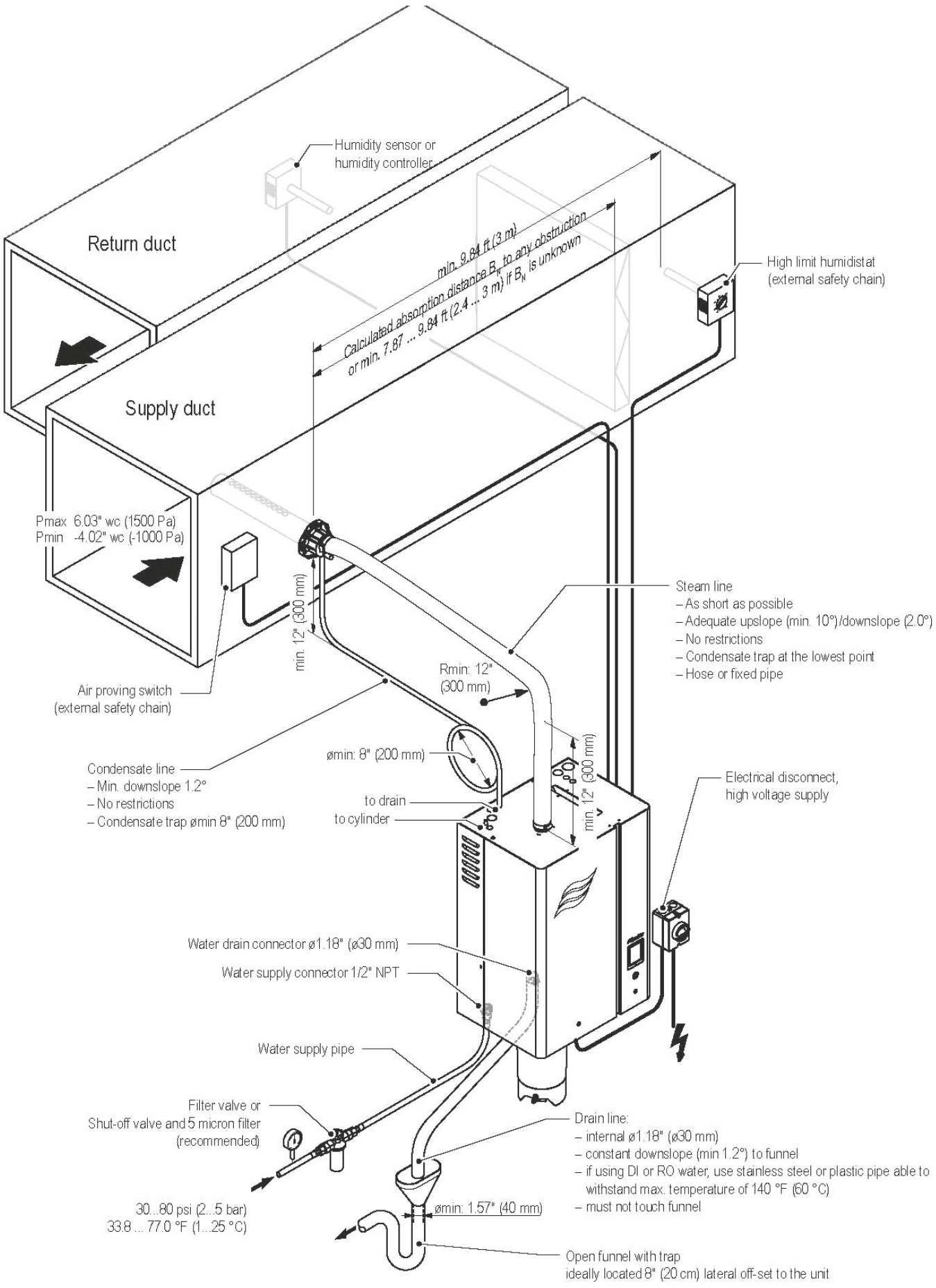
RSNT-Series

Humidificadores Precisión

Humidificadores de Vapor | Generación de Vapor | 5 - 81 Kg/h

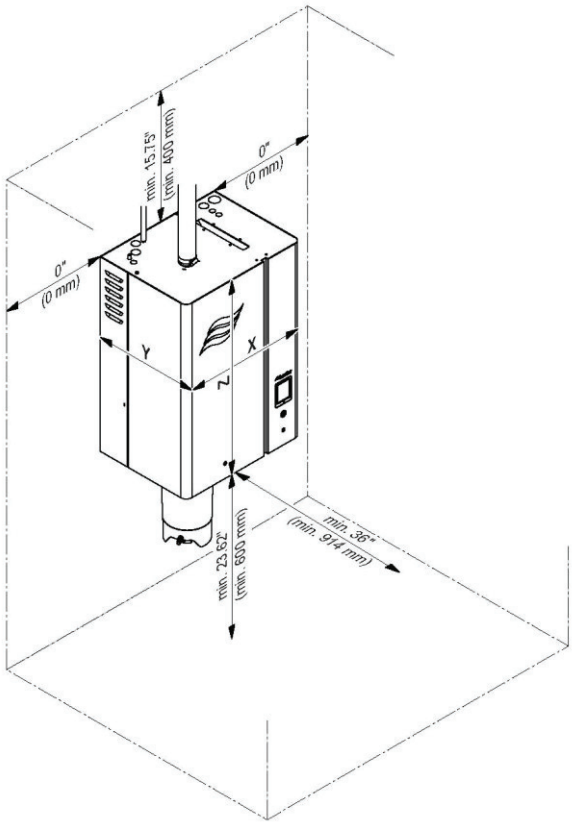
Manual IOM

Installation Overview



Unit Mounting

Locating the unit



– Install the steam humidifier so that the minimum bend radius R=12" / 300mm for Nortec hose, R=5 x internal diameter for hard pipes and upslope (min 10°) / downslope (min 2°) of the steam hose is maintained.

– Use 1/4 x 2" lag bolts and washers to mount the humidifier onto wooden studs (or equivalent).

The back panel of the Nortec RS is retaining heat during operation (max. surface temperature of the metal housing approx. 140 - 160 °F / 60 - 70 °C). Make sure, therefore, that the construction (wall, pillar, etc.) to which the unit is to be mounted, does not consist of heat-sensitive material.

