV lamps may lead to injury and cause damage to human health and harm to the environment.**

**That is why the waste from damaged UV lamps must be disposed of in accordance with local provisions on hazardous substances and the site of the damage must be cleaned properly.**

**CAUTION!**

**Leaky or defective water pipes/connections may lead to water damage.**

**That is why the central unit and any external drain modules should, where possible, be installed in a technical room with a water outlet that is only accessible to a limited number of people.**

We recommend equipping the central unit water outlet with hose breakage protection (washing machine connection, by customer) or with leakage monitoring (by customer), ensuring the water supply if the outlet pipe breaks.

**DANGER!**
**Health risk!**

**Due to health risks, the silicate content in the supply water – in any form – must not exceed 12 mg/l.**

If the silicate content of the supply water is higher a silicate filter must mandatory be installed in the water supply line before the humidifier by the customer..

For product-specific restrictions regarding the silicate content of upstream water treatment systems, please note the relevant water quality requirements for the respective water treatment system.

### Preventing hazardous operating conditions

If it is suspected that **safe operation is no longer possible**, the Condair MN should immediately **be shut down and secured against accidental power-up. Then, contact the Condair representative**. This can be the case under the following circumstances:

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

All persons working with the Condair MN must report any alterations to the unit that may affect safety to the Condair representative.

### Unauthorised modifications to the device

No additions or modifications may be made to the Condair MN without the written permission of Condair.

When replacing any defective components of the device, use only genuine accessories and spare parts from your Condair representative.

# 3 Product overview

## 3.1 Product designation

The identification of the product is found on the specification label on the right side of the central unit:

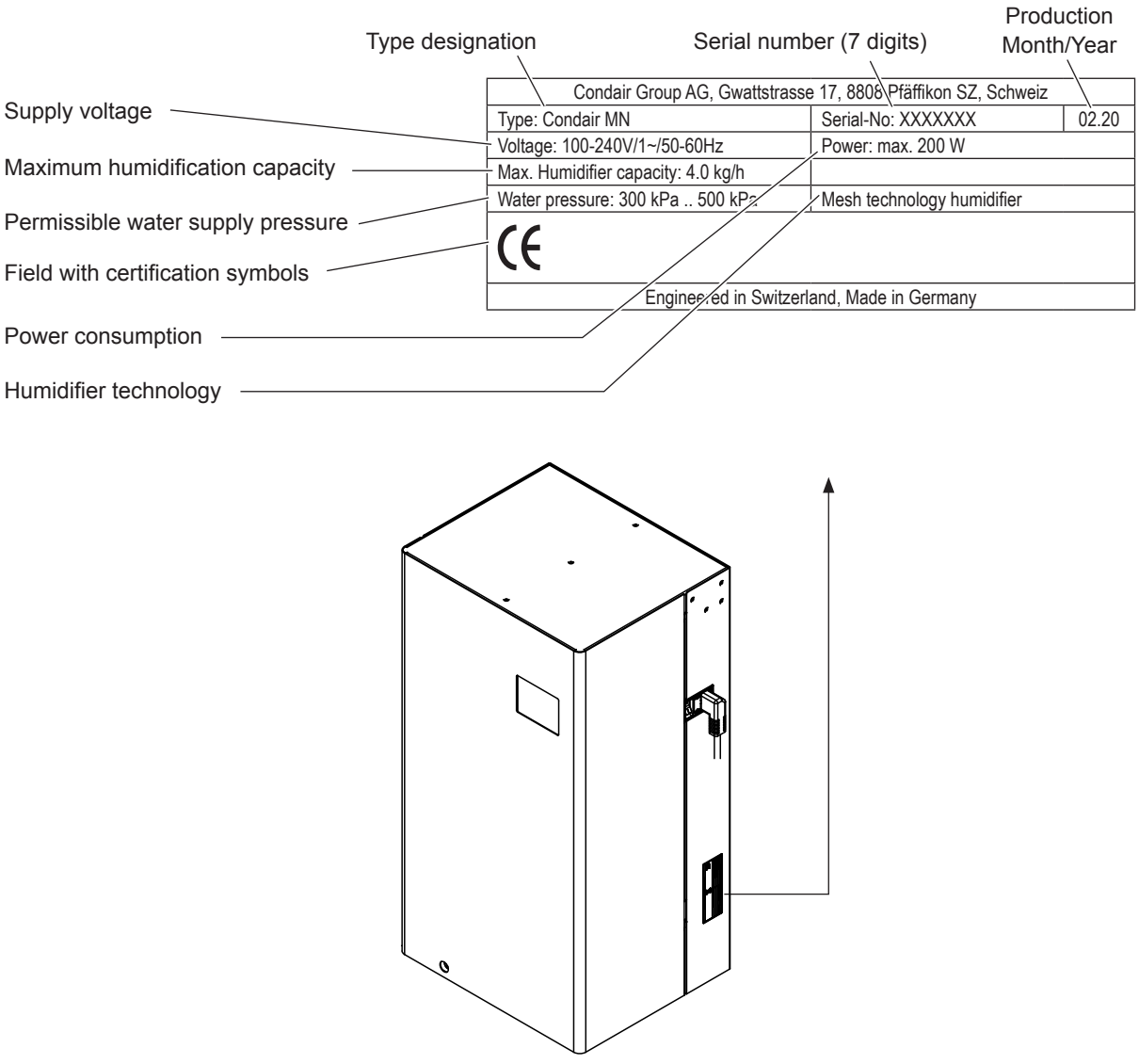
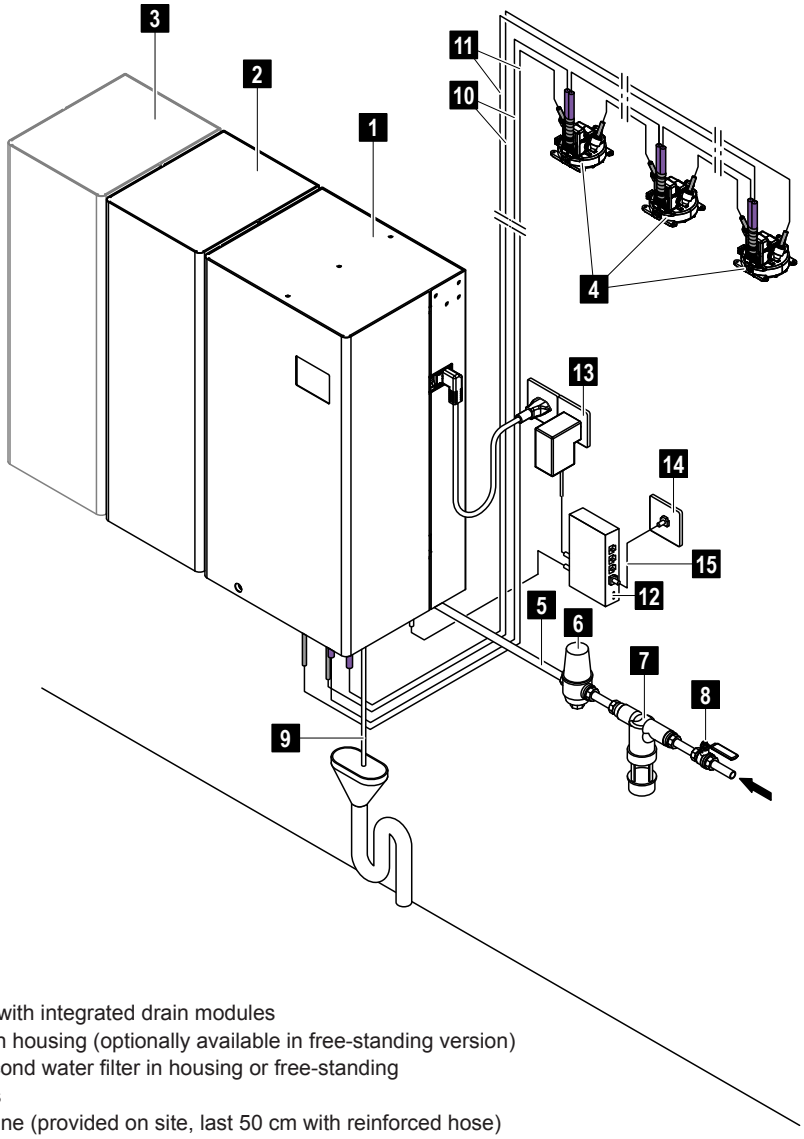


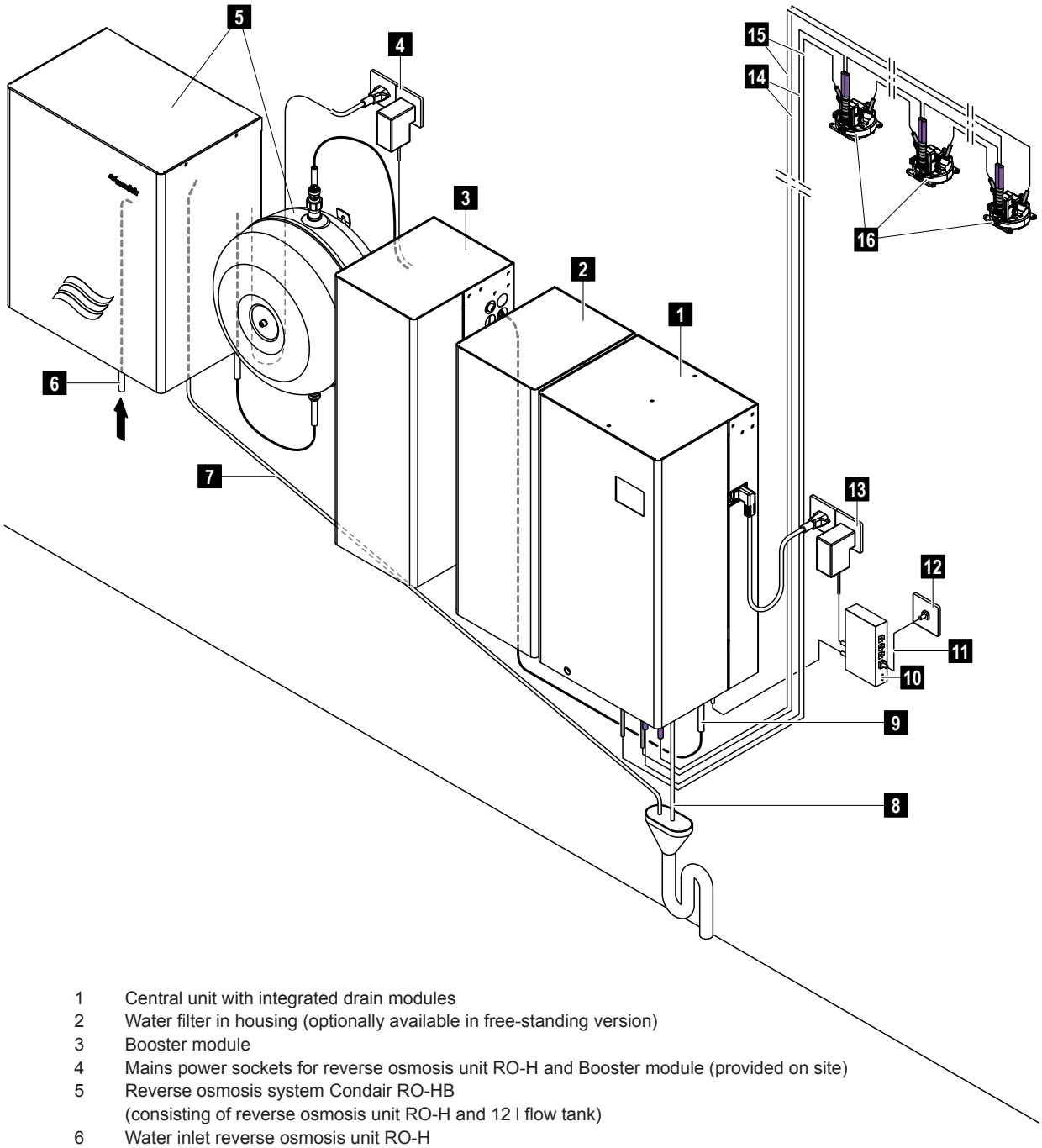

*Fig. 1: Location of the specification label*

## 3.2 System overviews



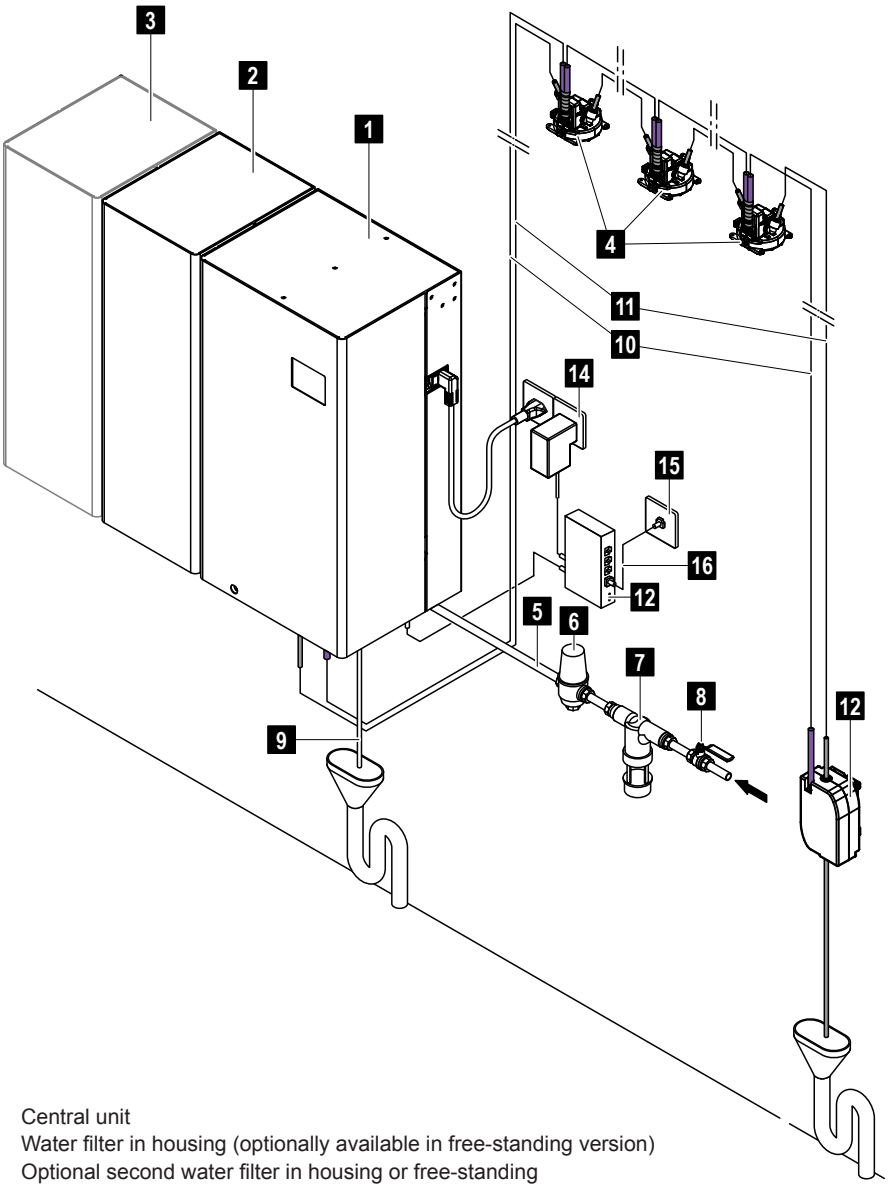

1 Central unit with integrated drain modules
2 Water filter in housing (optionally available in free-standing version)
3 Optional second water filter in housing or free-standing
4 Spray heads
5 Water feed line (provided on site, last 50 cm with reinforced hose)
6 Pressure reduction valve (provided on site) for water pressures >500 kPa (>5 bar)
7 Backflow preventer for fluid category 2 with integrated particle filter (provided on site)
8 Water inlet shut-off valve (provided on site)
9 Central unit water outlet
10 CAN bus cable
11 Hoses
12 LAN gateway
13 Mains power sockets for central unit and LAN gateway (provided on site)
14 LAN connection (provided on site)
15 LAN cable (provided on site)