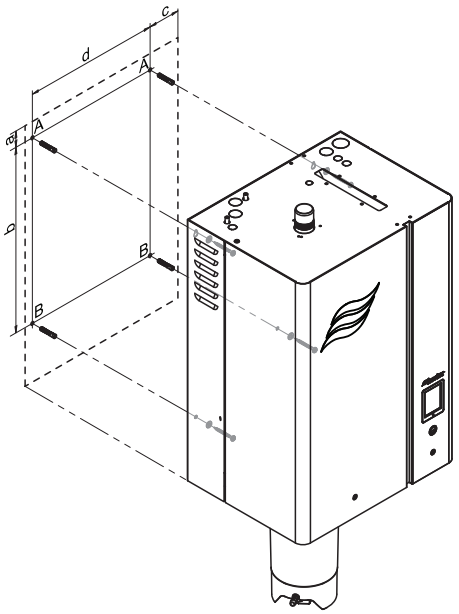
– Install the steam humidifier in such a manner that it is freely accessible with sufficient space available for maintenance purposes. The minimum distances shown in the adjacent illustration must be maintained.

– The Nortec RS is protected according to IP21. As a safeguard, the humidifier should be installed in a drip-proof location. Admissible ambient conditions must be complied with.

– Do not mount the steam humidifier to hot or very cold walls or near vibrating components.

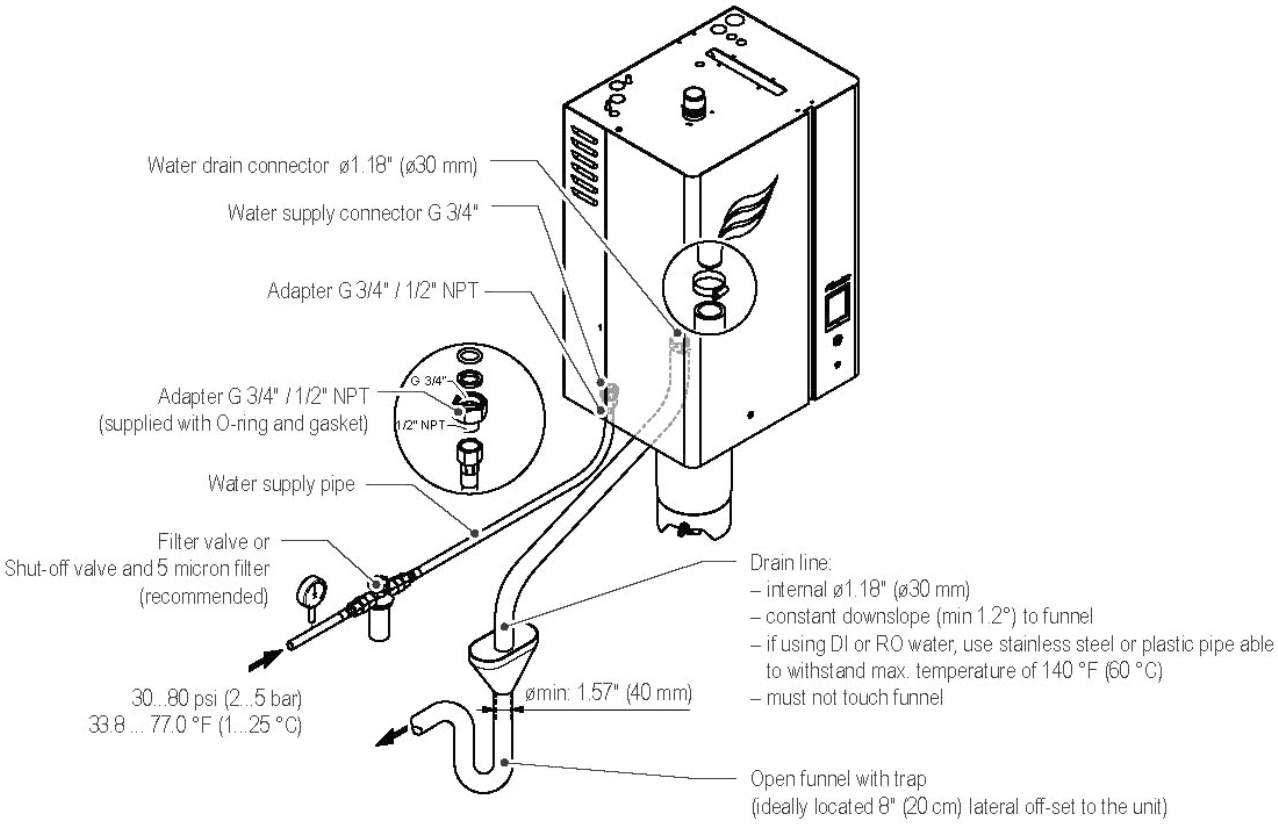
Housing		Small	Medium	Large
Housing dimensions in inch (mm)	X	16.5" (420)	20.9" (530)	29.4" (1000)
	Y	14.6" (370)	16" (406)	16" (406)
	Z	26.4" (670)	30.7" (780)	30.7" (780)
Net weight in lb (kg)		60 (27.2)	89 (40.3)	179 (81.0)
Operating weight in lb (kg)		89 (40.2)	145 (65.8)	291 (132.0)

Mounting the unit



1. Mark the attachment points "A" and "B" at the desired position in the mounting surface with the help of a level.
2. Install 1/4 × 2 in lag bolts and washers at attachment points "A". Allow the heads of the bolts to extend 1/4 in (5 mm) from the mounting surface so that the humidifier can be hung on the bolts.
3. Unlock the screws on the front panels of the unit, and remove the front panels.
4. Carefully raise the unit and hang it on the installed lag bolts.
5. Install additional 1/4 × 2 in lag bolts and washers through the rear panel of the humidifier into the mounting surface at attachment points "B".
6. Align the unit with the help of a level, then tighten the lag bolts.
7. Install the front panels and fasten them securely.

Water Installation



Water supply

The water supply is to be carried out according to the figure above and the applicable local regulations for water installation.

The indicated connection specifications must be observed.

– Admissible supply water temperature 33.8 to 77.0°F (1 to 25°C).

– Admissible mains pressure 30 to 80 (hammer-free system).

Notes on water quality:

For the water supply of the Nortec RS, use exclusively untreated drinking water, water from RO system or de-ionized water.

– The use of additives such as corrosion inhibitors, disinfectants, etc. is not allowed, since these additives may endanger health and affect proper operation.

– Conductivity should be between 1 and 1500 µS/cm. Note that conductivity less than 1 µS/cm is very aggressive water (this is equivalent to a resistivity of 1 MΩ or greater). It is recommended to blend such water with other less-treated water to ensure the supply is not overly aggressive.

– Hardness should be between 0 and 12 grains/gallon.

– Silica content should be between 0 and 12 ppm.

– pH should be between 6.5 and 7.5.

– Chloride content should be between 0 and 50 ppm.

– The connection material must be pressure-proof and certified for use with the particular supply (drinking water, RO, or DI water).

– Important! Before connecting the water line, the line must be well flushed out. .

CAUTION!

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

Water drain

The water drain is to be carried out according to the figure found in Section 5.6.1 of the RS Series Installation Manual, 2582419 and the applicable local regulations for water installations. The indicated connection specifications must be observed.

– Make sure that the drain pipe is correctly fixed and easily accessible for inspections and cleaning purposes.

– The draining temperature is maximum 140°F (60°C). Use temperature-resistant materials only!

– Lead drain line down to the funnel with a constant downslope (min. 1.2°).

Note: On units with two steam tanks, each drain line must be led into a separate funnel with trap.

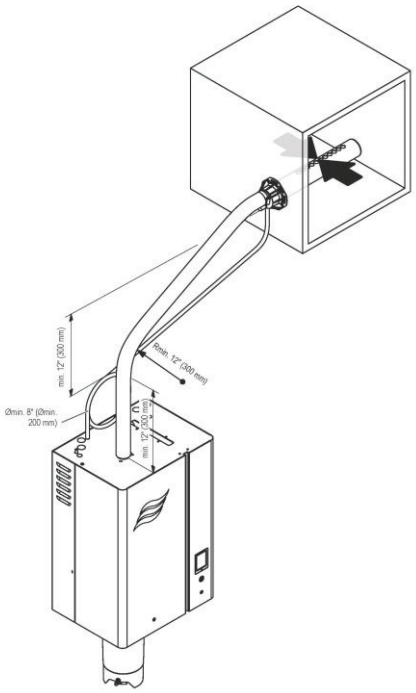
– Attach drain line in such a way, that it cannot slip out of the funnel or bottom out in the funnel.