*Fig. 2: Overview of Condair MN system with internal drainage of spray circuit*



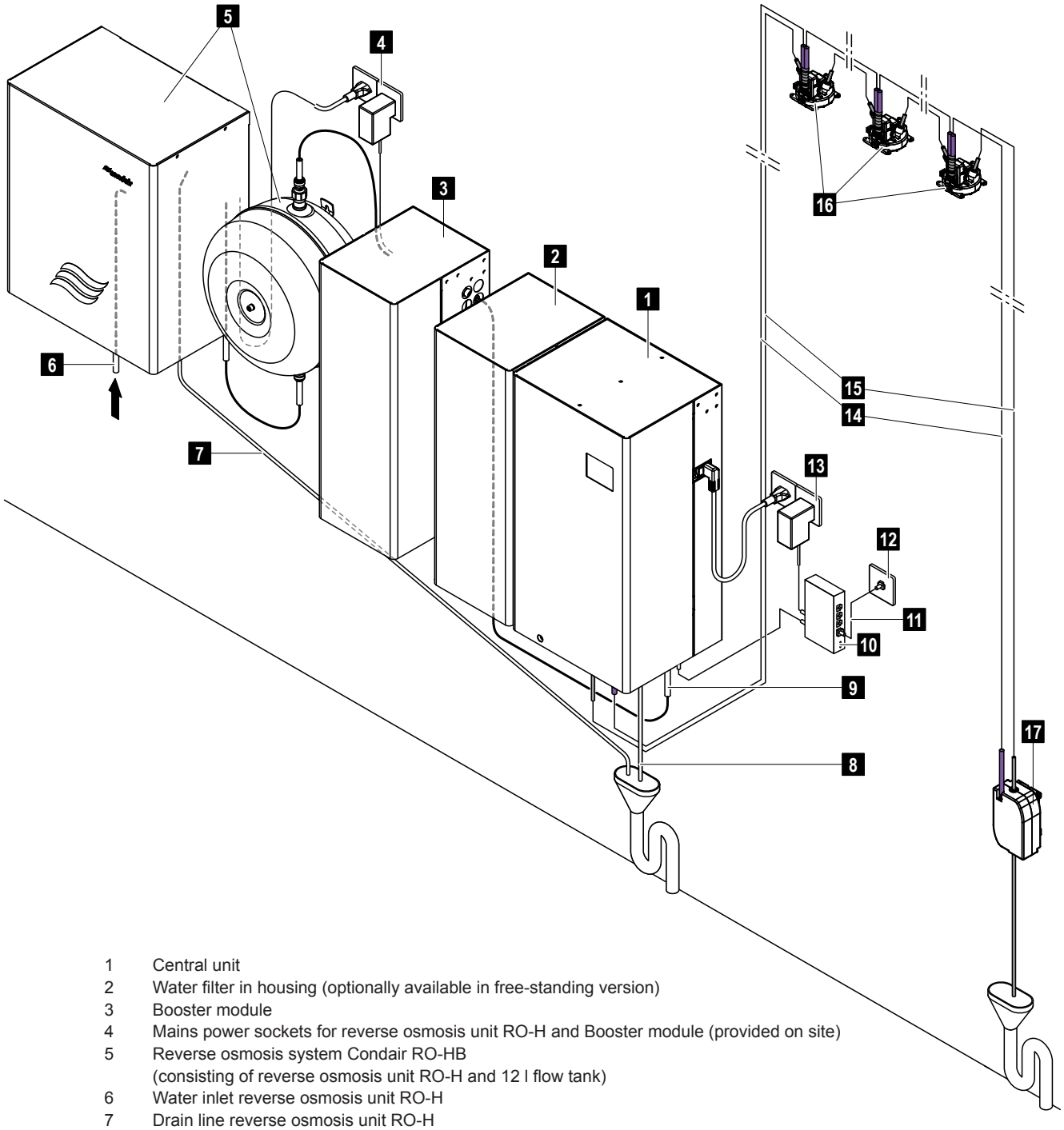

1 Central unit with integrated drain modules
2 Water filter in housing (optionally available in free-standing version)
3 Booster module
4 Mains power sockets for reverse osmosis unit RO-H and Booster module (provided on site)
5 Reverse osmosis system Condair RO-HB
(consisting of reverse osmosis unit RO-H and 12 l flow tank)
6 Water inlet reverse osmosis unit RO-H
7 Drain line reverse osmosis unit RO-H
8 Central unit water outlet
9 RO water feed line
10 LAN gateway
11 Mains power sockets for central unit and LAN gateway (provided on site)
12 LAN connection (provided on site)
13 LAN cable (provided on site)
14 CAN bus cable
15 Water hoses
16 Spray heads

*Fig. 3: Overview Condair MN system with internal drainage of spray circuit and reverse osmosis system Condair RO-HB*




1 Central unit
2 Water filter in housing (optionally available in free-standing version)
3 Optional second water filter in housing or free-standing
4 Spray heads
5 Water feed line (provided on site, last 50 cm with reinforced hose)
6 Pressure reduction valve (provided on site) for water pressures >500 kPa (>5 bar)
7 Backflow preventer for fluid category 2 with integrated particle filter (provided on site)
8 Water inlet shut-off valve (provided on site)
9 Central unit water outlet
10 CAN bus cable
11 Water hoses
12 Drain module (installed externally)
13 LAN gateway
14 Mains power sockets for central unit and LAN gateway (provided on site)
15 LAN connection (provided on site)
16 LAN cable (provided on site)

*Fig. 4: Overview of Condair MN system with external drainage of spray circuit*




1 Central unit
2 Water filter in housing (optionally available in free-standing version)
3 Booster module
4 Mains power sockets for reverse osmosis unit RO-H and Booster module (provided on site)
5 Reverse osmosis system Condair RO-HB
(consisting of reverse osmosis unit RO-H and 12 l flow tank)
6 Water inlet reverse osmosis unit RO-H
7 Drain line reverse osmosis unit RO-H
8 Central unit water outlet
9 RO water feed line
10 LAN gateway
11 Mains power sockets for central unit and LAN gateway (provided on site)
12 LAN connection (provided on site)
13 LAN cable (provided on site)
14 CAN bus cable
15 Water hoses
16 Spray heads
17 Drain module (mounted externally)

*Fig. 5: Overview of Condair MN system with external drainage of spray circuit and reverse osmosis system Condair RO-HB*

## 3.3 System description

### System design

The Condair MN consists of:
- a central unit;
- a water filter and an optional second water filter (both water filters with or without housing);
- one to max. two spray circuits with maximum 15 spray heads per spray circuit;
  Note: The spray heads are designed as standard for flush mounting on the ceiling or walls. Surface panels for surface mounting of the spray heads are available as an option.
- a internal drainage (drain module integrated in the central unit, see *Fig. 2* and *Fig. 3*) or a external drainage (drain module installed in a separate room, see *Fig. 4* and *Fig. 5*) per spray circuit.

The Condair MN system can optionally be equipped with a reverse osmosis system RO-HB (reverse osmosis unit with flow tank) and a booster module to feed the Condair MN system with RO water (see *Fig. 3* and *Fig. 5*).

### Humidification output

The maximum humidification output of one spray head is 200 ml/h.

This yields the following maximum humidification outputs:
- With one spray circuit with max. 15 spray heads: max. 3 l/h
- With two spray circuits with max. 15 spray heads per spray circuit: max. 6 l/h

### Power supply

- Central unit: 100-240 V / 1~ / 50-60 Hz
- Spray heads: 36 VDC, supplied by the central unit through a bus cable

### Supply water

- Quality: Drinking water in accordance with applicable local drinking water regulations or reverse osmosis water
- Permissible water supply pressure: 300 ... 500 kPa (3 ... 5 bar)
- Permissible water temperature: 5...25 °C
- Water hardness: 3 ... 30 °dH or 5...53 °fH
- Conductivity: 3 ... 1000 µS/cm
- Silicate content in any form, e.g. $SiO_2$: max. 12 mg/l

Note: The permissible values for the supply water for the optional RO-HB reverse osmosis system can be found in the separate installation and operation manual for the reverse osmosis unit.

### Water drainage

- Open drain funnel with trap connected to the building's wastewater pipe.

**Hygiene functions**

In order to comply with the guidelines set out in VDI 6022, sheet 6, the Condair MN has the following hygiene functions as standard:

- Periodic system flushing
- UV treatment of water
- Permanent temperature control
- Safeguard against system being switched off for too long

**Safety functions**

- Hydraulics
  - Permanent conductivity monitoring
  - Permanent pipe burst monitoring
  - Periodic leakage monitoring
  - Permanent temperature control
- Electronics
  - Short circuit fuse on spray circuit

**Remote operation/monitoring**

Connecting the Condair MN via a LAN gateway enables online access and monitoring of the system.

## 3.4 Spray circuit design

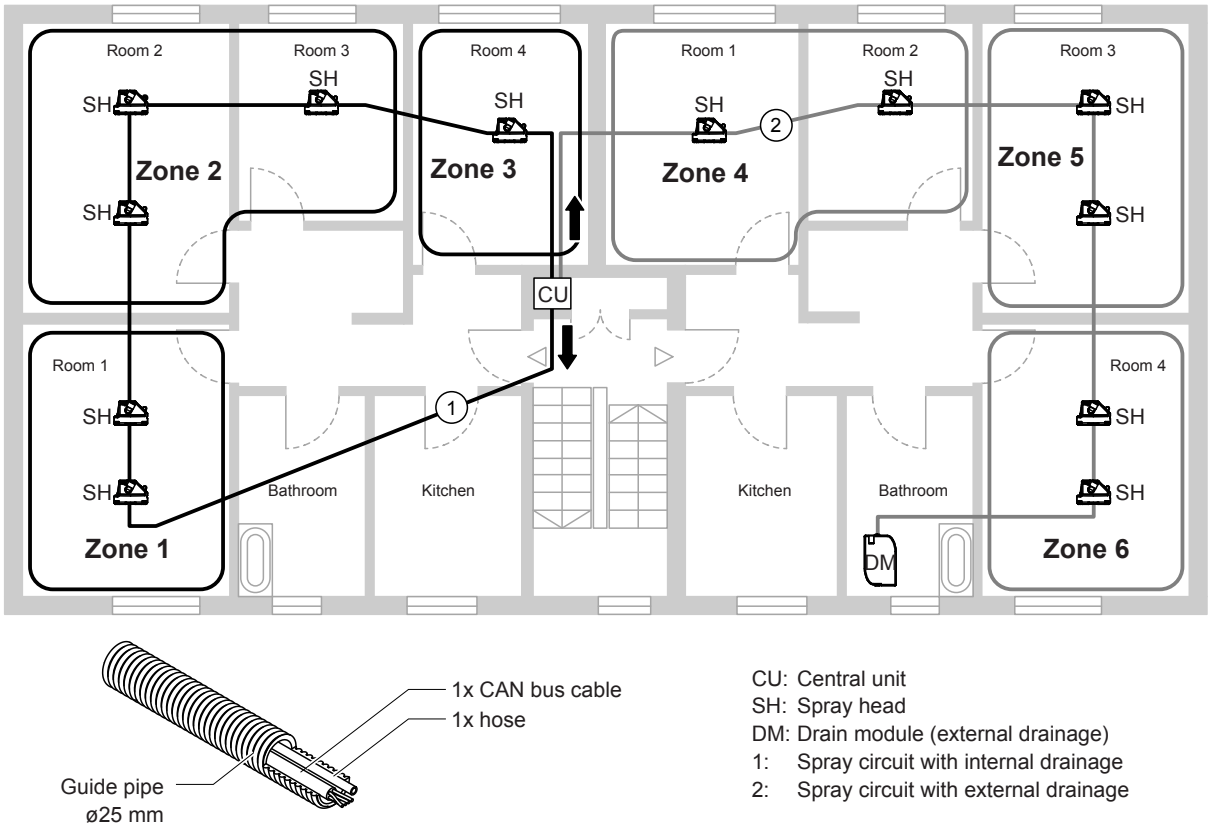
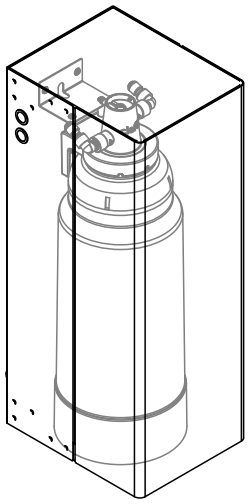
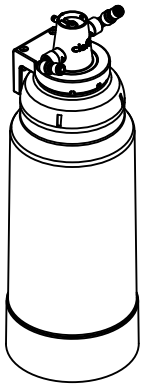
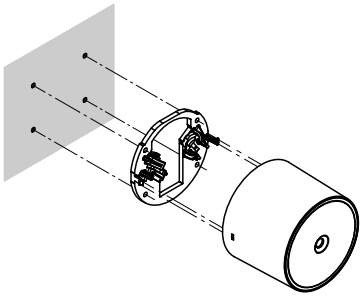
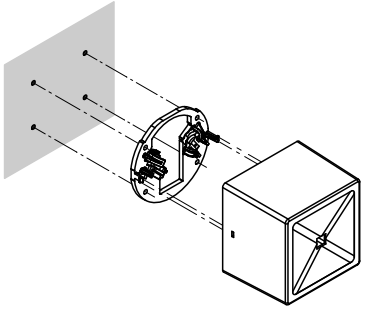



*Fig. 6: Spray circuit overview*

### Maximum spray circuit length

The maximum spray circuit length depends on the water supply pressure on the central unit (see *Section 4.4*).

## 3.5 Options

<table>
<tr><td>Second water filter in housing<br>  </td><td>Second water filter to prolong the interval between filter replacements.</td></tr>
<tr><td>Water filter without housing<br>  </td><td>Water filter without housing for placing on the ground. Serves as an alternative to the first and/or second water filter if there is no room to attach the water filter in the housing at the installation site.</td></tr>
<tr><td>Round surface panel<br>  </td><td rowspan="2">If flush mounting is not possible, the spray heads can be installed using the optional panel (round or square).</td></tr>
<tr><td>Square surface panel<br>  </td></tr>
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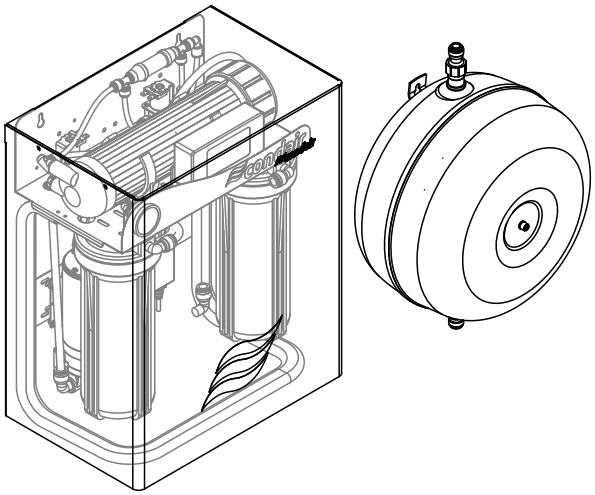
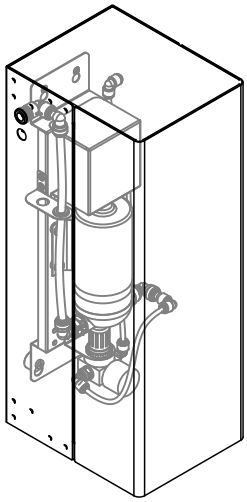
| | |
|---|---|
| **Reverse osmosis system RO-HB**<br>  | Reverse osmosis system RO-HB consisting of the reverse osmosis unit Condair RO-H and the 12 l flow tank for feeding the central unit with RO water.<br>Note: A booster module is additionally required to operate the Condair MN system with the RO-HB reverse osmosis system. |
| **Booster module for reverse osmosis system RO-HB**<br>  | Booster module for the RO-HB reverse osmosis system. |

# 4 Planning a Condair MN system

## 4.1 Note on the water supply to the Condair MN

The Condair MN can be operated with raw water (drinking water) or with RO water from the reverse osmosis system Condair RO-HB.

For larger systems or systems with a high number of operating days and/or with a high number of operating hours per day, the use of the reverse osmosis system RO-HB for the treatment of the supply water must be considered. Please contact your Condair representative to determine when the use of the reverse osmosis system RO-HB is worthwhile.

## 4.2 Determining the number of spray heads

The following information and documents are required to calculate the humidity requirement and/or the number of spray heads:

- Desired humidity and room temperature (target values)
- Absolute humidity of outside air or relative humidity in %rh and temperature of outside air
- Room volume for humidifying per room (calculated from room area x room height)
- Air change rate or air quantity per hour
- Floor plan, side and front elevations of the room to be humidified, including the room dimensions and scale

## 4.3 Configuring the central unit

The following information is required for the configuration of the central unit:

- Number of water filters (1 or 2):

  Establishing whether the central unit must be equipped with one or two water filter(s) depends on the water quality of the inlet water and the number of spray heads in the system and is established based on the following table.

| Water quality | Number of spray heads | Number of water filters |
|---|---|---|
| < 15 °dH or < 25 °fH | < 8 | 1 |
| < 15 °dH or < 25 °fH | ≥ 8 | 2 |
| ≥ 15 °dH or ≥ 25 °fH | < 5 | 1 |
| ≥ 15 °dH or ≥ 25 °fH | ≥ 5 | 2 |
| ≥ 23 °dH or ≥ 40 °fH | Independent | 2 |

– Number of spray circuits (1 or 2):

  The number of spray circuits depends on the maximum spray circuit length (see *Section 4.4*) and the maximum number of spray heads per spray circuit (max. 15 spray heads per spray circuit).

  Example 1: At a water supply pressure of 300 kPa (3 bar) and a spray circuit length of 100 m, the spray heads must be distributed between two spray circuits with a maximum length of 60 m.

  Example 2: With a total of 23 spray heads required, these must be distributed between two spray circuits (max. 15 spray heads per spray circuit).

## 4.4 Calculating cable and hose lengths

The maximum length of the cables and hoses required can be calculated based on the positioning of the spray heads (see *Section 4.8*). The maximum length per spray circuit depends on the water supply pressure.

| Water supply pressure | Maximum spray circuit length per spray circuit |
|---|---|
| 300 kPa (3 bar) | up to 60 m |
| 350 kPa (3.5 bar) | up to 80 m |
| 400 kPa (4 bar) | up to 100 m |
| 450 kPa (4.5 bar) | up to 110 m |
| 500 kPa (5 bar) | up to 120 m |

## 4.5 Overview of clearances to be observed

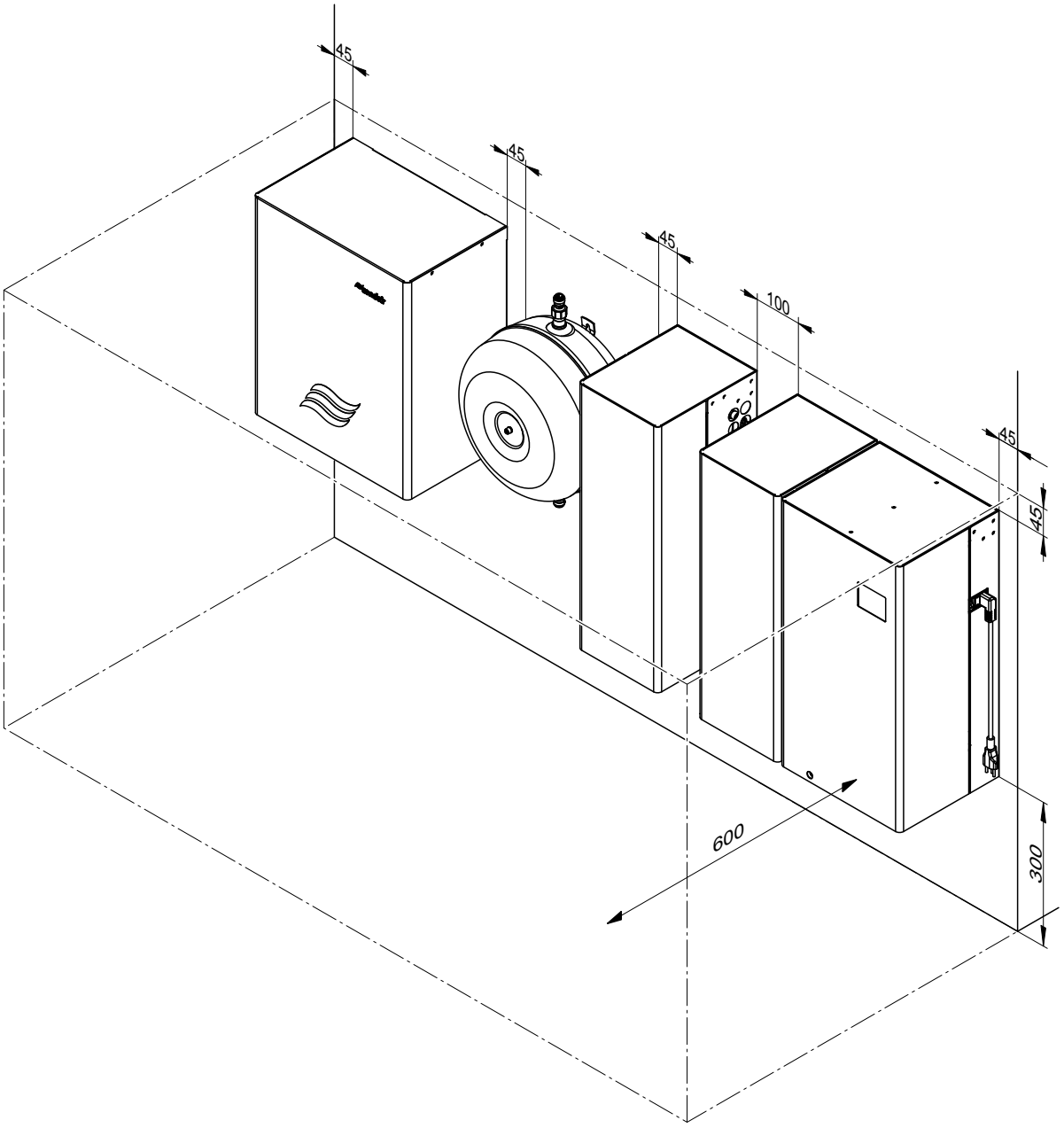



*Fig. 7: Overview of clearances to be observed (dimesnions in mm)*

Note: Detailed information on the placement of the individual components can be found in Section 4.6 to Section 4.8.

## 4.6 Information on positioning the central unit and water filter(s)

The central unit and the water filter(s) should be installed in a lockable technical room with limited access for people where possible. The room must meet the following requirements:

– The room temperature should be between +7°C and +25°C all year round and the room should be ventilated.
**Important: If the central unit is installed in a cupboard, it must be ensured that it is sufficiently aired or equipped with a ventilation system (provided on site).**

– There must be a sufficiently large free wall space to install the central unit and the water filter(s) (see *Fig. 8*).
Important: The wall that the central unit and the water filter(s) will be installed on must have a sufficient load-bearing capacity (see weight information in *Fig. 8*) and be suitable for the attachment.

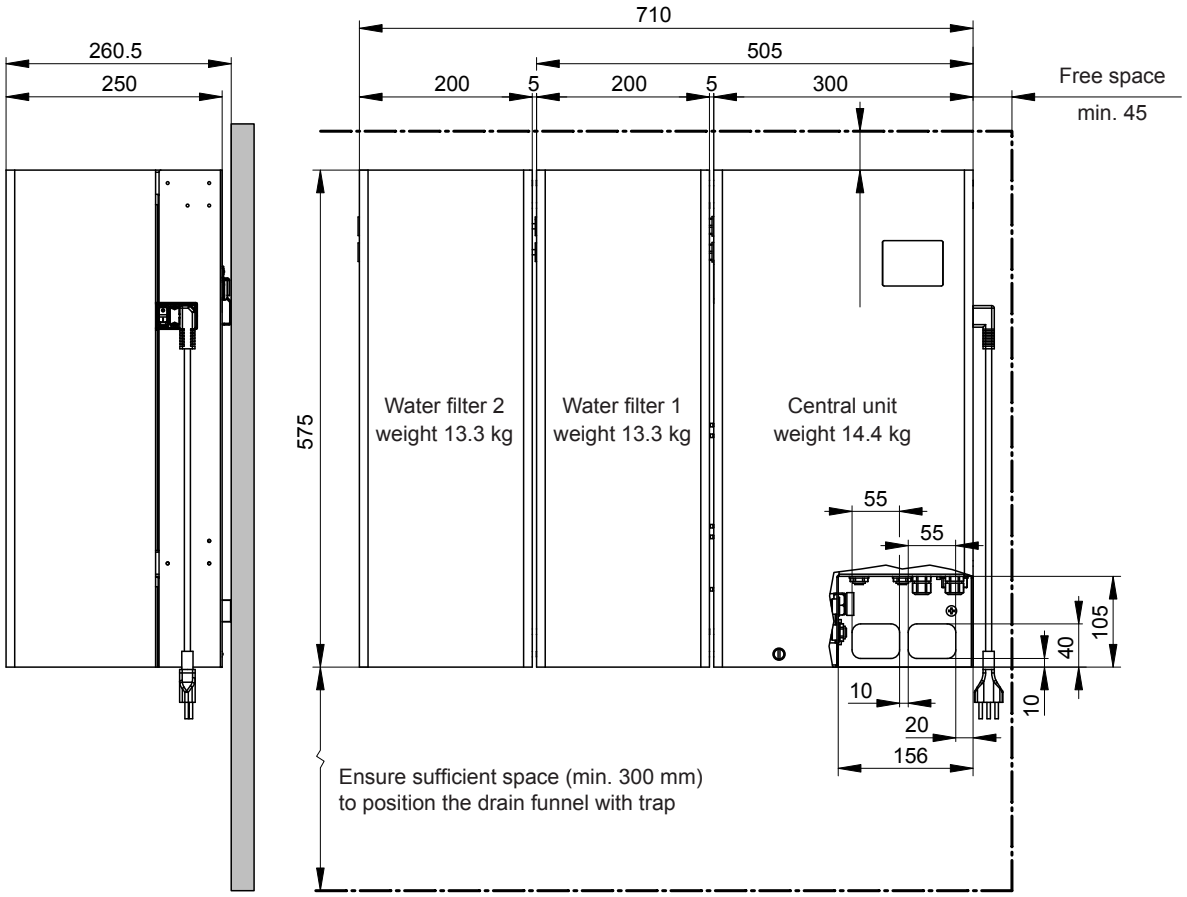



*Fig. 8: Central unit and water filter dimensions (dimensions in mm)*

– In the area immediately surrounding the place where the central unit is being installed:
  – There must be at least **two 3-pin wall sockets (L1, N and PE) with a mains power supply of 100-240 V / 1~ / 50-60 Hz**.
  – There must be a **3/4"** drinking water tap with a shut-off valve and a backflow preventer for fluid category 2 (provided on site).
– There must be an **open drain funnel with trap** connected to the building's wastewater pipe underneath the central unit.
– We recommend positioning the central unit in a room with a floor drain connected to the building's wastewater pipe.
– There must be a LAN connection (Wi-Fi only available by request) in direct proximity to the central unit.

## 4.7 Information on positioning of the components of the optional reverse osmosis system Condair RO-HB

The components of the optional RO-HB reverse osmosis system (RO-H reverse osmosis unit, 12 l flow tank and booster module) should, if possible, be installed in the same lockable technical room near the central unit. The room must meet the following requirements:

– The room temperature should be between +7°C and +25°C all year round and the room should be ventilated.
– There must be a sufficiently large free wall space in the room for the installation of the RO-H reverse osmosis unit, the flow tank and the booster module (see *Fig. 9* to *Fig. 14*).
  Important: The wall on which the components of the reverse osmosis system are mounted must have sufficient load-bearing capacity (see weight information in *Fig. 9* to *Fig. 11*) and be suitable for the attachment.