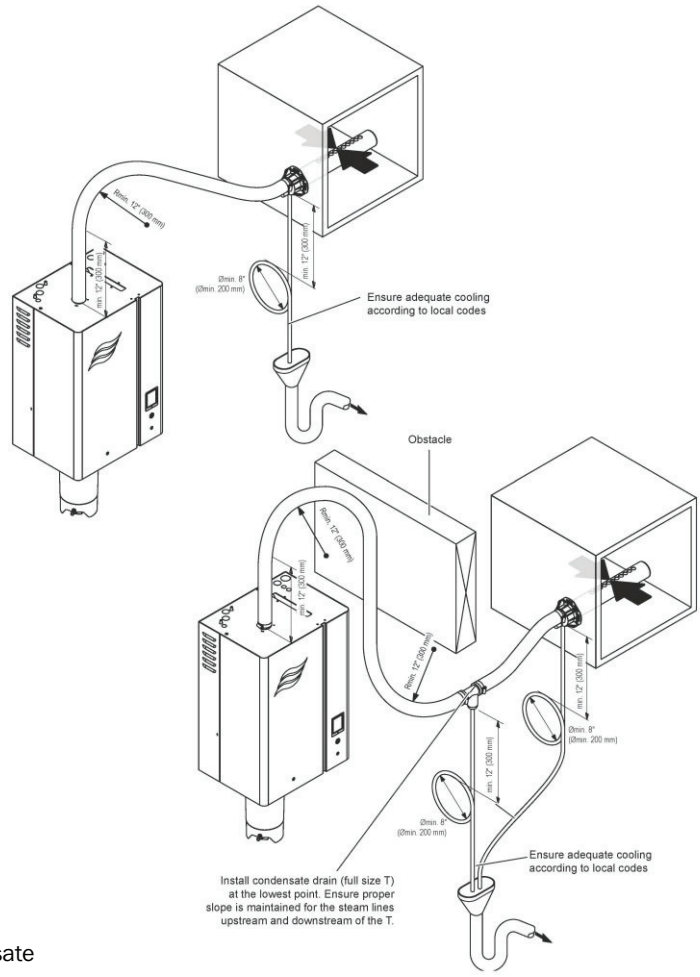
– The open end of the drain line must not touch the funnel (min. air gap 0.79" (2 cm)).

– We recommend to install the funnel with an lateral off-set of 8" (20 cm) to the side of the unit, to prevent damage to humidifier due to rising steam.

Steam Installation

Installation examples





Installation Notes

– Use original steam and condensate hose from your Nortec representative or solid steam pipes from copper (MED-L) or stainless steel (min. AISI 304) exclusively. Steam and condensate lines of other material may cause undesired operational malfunctions. For installations with reverse osmosis or de-ionized water supply, do not use copper steam lines.

– Initially, lead the steam line upright upwards min. 12" (300 mm) above the humidifier. Then lead the steam line with a minimum upslope of 10° or a minimum downslope of of 2° to the steam distributor.

– The condensate hose from the steam distributor is led down to the humidifier with a minimum downslope of 1.2°, via a condensate trap (min. hose bend diameter Ø8" (ø200 mm)) and there it is to be connected to the appropriate connector on top of the unit.

Important! Before putting the unit into operation, the condensate trap of the condensate hose must be filled with water.

– The steam line should be kept as short as possible, as per Table 1 from the RS Series Installation Manual (2582419). Ensure the the minimum bend radii are observed: 12" (300 mm) for steam hoses or 5x internal diameter for solid pipes.

Important! Allowance must be made for a pressure loss from elbows, according to equivalent length tables.

– Important! When deciding on the length and layout of steam hoses, it should be noted that steam hoses may become shorter and/or longer depending on temperature and age.

– The steam hose must be secured to the steam distributor and humidifier steam outlet by means of hose clamps. Solid steam pipes should be connected to the steam distributor and steam humidifier with short lengths of steam hose secured with hose clamps.
Caution! Do not overtighten the hose clamp on the steam connector of the steam humidifier.