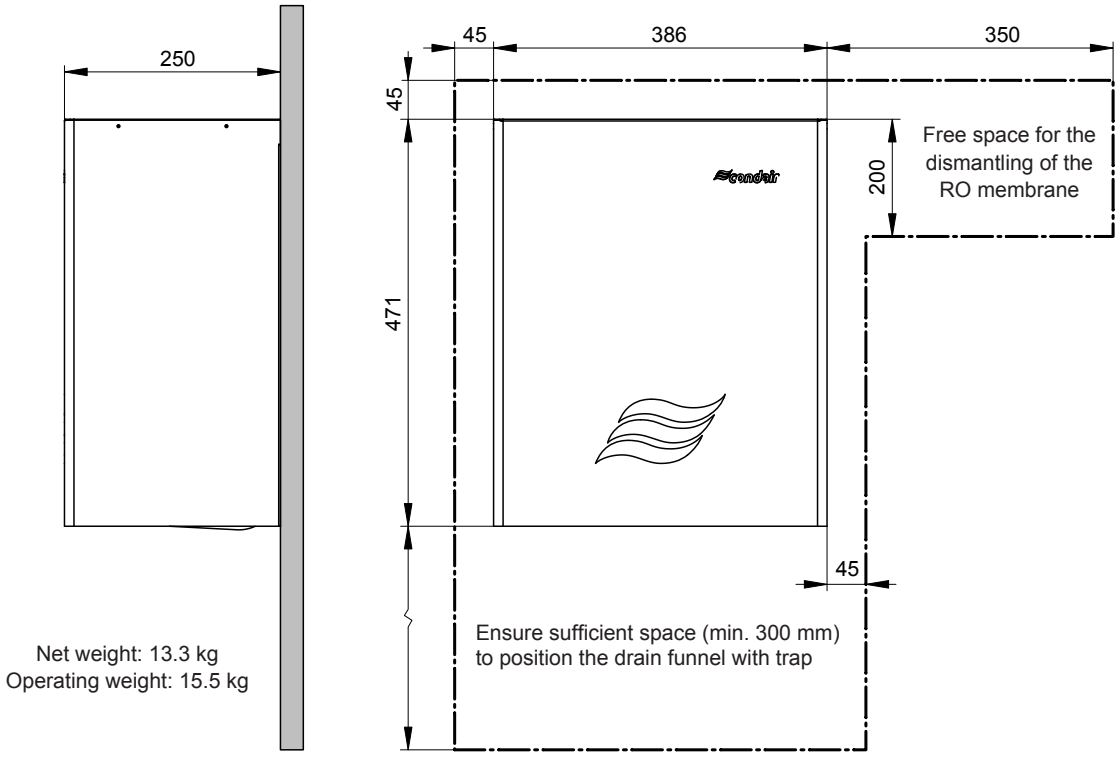



*Fig. 9: Dimensions RO-H (dimensions in mm)*

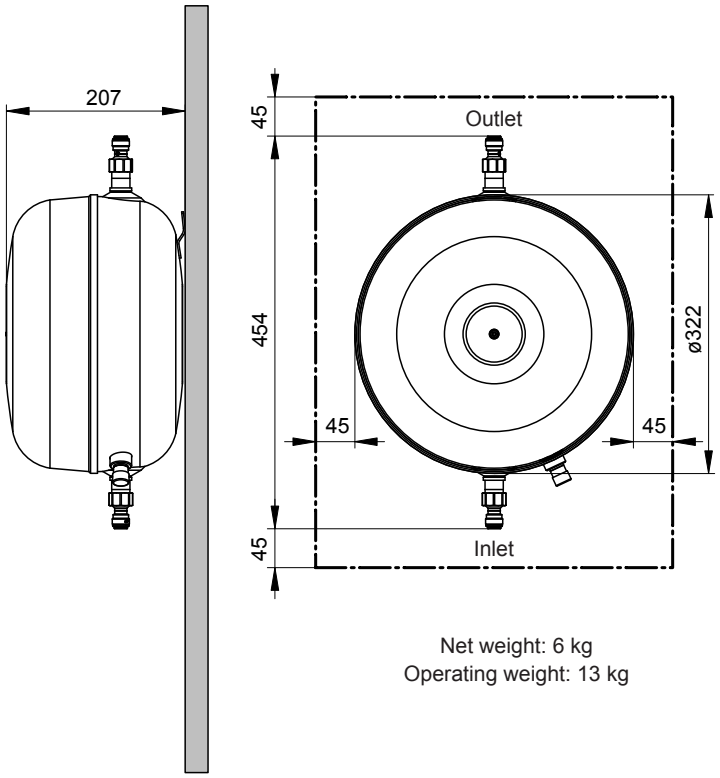



*Fig. 10: Dimensions flow tank (dimensions in mm)*

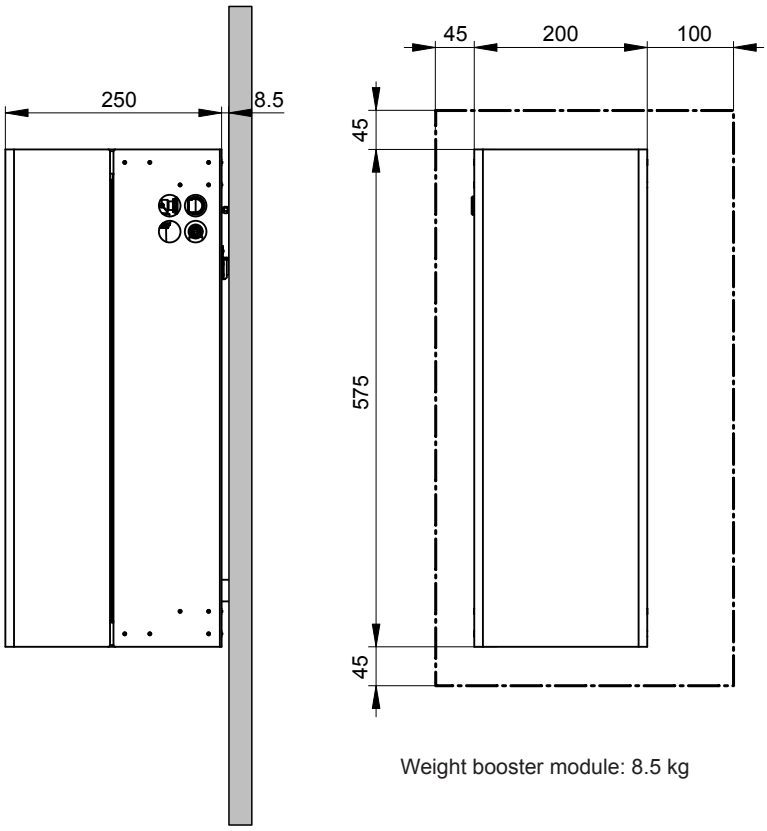



*Fig. 11: Dimensions booster module (dimensions in mm)*

– In the immediate vicinity of the installation site of the RO-HB reverse osmosis system:
  – There must be at least **two 3-pin wall sockets (L1, N and PE) with a mains power supply of 100-240 V / 1~ / 50-60 Hz**.
  – There must be a drinking water connection for the supply of the reverse osmosis unit Condair RO-H (for details see installation and operation manual for the Condair RO-H).
– If the water drain of the Condair RO-H reverse osmosis unit cannot be routed into the drain funnel of the central unit of the Condair MN, an **open drain funnel** with trap must be available below the reverse osmosis unit Condair RO-H, which is connected to the building's wastewater pipe.
– We recommend positioning the RO-HB reverse osmosis system in a room with a floor drain that is connected to the building's waste water pipe.
– The booster module must be positioned in such a way that the **maximum hose length of 20 m between the outlet connection on the flow tank and the inlet connection on the booster module is not exceeded**.
– If possible, the RO-HB reverse osmosis system, the booster module as well as the central unit and the water filter(s) of the Condair MN should be placed on the same floor. If this is not possible in your specific case, please contact your Condair representative.

The components of the reverse osmosis system can be placed individually. However, it is important to ensure that:
– the components are easily accessible for installation and maintenance.
– the clearances of the individual components are observed.
– the hose lengths are kept as short as possible and the hoses can be routed correctly.
– the control cable connected to the booster module has a length of 3 m. The booster module must therefore not be installed more than 1 m away from the central unit.

Possible placement variants with the corresponding minimum distances are shown below.

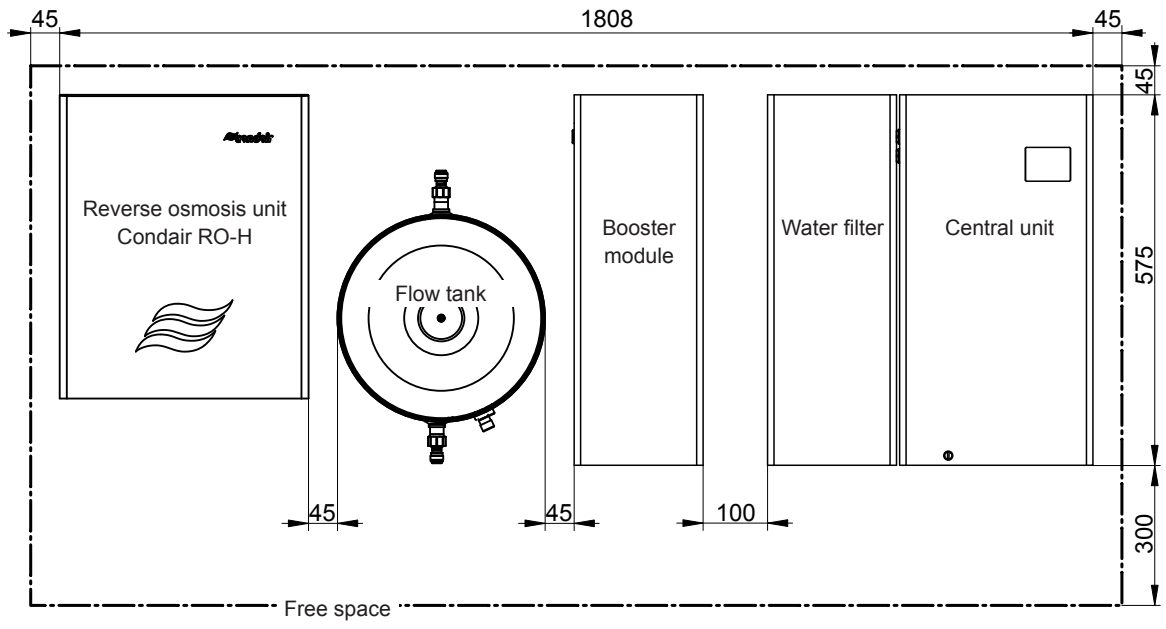



*Fig. 12: Placement example 1 (dimensions in mm)*

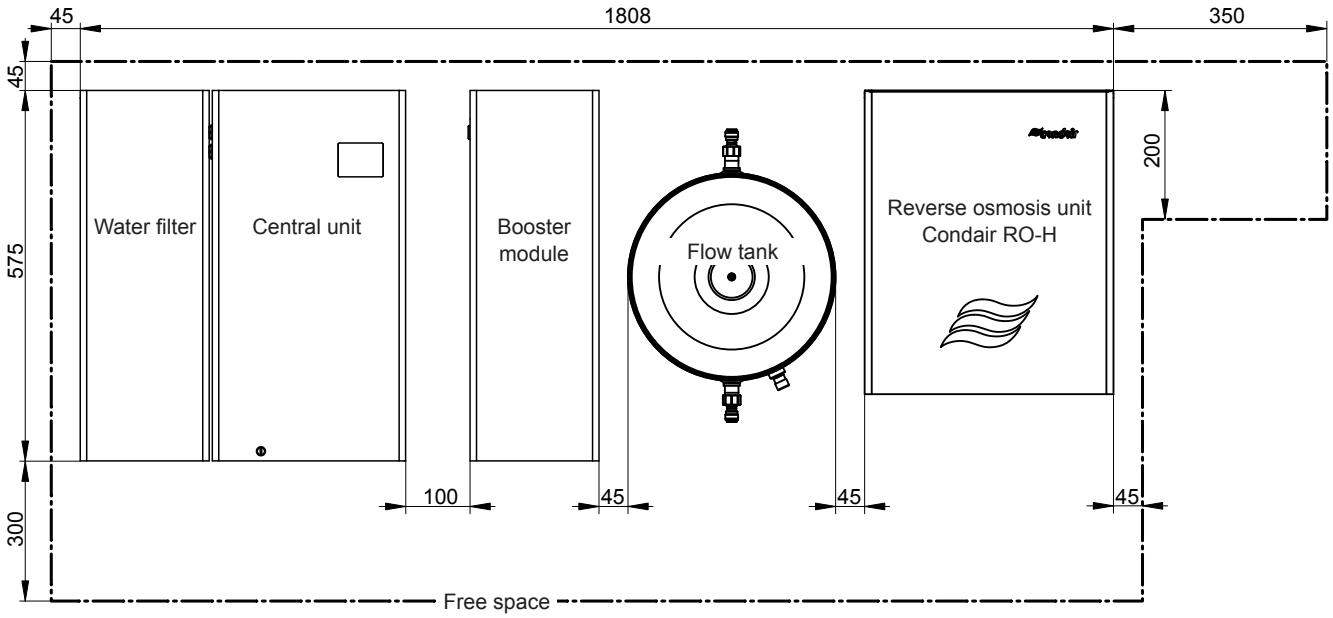



*Fig. 13: Placement example 2 (dimensions in mm)*

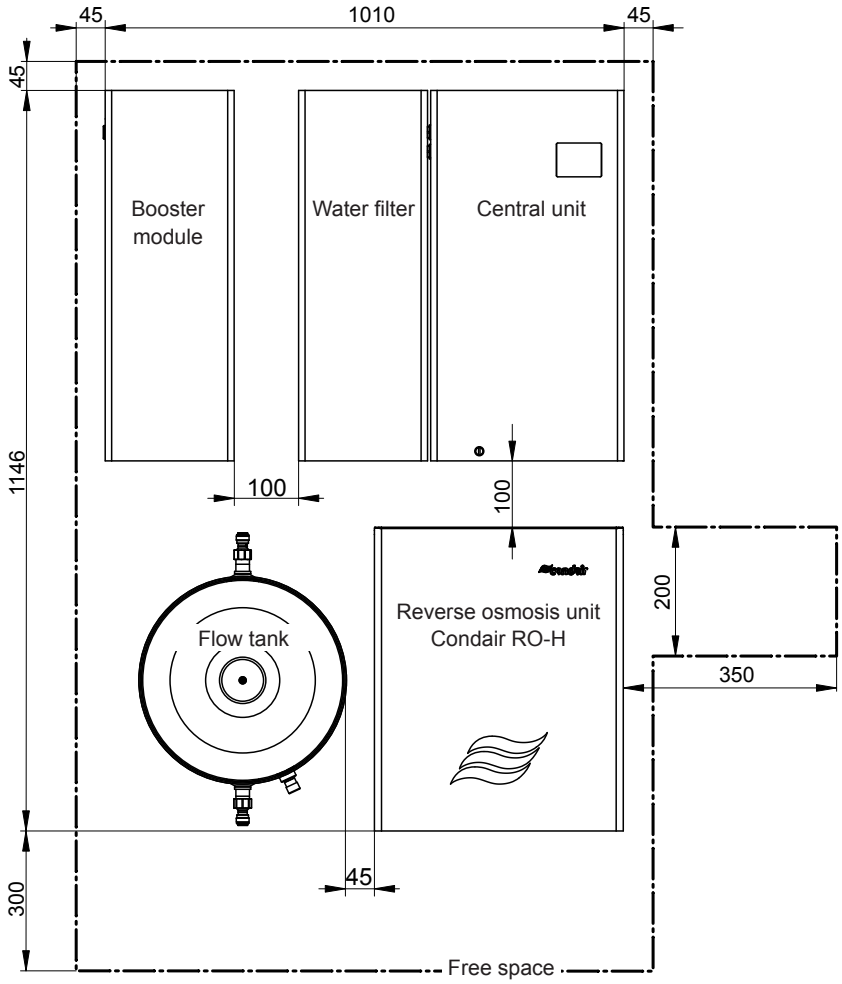



*Fig. 14: Placement example 3 (dimensions in mm)*

## 4.8 Positioning the spray heads

When positioning the spray heads, the following specifications must be referred to and complied with. Under all circumstances, the requirements for the installation site of spray heads in accordance with VDI 6022, sheet 6 must be met:

– The spray heads must be positioned so that the mist can spread freely in the room and is not facing obstacles, such as pillars, furniture, cold outer walls, window surfaces, etc. where the humid air could condense. The required minimum distances are stated below and can be viewed in the *Fig. 15*.

**Important: The specified minimum distances refer to a room humidity of 45 %rh. If the room humidity is higher, the minimum distances increase accordingly.**

| | |
|---|---|
| **A** | Min. horizontal distance from obstacles in spray head wall installation **1.0 m** |
| **B** | Min. distance of surface-installed spray heads from the ceiling **0.1 m** |
| **C** | Min. space **"C"** beneath the spray head **2.0 m** |
| **D** | Min. distance **"D"** from windows in spray head ceiling installation **1.0 m** |
| **E** | Min. distance **"E"** from walls in spray head ceiling installation **0.5 m** |

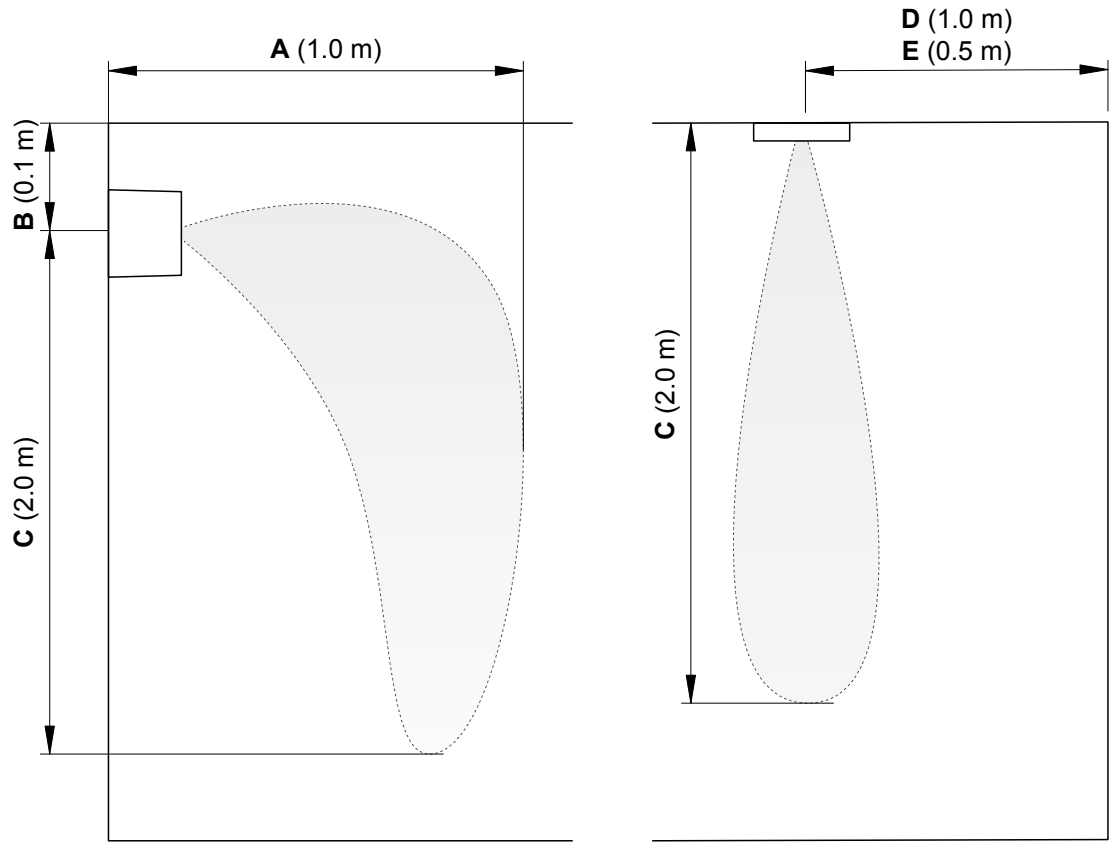



*Fig. 15: Required minimum distances in the positioning of spray heads*

– The spray heads may not be placed in niches, enclosed corridors, behind curtains, etc. as these positions do not guarantee optimum distribution of humidity.