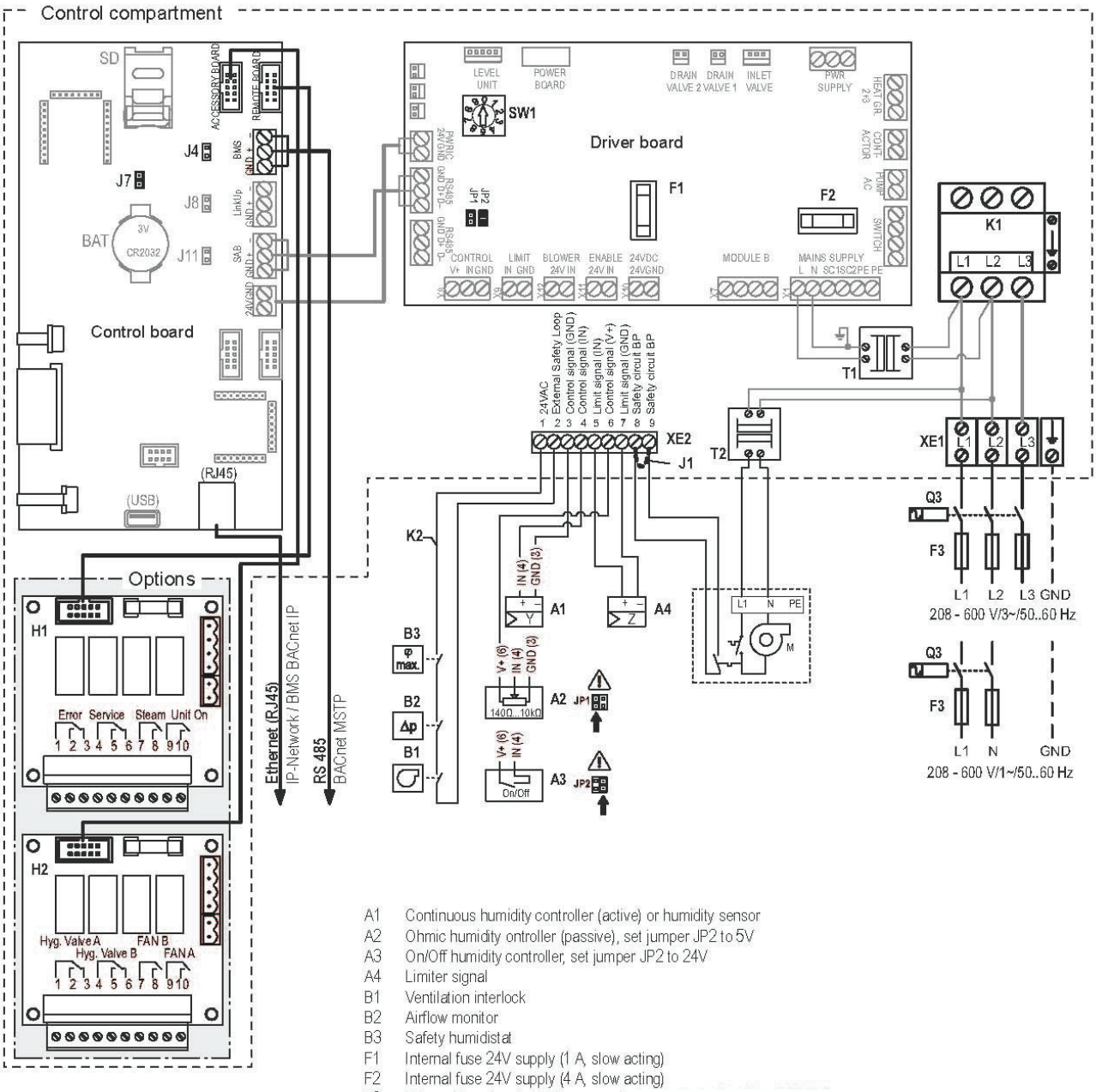
– Steam lines made of solid pipes (copper or stainless steel) must be insulated over the entire length to minimize condensate formation. Condensate created due to thermal loss in steam lines will reduce the operational efficiency of the humidification system and reduce the moisture supply to the conditioned environment.

– Reducing the cross section or the complete closure of the steam line 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. All installations must comply with the following instructions.

- Ensure steam line is open (no reduction in cross-section) along the entire length after installation.
- Steam lines must not sag or else condensate may accumulate in low point.
- Valves in the steam line are not permitted.

Electrical Connection

Wiring diagram



A1	Continuous humidity controller (active) or humidity sensor
A2	Ohmic humidity ontroller (passive), set jumper JP2 to 5V
A3	On/Off humidity controller, set jumper JP2 to 24V
A4	Limiter signal
B1	Ventilation interlock
B2	Airflow monitor
B3	Safety humidistat
F1	Internal fuse 24V supply (1 A, slow acting)
F2	Internal fuse 24V supply (4 A, slow acting)
F3	External fuse heating voltage supply
F5	Internal fuse control module (200 mA, quick acting)
H1	Remote operating and fault indication (option)
H2	Accessory board (option) for the control of an external fan of the AHU as well as the optional external valve for the water supply line flushing
J1	Jumper, install if no blower pack is connected
J4	Jumper for activating the terminating resistor for Modbus network (Jumper must be connected, if Nortec RS is the last unit in the Modbus network)
J7	Jumper for activating Modbus or BACnet MSTP communication via RS485 interface (J6). If jumper is not in place no communication will take place through the RS485 interface
K1	Mains contactor (heating voltage)
K2	External safety circuit (safety humidistat, airflow monitor, etc.)
M	Motor Blowepack
Q3	External main switch high voltage supply
SW1	Rotary switch module identification (must be left on position "0")
T1	Tranformer control voltage supply Module A
T2	Transformer blower pack supply
XE1	High voltage terminal block
XE2	Control terminal block

For wiring diagram of double tank humidifier, refer to Installation Manual (2582419).