– Spray heads should ideally be positioned in walkways. However, it must be ensured that people are not negatively impacted by the cooling of the room air during atomisation.

– When positioning the spray heads, the air flow within the room must be taken into account. Do not position spray heads directly near air outlets.
– The spray heads should not be placed in rooms where increased air pollution can be expected, particularly from micro-organisms and allergens.
– The spray heads' sound emissions are below 25 dB(A). The spray heads can therefore also be placed in quiet zones.

## 4.9 Water supply requirements

### 4.9.1 Water supply requirements (without RO system)

– The supply water must meet the following requirements:

| | |
|---|---|
| Water quality | Drinking in accordance with applicable local drinking water regulations or reverse osmosis water |
| Permissible water temperature | 5...25 °C |
| Permissible water hardness | 3...30 °dH or 5...53 °fH |
| Permissible water conductivity | 3 ...1000 µS/cm |
| Silicate content in any form, e.g. $SiO_2$ | max. 12 mg/l |
| Permissible water pressure | 300 ... 500 kPa (3...5 bar) |

Note: The inlet water's quality compliance must be examined before connecting the feed line to the central unit.

– The water inlet must be installed in accordance with the DIN EN 1717 and DIN 1988-100 standards, the SVGW & DVGW directives and local drinking water regulations.
– A stop valve (provided on site) must be installed in the feed line just before the central unit.
– For water pressures above >500 kPa (>5 bar), a pressure reduction valve must be built into the feed line (adjusted to 500 kPa (5.0 bar) (provided on site).
– At room temperatures >25 °C, the water supply line must be insulated, as a high water supply temperature leads to increased temperature flushings and thus increased water consumption.

### 4.9.2 Water supply requirements for the reverse osmosis system Condair RO-HB

Information on the water supply of the reverse osmosis system Condair RO-HB can be found in the separate installation and operation manual for the Condair RO-H.

## 4.10 Water outlet requirements

There must be an open drain funnel with trap connected to the building's wastewater pipe directly underneath the central unit.
Note: For external drainage of the spray circuits, there must be an open drain funnel with trap at each drainage place.

The outlet pipe must not touch the drain funnel and must be 2 cm away from the drain funnel.

**CAUTION!**

During drainage, there is a pressure surge in the central unit's outlet pipe (internal drainage) or the drain module (external drainage). The outlet pipe must therefore be fixed so that it cannot slip out of the drain funnel and is not touching the drain funnel.

Note: If the water drain of the optional reverse osmosis unit Condair RO-H cannot be routed into the drain funnel of the central unit, an additional drain funnel with trap must be provided in the room.

## 4.11 Power supply requirements

To connect the central unit (connecting cable length: **2 m**) and the LAN gateway (connecting cable length: **1 m**) to the power supply, **two three-pin wall sockets (L1, N and PE) with a mains voltage of 100-240 V / 1~ / 50-60 Hz** must be installed in direct proximity to both units. Both wall sockets must be installed and secured in accordance with the locally applicable regulations for electrical installations.

To operate the Condair MN with the optional Condair RO-HB reverse osmosis system, **two additional three-pin wall sockets (L1, N and PE) with a mains voltage of 100-240 V / 1~ / 50-60 Hz** must be installed in direct proximity of the Condair RO-H reverse osmosis unit (connecting cable length: **1 m**) and the booster module (connecting cable length: **1 m**). Both wall sockets must be installed and secured in accordance with the locally applicable regulations for electrical installations.

## 4.12 LAN connection requirements

The LAN connection is used to establish connection for the remote operation of the system via the Condair HumiLife-App and for the remote maintenance of the system by an authorized Condair service technician.

For the central unit's LAN connection, there must be an Ethernet connection in direct proximity to the central unit where possible.

The system's network must meet the following requirements:

– IP addresses must be assigned automatically (DHCP).

– The following outgoing ports must be accessible via the internet: 8883 (http), 443 (https), 22 (ssh).

– Connection to the network should, wherever possible, be made via cable. As the systems are often installed in unoccupied spaces, it is very possible that the signal strength is not sufficient in the case of a wireless connection.

– For a wireless connection, it must be ensured that the WiFi of the internet router of the building network is activated and accessible.

– SSID and password are required for protected networks.

– The connection to the LAN must be guaranteed.

## 4.13 Information on servicing the Condair MN

In order to comply with the requirements for hygienic operation of the Condair MN in accordance with VDI 6022, sheet 6, the Condair MD system must be serviced by authorized service specialists at regular intervals.

– Systems without a certificate: **yearly service**

– Systems with DGUV certificate "Optimized air humidification": **semi-annual service**

For VDI-certified systems, the personnel must meet the following qualifications:

– For general installation, maintenance and inspection work:
Completed training according to **VDI 6022 Sheet 6, Qualification category B**

– For hygiene-relevant work during planning, installation, commissioning, operation and maintenance as well as for hygiene inspections:
Completed training according to **VDI 6022 Sheet 6, Qualification category A**

Condair arranges and carries out the annual or semi-annual service. After completion, the service must be documented in the customer's service log.

Note: For the maintenance of the optional reverse osmosis system Condair RO-HB, please refer to the information in the separate installation and operating manual for the Condair RO-H.

## 4.14 Delivery scope overview

All material not supplied by Condair must be arranged by the installer according to the conditions on site.

| Material | Condair delivery scope | Provided on site |
|---|---|---|
| **Central unit** | | |
| – Central unit with water filter(s) | X | |
| – Mains power cable (3-pin) with plug | X | |
| – Feed line from room connection to central unit (3/4" connection) | | X |
| – Drain funnel with trap | | X |
| – Double mains power socket | | X |
| – LAN connection | | X |
| **Spray heads** | | |
| – Spray heads | X | |
| – Cable connector terminals | X | |
| – Flush-mounting boxes including lid for concrete (for specifications, see *Section 6.5*) | | X |
| **Installation material** | | |
| – Material for attaching flush-mounting installation boxes, central unit, etc. | | X |
| – 4-wire bus cable | X | |
| – Hoses 6 mm in diameter | X | |
| – Guide pipes for flush mounting (for specifications, see *Section 6.5*) | | X |
| – LAN cable | | X |

**Scope of delivery Booster module for the reverse osmosis system Condair RO-HB**

| Material | Condair delivery scope | Provided on site |
|---|---|---|
| Booster module with connection cable | X | |
| Water hose ø10 mm | X | |

**Scope of delivery optional reverse osmosis system Condair RO-HB**

See installation and operating manual for the Condair RO-H.

# 5 Preparatory installations

## 5.1 Checking delivery / Storage and transport

### 5.1.1 Checking delivery

Following receipt of the delivery:

– Check the packaging for damage.
  Any damage must be immediately reported to the transport company.
– Use the delivery note to check whether all components have been delivered.
  Report missing components to your Condair partner.
– Remove the components from their packaging and check them for any damage. Notify the transport company immediately should you find any damaged parts/components.

### 5.1.2 Storage and transport

**Storage**

The Condair MN components must be stored in the original packaging in a place secured against dripping water under the following conditions until installation:

– Room temperature: 5 ... 40°C
– Room humidity: 10 ... 75% RH (non-condensing)

**Transport**

Where possible, always transport the components in the original packaging and use a suitable means of transport or suitable lifting device where necessary.

**WARNING!**

The customer is responsible for ensuring that staff are trained on handling heavy goods and are aware of and adhere to the relevant provisions on occupational safety and accident prevention.

**Packaging**

Keep the original packaging for later use.

If the packaging should be disposed of, follow local environmental protection guidelines. Recycle the packaging material wherever possible.

## 5.2 Tools required for installation

The following tools are required to install the Condair MN:

- Standard electrical installation tools:
  - Pliers
  - Wire strippers (e.g. Weidmüller Stripex)
  - Crimping pliers (e.g. Knipex 975314)
  - Slot and Philips screwdrivers
  - Wire insertion tool
- Core drill ø75 mm (flush-mounting) / 60 mm in diameter (surface-mounting) for installing spray heads
- Drill
- John Guest hose cutter
- John Guest hose connector release tool

## 5.3 Preparatory installations overview

The preparatory installations must be carried out by the electrician and plumber and consist of the following tasks:

| Step | Task | Responsible |
|---|---|---|
| 1 | Discussing the electrical plan with the installers | Designers |
| 2 | Carrying out preparatory installations.<br>• Preparatory installations for flush-mounting spray heads in **new buildings with concrete ceilings**:<br>  • Install installation boxes for installing the spray heads (see *Section 5.4.1*).<br>  • Laying guide pipes (with a feeding-in cord/wire) in accordance with the electrical plan to the installation boxes, the central unit and, if laid out as such, to the external drain module(s) (see *Section 5.4.2*).<br>  • Drilling holes ø75 mm in the installation boxes (see *Section 5.4.3*).<br>• Preparatory installations for flush-mounting spray heads in **suspended ceilings**:<br>  • Drilling holes ø75 mm at the installation points in the suspended ceiling (see *Section 5.5.1*).<br>  • If intended as such, laying guide pipes (with feed-in cord/wire) according to the electrical plan to the installation points of the spray heads, the central unit and, if laid out as such, the external drain module(s) (see *Section 5.5.2*).<br>• Preparatory installations for **surface-mounting** spray heads:<br>  • If planned, drill wall ducts 60 mm in diameter into the wall at the installation points (see *Section 5.6.1*).<br>  • Lay cable ducts according to the electrical plan to the installation boards, the central unit and, if designed as such, the external drain module(s) (see *Section 5.6.2*).<br>• Install mains power sockets for the mains power supply to the central unit and the LAN connection.<br>• Set up LAN installation. | Electricians |

| | | |
|---|---|---|
| 3 | Set up plumbing installations.<br>• Install the central unit and water filter(s) in the planned location (see *Section 5.7*).<br>• If applicable: Mount components of the optional reverse osmosis system Condair RO-HB at the intended location (see *Section 5.8*).<br>• Install the drain funnel with trap beneath the central unit and, if designed as such, beneath the external drain module(s) and connect to the building wastewater pipe (see *Section 5.9.2*).<br>• Set up feed line to the central unit (connection G 3/4") including shut-off valve and backflow preventer (see *Section 5.9.2*).<br>• Feed in hoses and CAN bus cable (see *Section 5.9.4*). | Plumber |
| 4 | Check execution of the preparatory installations and plumbing installations | Condair |

## 5.4 Preparatory installations for flush-mounting spray heads in new buildings with concrete ceilings

### 5.4.1 Install installation boxes for flush-mounting in concrete ceilings

For flush-mounting spray heads in concrete ceilings in new buildings or suspended insulated ceilings, the installation boxes must be installed at the intended spray head installation points.

#### 5.4.1.1 Flush-mounting installation boxes for concrete ceilings

| | | | |
|---|---|---|---|
| Use: | for installation in concrete ceilings in new buildings | | |
| Recommended box type: | AGRO HaloX® 100 | #1281-00 | E. No. 920 858 319 |
| Corresponding front part: | AGRO HaloX® 100 | #1281-11 | E. No. 920 896 119 |

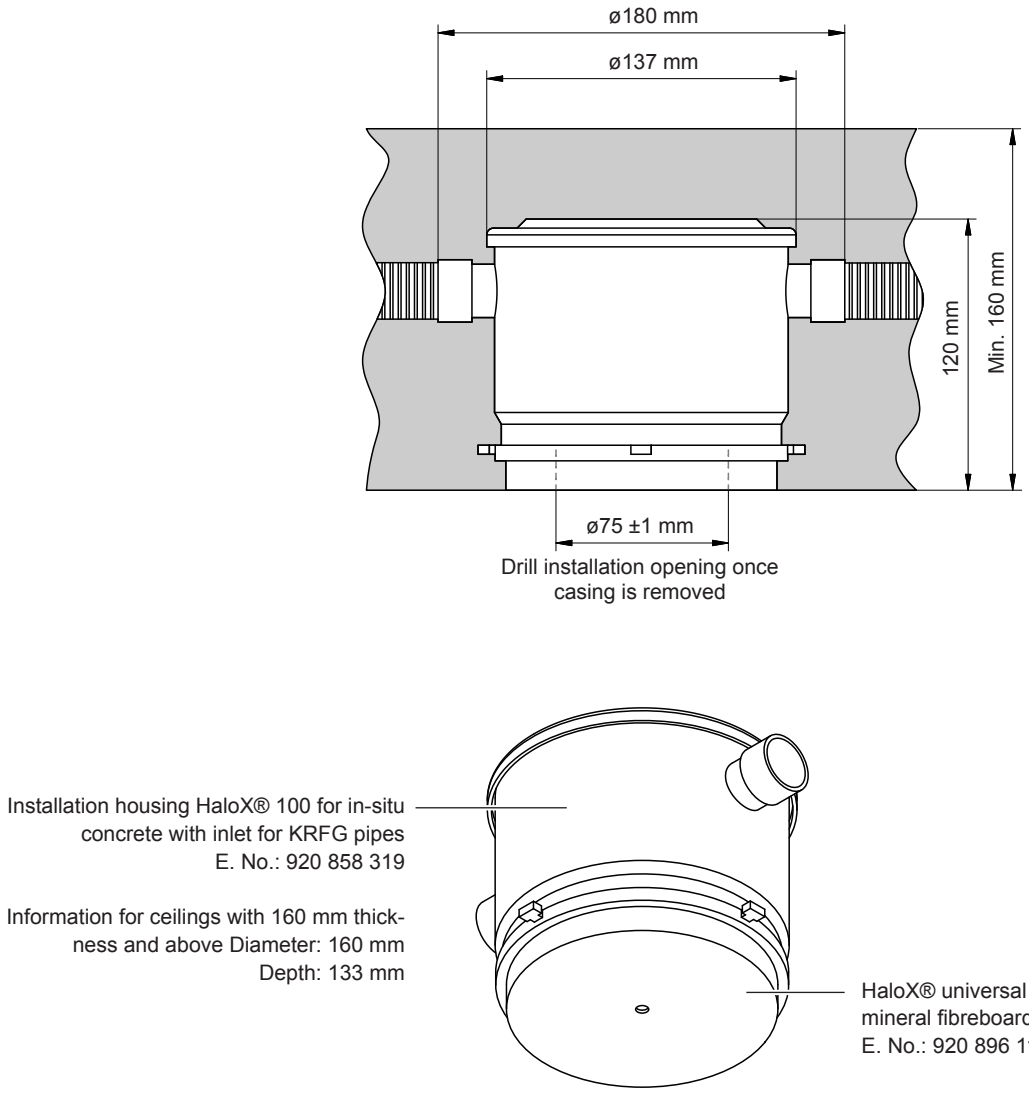



*Fig. 16: Details of flush-mounting installation box for concrete ceilings*

- The installation boxes for concrete ceilings must be placed in the intended locations on the shell and attached to the casing.

### 5.4.2 Laying the guide pipes

Lead a guide pipe (with feed-in cord/wire) into and away from each flush-mounting installation box and/or to each installation point. The plan sets out the sequence in which the individual flush-mounting installation boxes and/or installation points should be connected with guide pipes.
The guide pipe running away from the last installation box and/or installation point for each spray circuit leads either back to the central unit (internal spray circuit drainage) or the drain module (external spray circuit drainage).

- For concrete ceilings, the guide pipes must be placed in both of the entries intended for them in the installation boxes and attached (see *Fig. 16*) so as to ensure that they cannot slip out when the concrete is inserted.

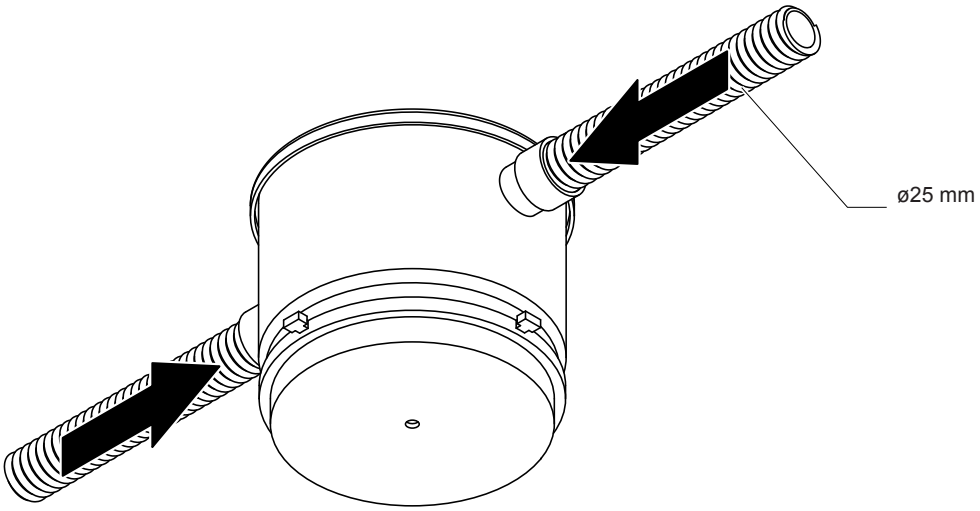
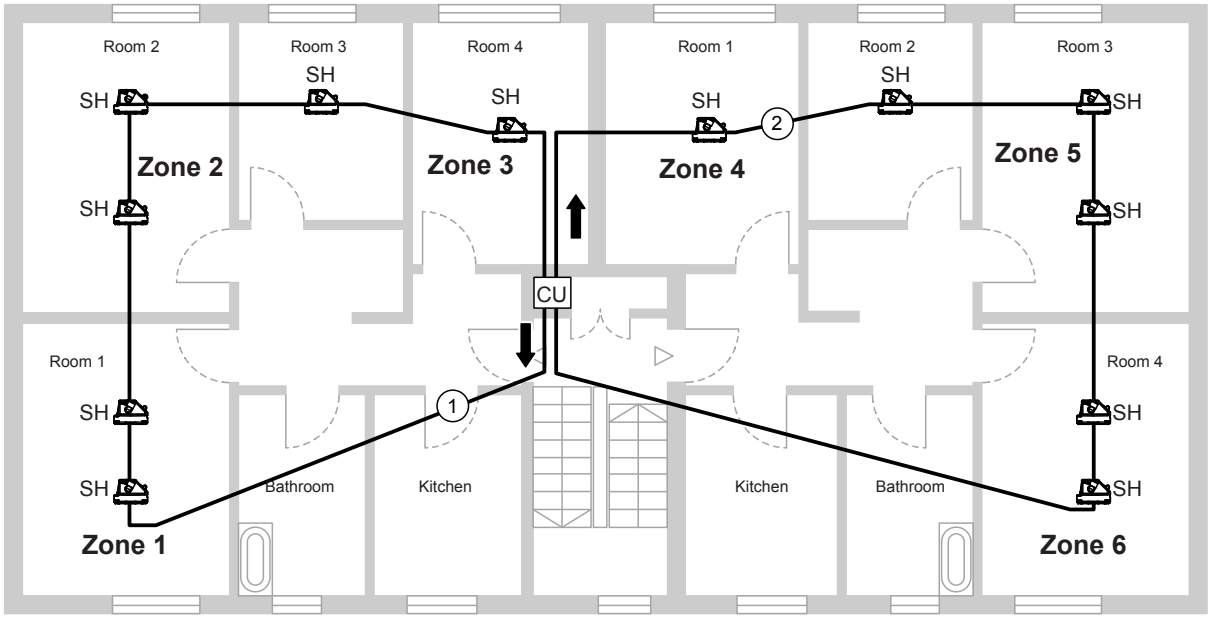
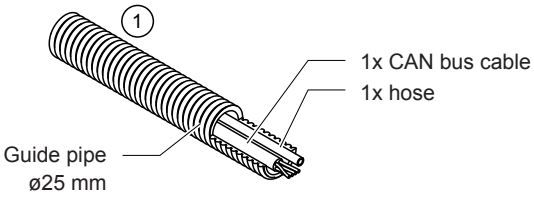



*Fig. 17: Details of flush-mounting installation box for concrete ceilings*

**Important**: When laying the guide tubes, make sure that they are laid with the largest possible radii so that the hoses and CAN bus cables can be easily pulled in. **Under no circumstances should the guide tubes be kinked.**

The applicable specifications on laying guide pipes must be followed and complied with.
The following illustrations show possible guide pipe designs for internal and external spray circuit drainage.

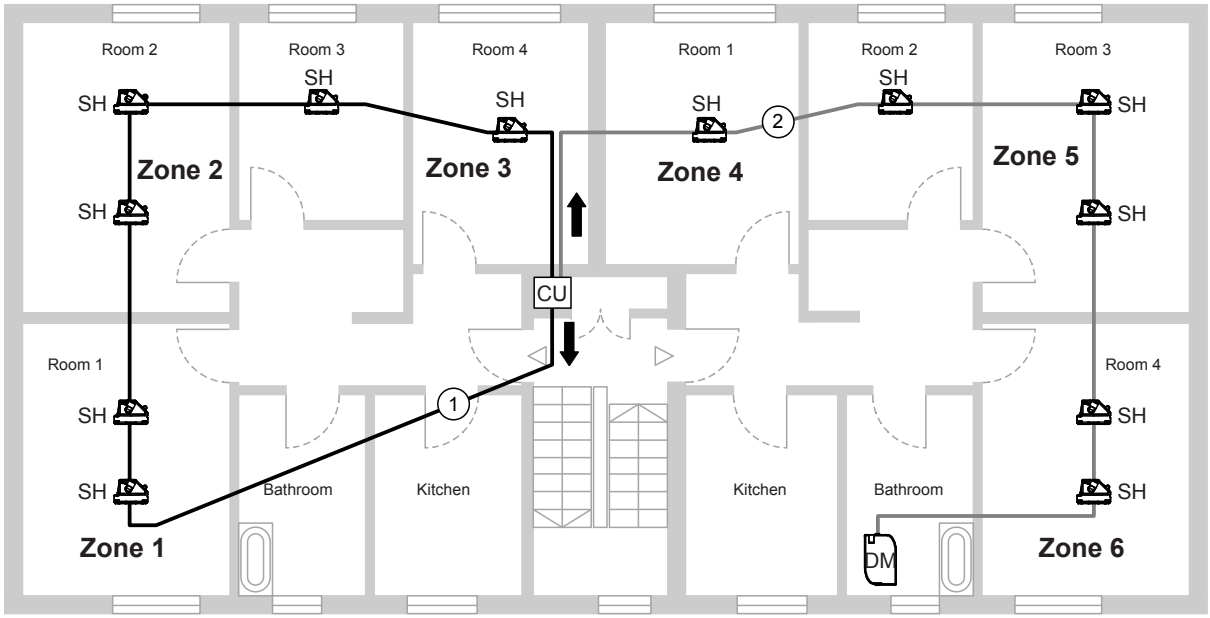


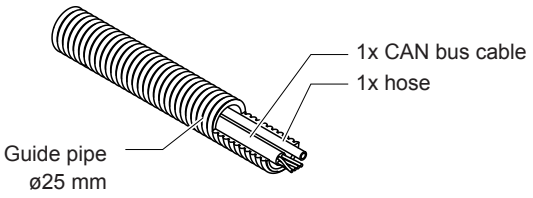




1 Spray circuit 1 with central spray circuit drainage
2 Spray circuit 2 with central spray circuit drainage

CU Central unit with drain modules
SH Spray head

*Fig. 18: Guide pipe layout with central spray circuit drainage (1 and 2)*




1 Spray circuit 1 with internal spray circuit drainage
2 Spray circuit 2 with external spray circuit drainage

CU Central unit
SH Spray head
DM Drain module (external drainage)

*Fig. 19: Guide pipe layout with internal (1) and external (2) spray circuit drainage*

### 5.4.3 Drilling installation openings in the installation boxes

- Once the casings are removed, the installation openings ø75 mm must be drilled in the lid of the installation boxes.

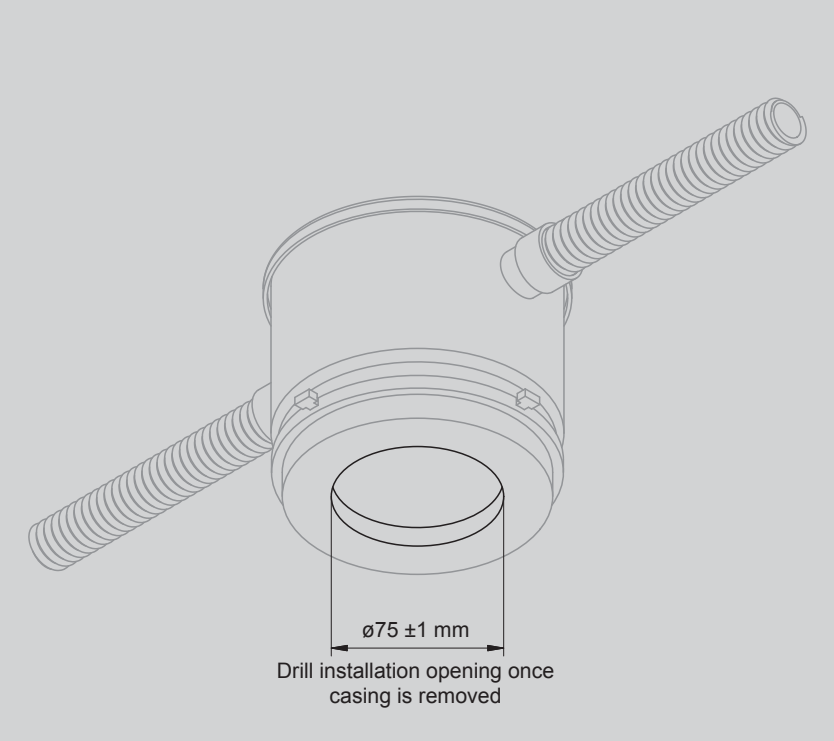



*Fig. 20: Drill installation hole in the installation box*

## 5.5 Preparatory installations for flush-mounting spray heads in suspended ceilings

### 5.5.1 Drill installation openings in the suspended ceilings

- Drill installation openings ø75 mm in the planned positions on the suspended ceilings.

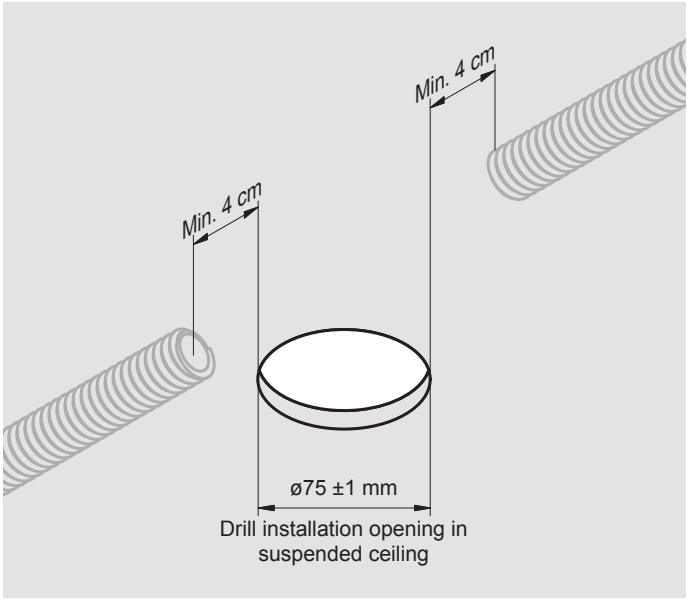



*Fig. 21: Drill installation opening in the suspended ceilings*

### 5.5.2 Laying the guide pipes

If guide pipes are laid to the installation points of the spray heads in the case of suspended ceilings, we recommend using **guide pipes with ø32 mm**. For laying the guide tubes, please observe the instructions in *Section 5.4.2*.

**CAUTION!**

The guide pipes may only extend to the installation hole (distance from end of pipe to installation hole min. 4 cm). The guide pipes may not be led out of the installation opening.

## 5.6 Preparatory installations for surface-mounting spray heads

### 5.6.1 Drill wall duct(s)

If the hoses and CAN bus cable should be led through the wall during surface mounting, a wall duct 60 mm in diameter must be drilled into the intended installation point(s).

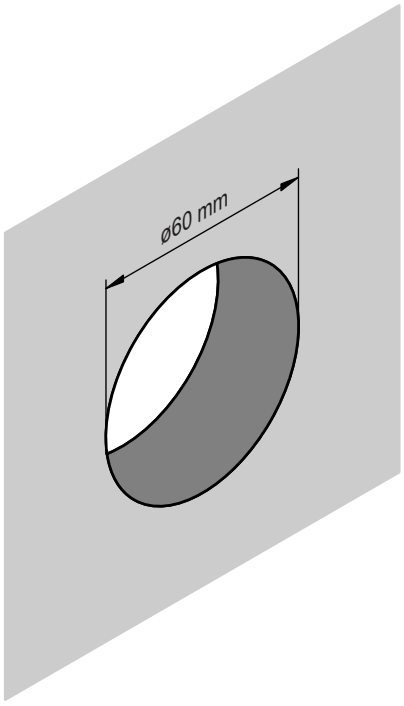



*Fig. 22: Drill wall duct(s)*

### 5.6.2 Laying cable ducts

Laying cable ducts depends on the cable duct used. In all cases, the cable duct must be selected so that a CAN bus cable and a hose can be led in and out of every surface mounting box.

A cable duct must feed into and away from every installation point on the spray head. The plan sets out the sequence in which the individual surface-mounting boxes should be connected with cable ducts and this is plotted on the electrical plan.
The cable duct running away from the last surface mounting box for each spray circuit leads either back to the central unit (internal spray circuit drainage) or the drain module (external spray circuit drainage).

The same specifications apply to the layout of the cable duct as for the layout of the guide pipes. Please see in the information in *Section 5.4.2*).

The applicable specifications on laying cable ducts must be followed and complied with.