1 Introduction

1.1 Before You Begin

Thank you for purchasing the **Nortec RS steam humidifier**.

The Nortec RS steam humidifier incorporates the latest technical advances and meets all recognized safety standards. Nevertheless, improper use of the Nortec 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 Nortec 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 Nortec representative. They will be glad to assist you.

1.2 Notes on the Installation Manual

Limitation

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

This installation manual is restricted to the **installation** of the Nortec RS steam humidifier and is meant for **well trained personnel being sufficiently qualified for their respective work**.

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

Symbols used in this manual

CAUTION!

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

WARNING!

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

DANGER!

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

Safekeeping

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

If the documentation gets misplaced, please contact your Nortec representative for replacement.

2 For Your Safety

General

Every person, who is in charge of the installation work on the Nortec RS must have read and understood this installation manual and the Nortec RS operation manual before carrying out any work.
Knowing and understanding the contents of the installation manual and the operation manual is a basic requirement for protecting personnel against any kind of danger, to prevent faulty operation, and to operate the unit safely and correctly.

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

Qualification of personnel

All installation work described in this installation manual **may only be carried out by specialists who are well trained and adequately qualified and are authorised by the customer**.
For safety and warranty reasons any action beyond the scope of this manual must be carried out only by qualified personnel authorized by the Nortec.

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

Intended use

The Nortec RS steam humidifier is intended exclusively for air humidification via a steam distributor or a blower pack approved by Nortec within specified operating conditions (see Nortec RS operation manual). Any other type of application, without the written consent of Nortec, is considered as not conforming with the intended purpose and may lead to hazardous operation of the Nortec RS and will void warranty. Operation of the equipment in the intended manner requires **that all the information contained in this installation manual are observed**.

Danger that may arise from the Nortec RS:

DANGER!
Danger of electric shock!

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

Preventing unsafe operation

All persons working with the Nortec RS are obliged to report any alterations to the unit, modifications, or unsafe issues that may affect safety to the owner without delay and to **secure the Nortec RS against accidental power-up**.

Prohibited modifications to the unit

No modifications must be undertaken on the Nortec RS without the express written consent of Nortec.

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

3 Product Overview

3.1 Models Overview

Nortec RS steam humidifiers are available in **different housing sizes (S, M and L)** with **different heating voltages** and **steam capacities ranging from 10 lbs/hr up to a maximum of 180 lbs/hr (5 ... 80 kg/h)**.

3.1.1 Units Small ("S") and Medium ("M")

Housing size	Nortec RS	208 V/1~	240 V/1~	480 V/1~	600 V/1~	208 V/3~	240 V/3~	480 V/3~	600 V/3~
		lb/hr (kg/hr)	lb/hr (kg/hr)	lb/hr (kg/hr)	lb/hr (kg/hr)	lb/hr (kg/hr)	lb/hr (kg/hr)	lb/hr (kg/hr)	lb/hr (kg/hr)
S	**10**	10.9 (4.9)	10.9 (4.9)	9.7 (4.4)	11.4 (5.2)	10.9 (4.9)	10.9 (4.9)	11.3 (5.1)	11.1 (5.0)
	15	15.9 (7.2)	14.5 (6.6)	14.1 (6.4)	14.7 (6.7)	15.9 (7.2)	14.5 (6.6)	14.6 (6.6)	17.6 (8.0)
	20	21.2 (9.6)	21.2 (9.6)	18.8 (8.5)	19.6 (8.9)	21.2 (9.6)	21.2 (9.6)	19.4 (8.8)	22.8 (10.3)
M	**30**	31.8 (14.4)	31.8 (14.4)	31.5 (14.3)	31.4 (14.2)	28.8 (13.1)	31.8 (14.4)	31.5 (14.3)	31.4 (14.2)
	45	—	—	—	—	47.7 (21.6)	47.9 (21.7)	45.2 (20.5)	47.1 (21.4)
	65	—	—	—	—	71.6 (32.5)	71.9 (32.6)	63.0 (28.6)	70.6 (32.0)
	90	—	—	—	—	—	—	94.6 (42.9)	94.3 (42.8)