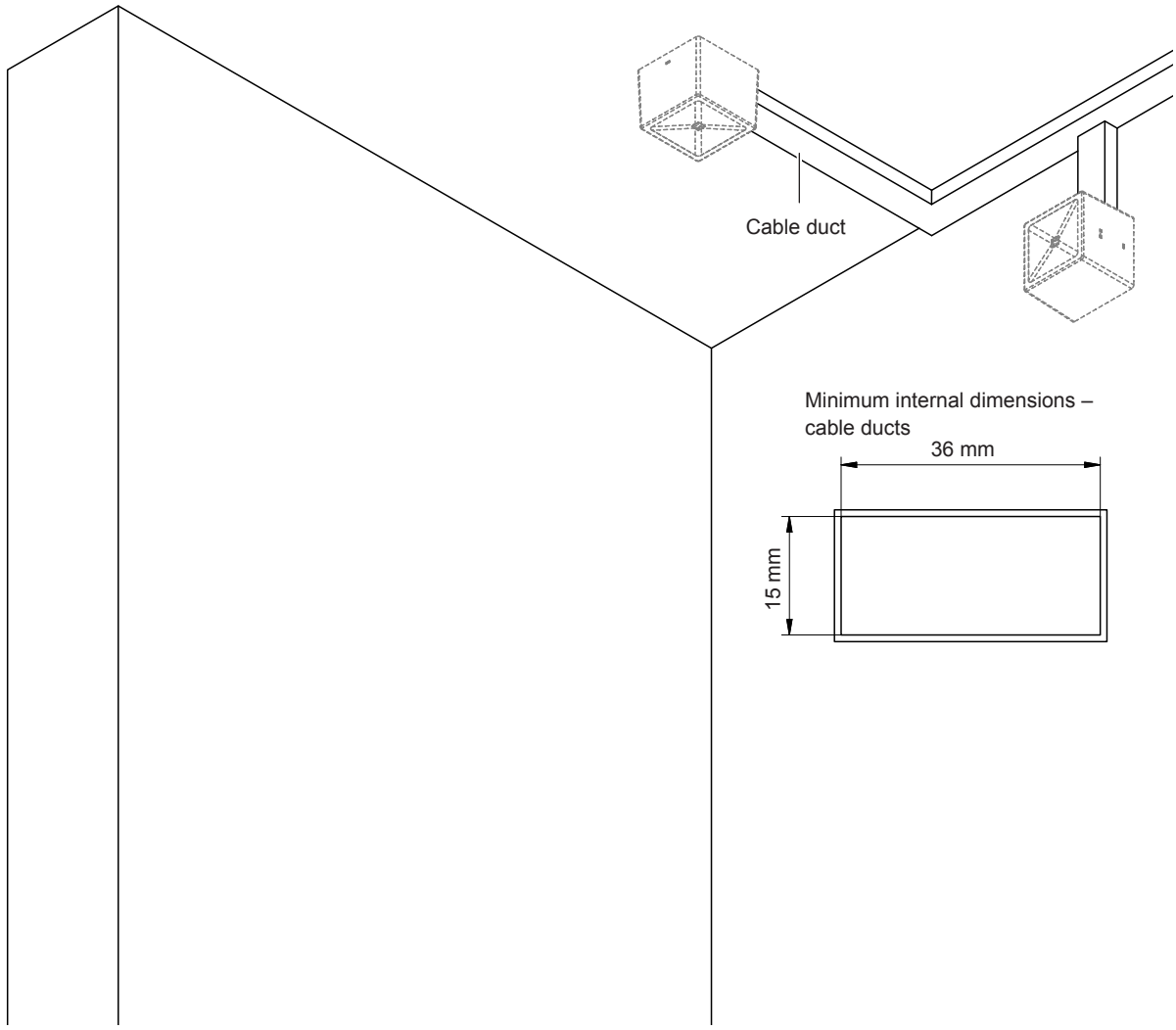



*Fig. 23: Laying cable ducts*

## 5.7 Installing the central unit and water filter housing(s)

### Installation overview

| | Per water filter | Central unit |
|---|---|---|
| Operating weight in kg | 13.3 | 14.4 |

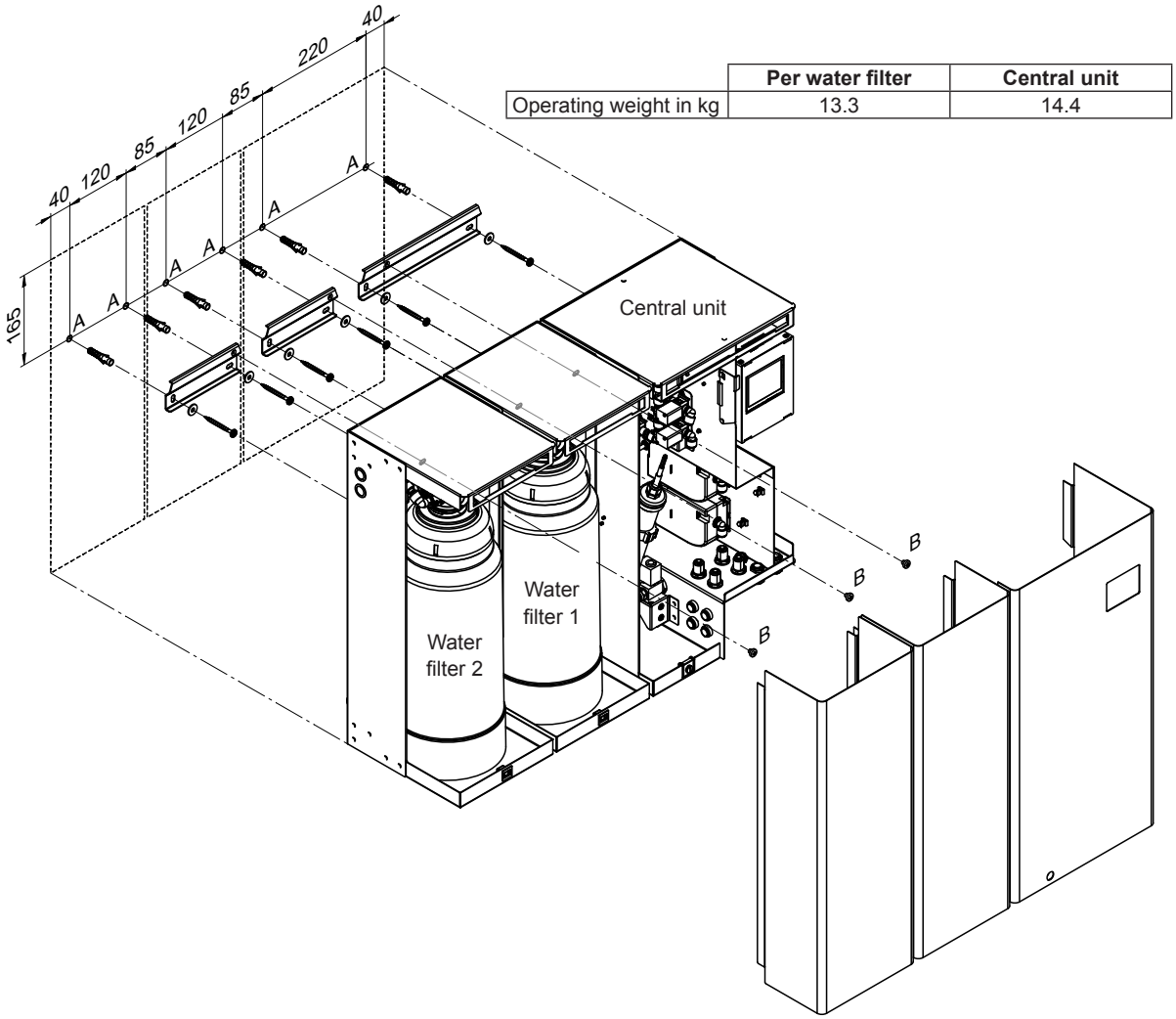



*Fig. 24: Central unit installation overview (dimensions in mm, illustration shows installation with screws and dowels)*

**CAUTION!**

The Information on positioning the central unit in *Section 4.6* must be referred to and complied with.

**Mounting procedure**

1. Mark the attachment points "A" for the attachment rails at the desired position using a spirit level.
2. Fasten the attachment rails to the wall using a suitable fastening material (provided on site) depending on the properties of the wall. Before tightening the screws, align the attachment rails horizontally using a spirit level.
3. Remove the front covers.
4. Hang the devices in the relevant attachment rails and fix to the attachment rails through the rear wall of the housing using the supplied screws "B".
5. Relocate the front covers and secure the front cover of the central unit with the screw.

Note: If, after mounting the central unit, the type plate attached to the right-hand side of the central unit is no longer or only insufficiently visible, the additionally type plate must be attached to the central unit in a clearly visible position (for example on the front cover)!

## 5.8 Installing the components of the optional reverse osmosis system Condair RO-HB

### Mounting the Condair RO-H and the flow tank

Mount the reverse osmosis unit Condair RO-H and flow tank at the desired location, observing the placement instructions (see *Section 4.7*) and the information in the separate installation and operating manual for the Condair RO-H.

### Mounting the booster module

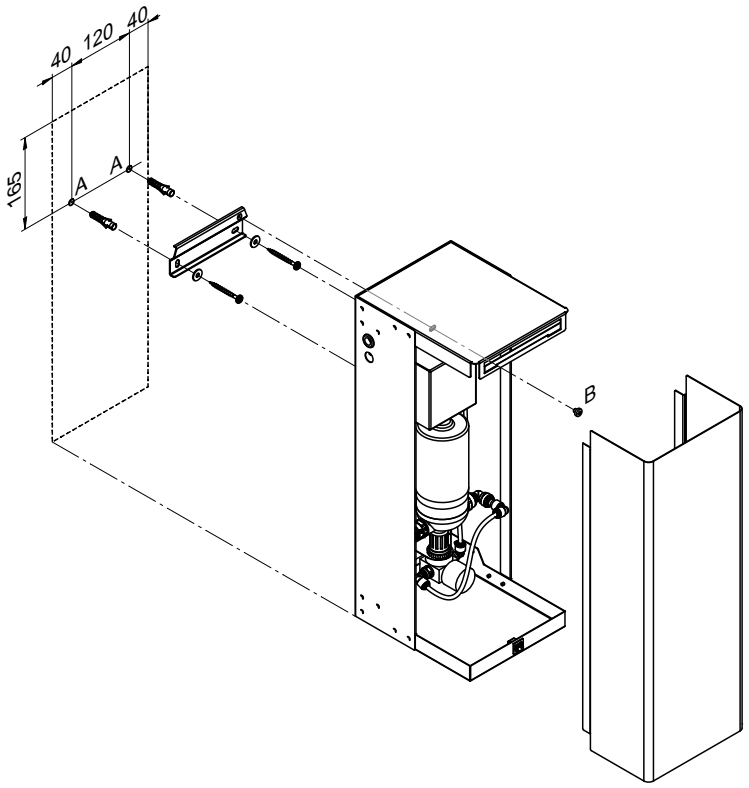



*Fig. 25: Mounting the booster module (dimensions in mm)*

### Mounting procedure

1. Mark the attachment points "A" for the attachment rail at the desired position using a spirit level.
2. Fasten the attachment rail to the wall using a suitable fastening material (provided on site) depending on the properties of the wall. Before tightening the screws, align the attachment rail horizontally using a spirit level.
3. Remove the front cover.
4. Hang the device in the attachment rail and fix to the attachment rail through the rear wall of the housing using the supplied screw "B".
5. Relocate the front cover.

## 5.9 Setting up water inlet and outlet

### 5.9.1 Information on water installation

Note: If the Condair MN is operated with the optional reverse osmosis system Condair RO-HB, please note the information on water installation in the separate installation and operating manual for the Condair RO-H.

**Water inlet**

**CAUTION!**
**Risk of contamination**

The water inlet pipe may only be connected to the central unit upon commencing operation and after thorough flushing of the inlet pipe.

The water inlet must be installed in accordance with the DIN EN 1717 and DIN 1988-100 standards, the SVGW & DVGW directives and local drinking water regulations. The connection information stated must be complied with.

– A stop valve (3) and a backflow preventer for fluid category 2 (2) must be installed, where possible, in direct proximity to the central unit.
– We recommend installing a water stop hose in the feed line to the Condair MN central unit.
– So the disinfection kit can be connected during maintenance and periodic water samples can be taken from the inlet water, the last 50 cm of the water inlet pipe should be installed with a corresponding reinforced hose.
– For water pressures >5 bar, a pressure reduction valve must be built into the inlet pipe which is set to 5 bar.
– The inlet water requirements must be complied with.

| | |
|---|---|
| Water quality | Drinking in accordance with applicable local drinking water regulations or reverse osmosis water |
| Permissible water temperature | 5...25 °C |
| Permissible water hardness | 3...30 °dH or 5...53 °fH |
| Permissible water conductivity | 3 ...1000 µS/cm |
| Silicate content in any form, e.g. $SiO_2$ | max. 12 mg/l |
| Permissible water pressure | 300 ... 500 kPa (3...5 bar) |

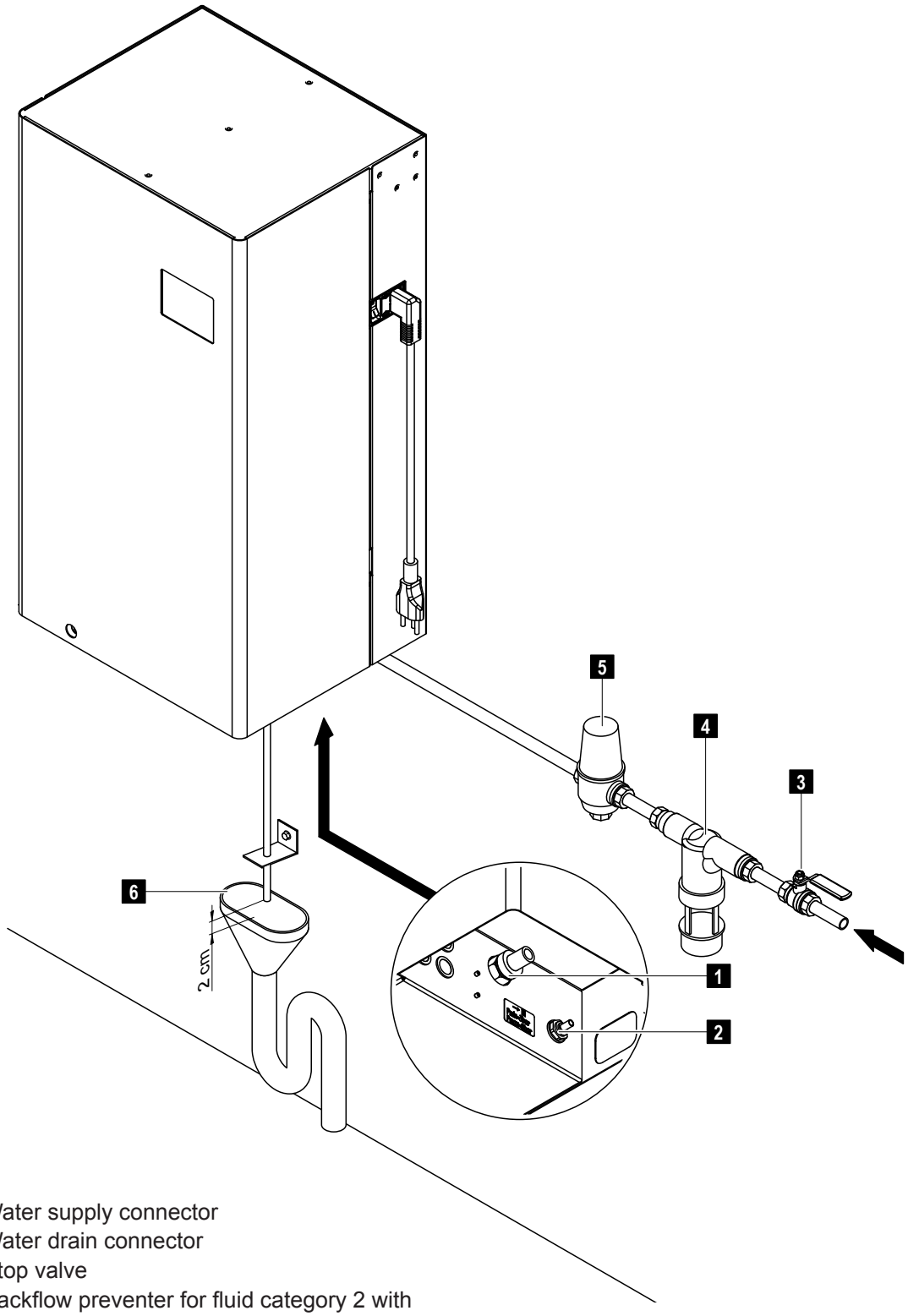
– The connection material used must be pressure-tested and permitted for use in drinking water supply.
– Attach the inlet pipe using suitable resources.

**Central unit water outlet**

Set up the water outlet in accordance with the overview illustrations in *Section 5.9.2* and the applicable specifications for water installations. The connection information stated must be complied with.

– The maximum length of the outlet pipe, from device connection to drain funnel, should not exceed 2 m. Longer outlet pipes are only permissible by agreement with Condair.
– Ensure that the outlet pipe, drain funnel and siphon are easily accessible and correctly attached for monitoring and cleaning purposes.
– Important: **The flushing process takes place under pressure. You must therefore attach the outlet pipe so that it cannot shift during operation (e.g. with angle support and drill).**
– The end of the outlet pipe must stop 2 cm above the drain funnel and may not touch it under any circumstances.
– Attach the drain funnel so that it cannot shift during operation.