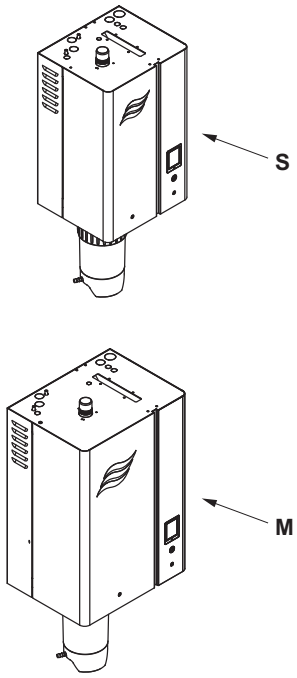


Fig. 1: Overview units small ("S") and medium ("M")

3.1.2 Units Large ("L")

Housing size	Nortec RS	208 V/1~	240 V/1~	480 V/1~	600 V/1~	208 V/3~	240 V/3~	480 V/3~	600 V/3~
		lb/hr (kg/hr)	lb/hr (kg/hr)	lb/hr (kg/hr)	lb/hr (kg/hr)	lb/hr (kg/hr)	lb/hr (kg/hr)	lb/hr (kg/hr)	lb/hr (kg/hr)
L	90	—	—	—	—	95.4 (43.3)	94.6 (42.9)	—	—
	130	—	—	—	—	143.2 (65.0)	141.8 (64.3)	126.0 (57.2)	141.2 (64.1)
	180	—	—	—	—	—	—	189.2 (85.8)	188.6 (85.5)

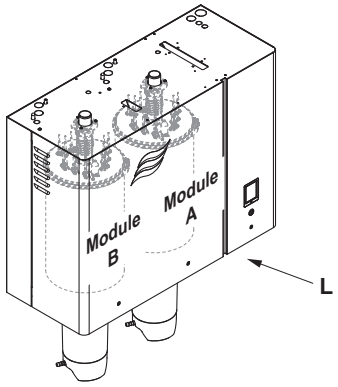
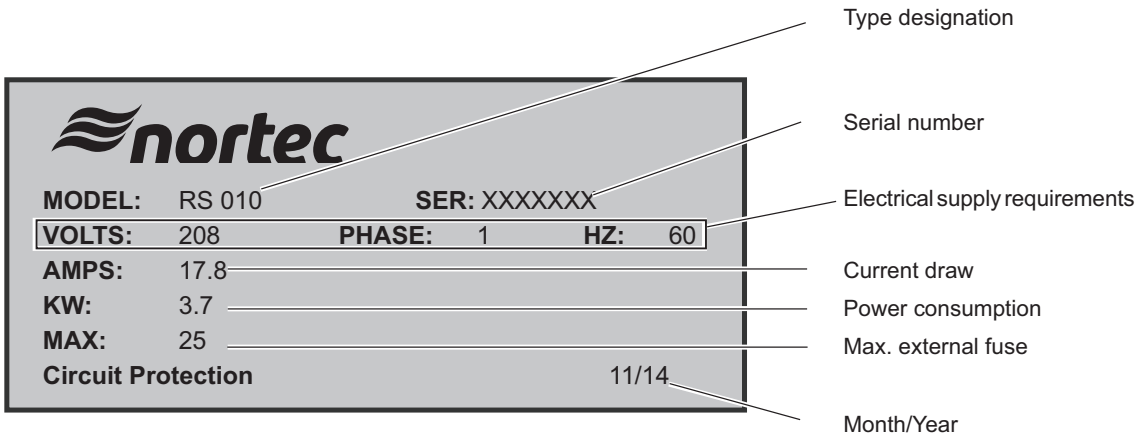


Fig. 2: Overview units large ("L")

3.2 Identification of the Unit

The identification of the unit is found on the specification label.