### 5.9.2 Water installation overview




1 Water supply connector
2 Water drain connector
3 Stop valve
4 Backflow preventer for fluid category 2 with integrated particle filter (provided on site)
5 Pressure reduction valve for pressures >5 bar
6 Open drain funnel with syphon

*Fig. 26: Water installation overview*

### 5.9.3 Installing a drain funnel with trap for external drain module(s)

Install the drain funnel with trap at the intended location. Attach the drain funnel so that it cannot shift during operation.
Note: The external drain module(s) will be installed by the Condair service technician during commissioning.

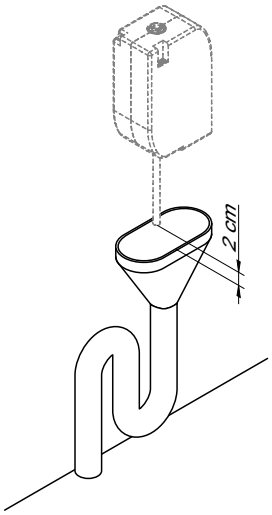
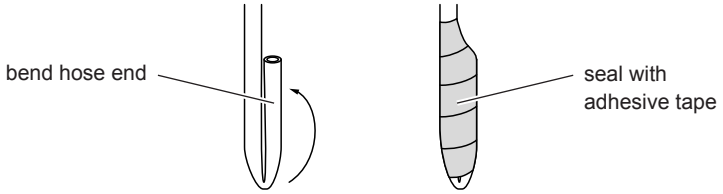



*Fig. 27: Installing a drain funnel with trap for external drain module(s)*

### 5.9.4 Feeding in hoses and CAN bus cables

**CAUTION!**
**Risk of contamination**

Before feeding in the hoses, the **end of the hose must be sealed** (e.g. bend the hose ends and seal them with adhesive tape, see figure below). Once the hoses are inserted, both ends of the hose must be kept sealed.




**Important: The hoses and CAN bus cable for connection to the central unit must be labelled to avoid mixing them up (e.g. with spray circuit number and room that the hose/CAN bus cable leads to).**

For central spray circuit drainage, according to the *Fig. 28*, the CAN bus cables and the hoses must be inserted between the central unit and the spray heads (guide pipe 25 mm in diameter or cable duct with a hose and CAN bus cable).

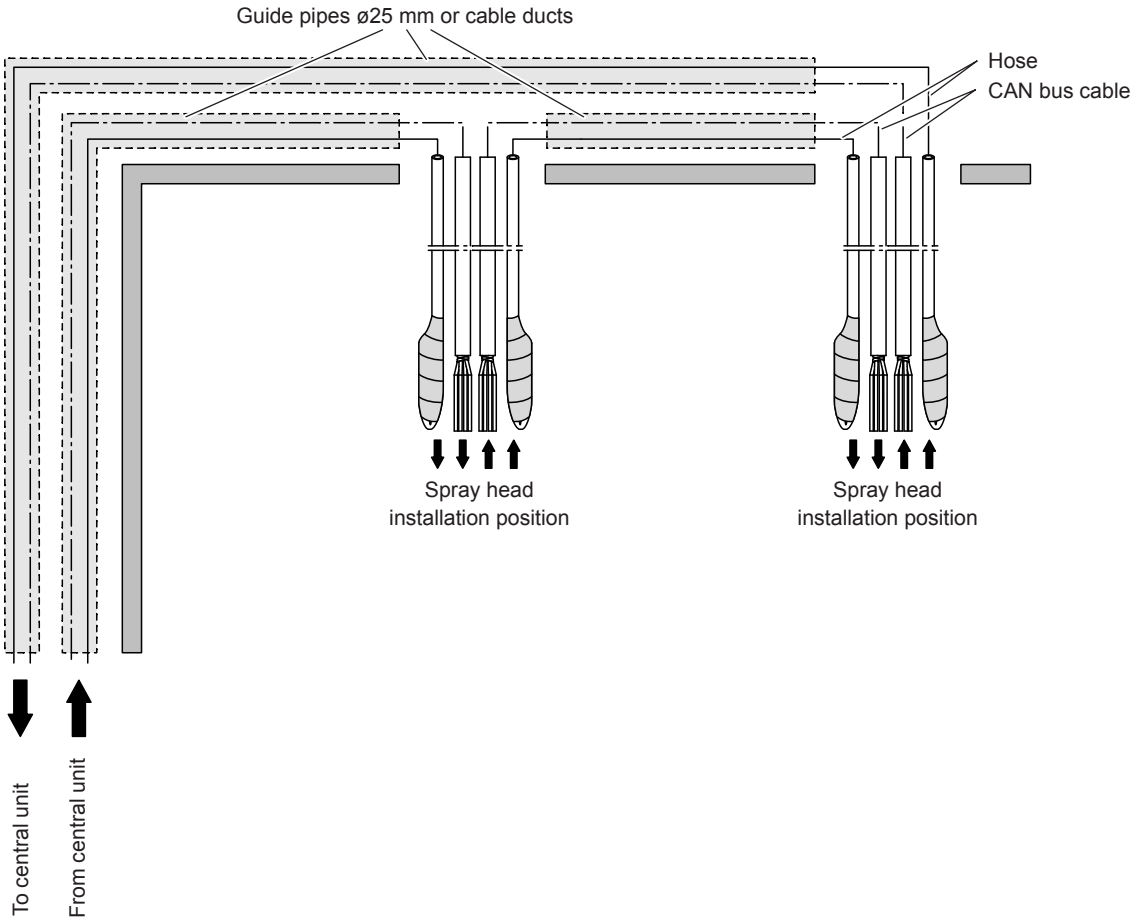



*Fig. 28: CAN bus cable and hose guide for central spray circuit drain (with a hose and a CAN bus cable)*

For external spray circuit drainage, according to the *Fig. 29*, the CAN bus cables and the hoses must be inserted between the central unit, the spray heads and the drain module (guide pipe with a hose and CAN bus cable).

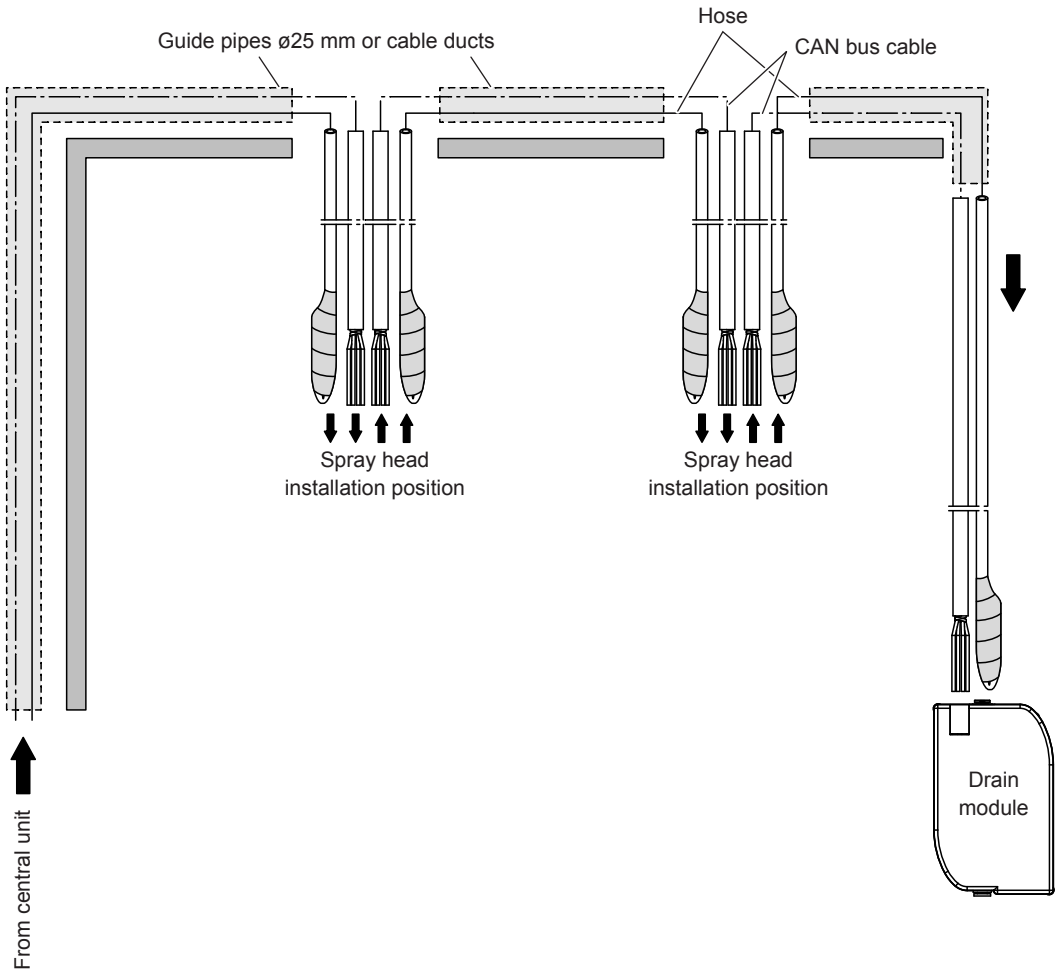


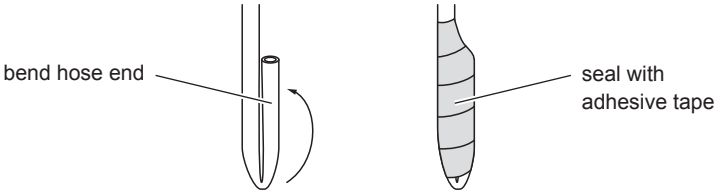

*Fig. 29: CAN bus cable and hose guide for external spray circuit drainage*

**Notes**

– The hoses and CAN bus cables must be led a minimum of 300 mm from the ceiling or floor connection point before they are cut to length (see *Fig. 30*).

**CAUTION!**
**Risk of contamination**

Once the hoses are inserted and cut to length, both ends of the hose must be sealed to prevent pollution (e.g. bend the hose ends and seal them with adhesive tape, see figure below).



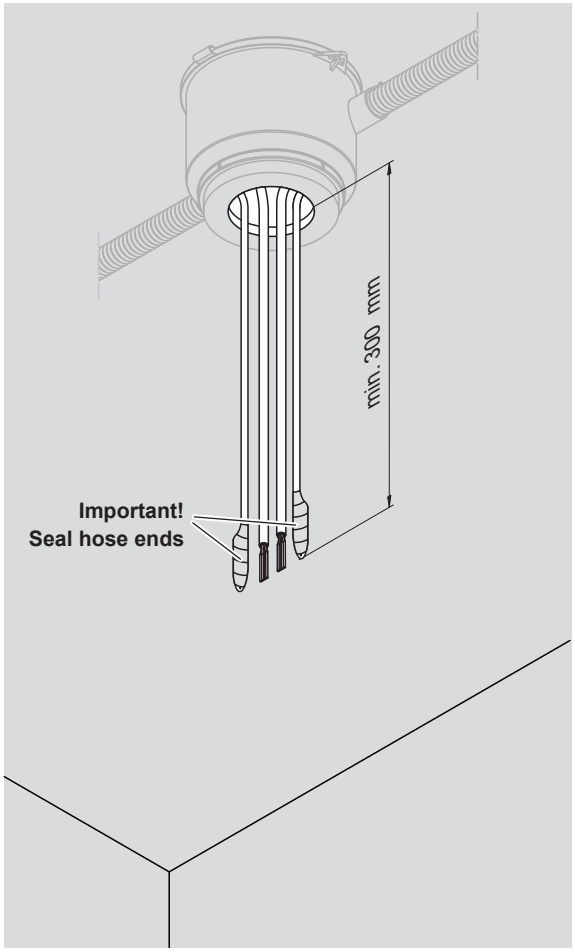




*Fig. 30: Additional length for hoses and CAN bus cables*

– For the central unit and external drain module, should there be one, the hoses and CAN bus cables must be cut to length leaving enough extra for easy connection (see *Fig. 30*).

# 6 Technical data

## 6.1 Central unit technical data

| | 1 water filter<br>1 spray circuit | 1 water filter<br>2 spray circuits | 2 water filter(s)<br>1 spray circuit | 2 water filter(s)<br>2 spray circuits |
|---|---|---|---|---|
| Central unit water connection | G3/4" | | | |
| Flushing water quantities | Approx. 20 litres/day | | Approx. 24 litres/day | |
| Minimum quality of inlet water | Drinking water according to applicable local drinking water specifications or reverse osmosis water | | | |
| Permissible water hardness | 3...30 °dH or 5...53 °fH | | | |
| Permissible water conductivity | 3 ...1000 µS/cm | | | |
| Silicate content in any form, e.g. $SiO_2$ | max. 12 mg/l | | | |
| Permissible inlet water pressure | 300 ... 500 kPa (3 ... 5 bar) | | | |
| Permissible inlet water temperature | 5 ... 25 °C | | | |
| Water treatment | Water filter (disposable mixed-bed resin cartridge), Optional reverse osmosis system Condair RO-HB | | | |
| UV lamp | For water sterilisation | | | |
| Central unit electrical connection | Plug 100-240 V / 1~ / 50-60 Hz | | | |
| Operating voltage | 24 - 36 VDC | | | |
| Max. current draw | 0.57 A | 0.8 A | 0.57 A | 0.8 A |
| Max. power consumption | 25 W | 35 W | 25 W | 35 W |
| Housing | Galvanised sheet steel, powder-coated | | | |
| IP protection | IP 20 | | | |
| Control, touchscreen | 3 humidity levels plus humidity Off<br>Operating status, water filter replacement and fault indicator | | | |
| Mobile control | Condair HumiLife-App | | | |
| Central unit dimensions H x W x D | W 505 x H 575 x D 250 mm | | W 710 x H 575 x D 250 mm | |
| Minimum installation space required | W 550 x H 625 x D 270 mm | | W 755x H 625 x D 270 mm | |
| Central unit weight (in operation) | 14.4 kg | | | |
| Permissible ambient temperature | 5 °C - 30 °C | | | |
| Permissible ambient humidity | max. 80 %rh (not condensing) | | | |

## 6.2 Spray head technical data

| | |
|---|---|
| Humidifying output (per spray head) | 200 g/h (+-10%) |
| Nominal operating voltage | 36 VDC |
| Nominal power consumption | 30 mA |
| Sound pressure level | < 25 dB(A) (in accordance with SIA 181) |
| Permissible ambient temperature | 5 °C - 30 °C |
| Permissible ambient humidity | max. 80 %rh (not condensing) |
| Dimensions, flush-mounting | |
| Spray head diameter | 73 mm |
| Panel diameter | 105 mm |
| Spray head height (including panel) | 52 mm |
| Min. installation depth | 100 mm |
| Panel height | 12 mm |
| Dimensions, "round" surface mounting | |
| Spray head diameter | 73 mm |
| Panel diameter | 87 mm |
| Spray head height (including panel) | 68 mm |
| Dimensions, "square" surface mounting | |
| Spray head diameter | 73 mm |
| Panel dimensions | 87 x 87 mm |
| Spray head height (including panel) | 70 mm |

## 6.3 Hose technical data

| | |
|---|---|
| Material | John Guest "PE-04025-0100M-N" |
| Diameter ID/OD | 4/6 mm |

## 6.4 CAN bus cable technical data

| | |
|---|---|
| Type | 2x2 pair |
| Diameter OD | 8 mm |
| Line impedance | 120 ohms |

## 6.5 Flush-mounting installation box/guide pipes technical data

| | |
|---|---|
| Installation box | AGRO HaloX® 100 / #1281-00 / E. No. 920 858 319 |
| Installation box lid | AGRO HaloX® 100 / #1281-11 / E. No. 920 896 119 |
| Guide pipe | KRFG pipe 25 mm in diameter |

## 6.6 Technical data optional reverse osmosis system Condair RO-HB

See separate installation and operating manual for the Condair RO-H.

Notes

Notes

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CH94/0002.00

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