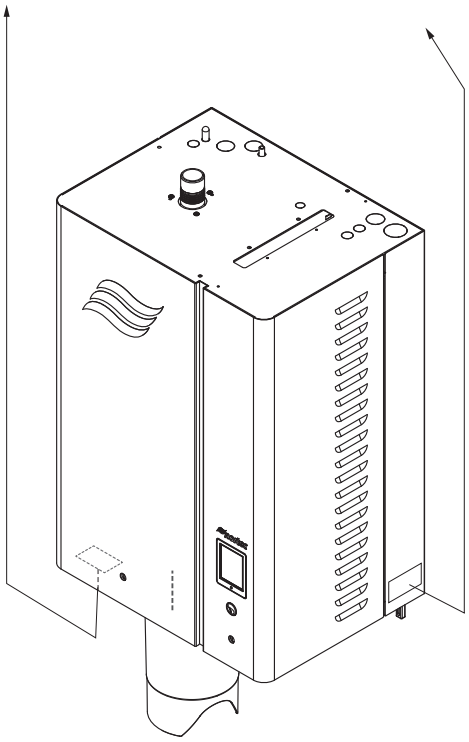


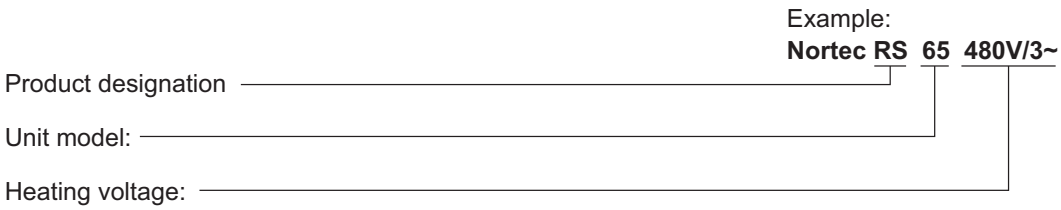
Fig. 3: Specification label location and details (right side and underside of unit)

3.3 Product Designation

The product designation and the most important unit data are found on the specification label fixed on the right side of the Nortec RS.

Notes regarding the specification label can be found in the Nortec RS operation manual.

Key model designation



208V/1~/50...60Hz: **208V/1~**
240V/1~/50...60Hz: **240V/1~**
480V/1~/50...60Hz: **480V/1~**
600V/1~/50...60Hz: **600V/1~**
208V/3~/50...60Hz: **208V/3~**
240V/3~/50...60Hz: **240V/3~**
480V/3~/50...60Hz: **480V/3~**
600V/3~/50...60Hz: **600V/3~**

3.4 Options

	Nortec RS								
	10	15	20	30	45	65	90	130	180
Precision Provides capability of humidifier to achieve ± 1% humidity control*. Solid State Relays allow for rapid response upon call for humidity, adapting rapidly to humidity demand. This allows for quick response and tight control of humidity. Also supplied are two fill valves for quicker response (turbo mode). * Humidity control is dependent on a variety of factors, including design of piping from humidifier to distributor, duct characteristics from distributor to space, control devices and location. In-field results may vary. Relative humidity levels in the supply duct will vary greater than in-space tolerance levels.	**1x P**								
Scale tank Provides a separate reservoir underneath the steam cylinder for scale collection. The addition of this option reduces maintenance time significantly. Minerals removed from the water during steam production will collect in the scale reservoir rather than in the tank. For the double tank humidifiers (RS 135 and 180), order two for each humidifier.	**1x SC** **(2x SC for RS 90 large unit)**							**2x SC**	
Built-on Blower Pack For direct dispersion into a conditioned environment.	**1x BOBP** **(N/A for RS 90 large units)**							**N/A**	
Remote operating and fault indication PCB with relay contacts for the connection of remote displays for "Operation", "Steam", "Fault" and "Service".	**1xRFI**								
Accessory Board PCB with relay contacts for the connection of remote fan enable (cylinder A/B) as well as hygiene flush (cylinder A/B).	**1x ACC**								
BACnet MSTP BTL PCB to provide BTL certified BACnet MSTP. This option also enables full Master functionality when using BACnet MSTP.	**1x BAC-BTL-MSTP**								
BACnet IP BTL PCB to provide BTL certified BACnet IP.	**1x BAC-BTL-IP**								
LonWorks board Supplementary board to connect the Nortec RS to a building management system via LonWorks.	**1x LON**								
Mounting bar Provides two mounting bars which fit into each other for wall mounting. One bar is fastened to the humidifier, the other bar is fastened to the wall. The unit can then be "hung" onto the wall by engaging the two mounting bars. Note: without this option, the unit may still be wall mounted using the keyhole cutouts on the back of humidifier housing.	**1x MP-S**			**1x MP-M** **(1xMP-L for RS 90 large unit)**				**1x MP-L**	
Mounting rack basic Mounting rack for Nortec RS.	**1x MR-B-S**			**1x MR-B-M** **(1x MR-B-L for RS 90 large unit)**				**1x MR-B-L**	

	Nortec RS								
	10	15	20	30	45	65	90	130	180
Height extension profiles for mounting rack basic ** Height extension profiles for mounting rack.	**1x MR-E (N/A for RS 90 large unit)**							**N/A**	
Adjustable profiles for mounting rack basic ** Profiles with screw feet for levelling the mounting rack.	**1x MR-A (N/A for RS 90 large unit)**							**N/A**	
Pressure compensation kit Provides extension for the fill cup to overcome back pressure (including duct static pressure) in excess of 5-1/2" water column. Longer hoses included. Two required for double tank humidifiers.	**1x OPS (2x OPS for RS 90 large unit)**							**2x OPS**	

** Not available for units size "L" (large)

4 Receiving and Storage

4.1 Inspection

Upon receiving:

– Inspect shipping boxes for damage.
  Any damages of the shipping boxes must be reported to the shipping company without delay.

– Check packing slip to ensure all parts have been delivered.
  All material shortages are to be reported to your Nortec supplier within 48 hours after receipt of the goods. Nortec Humidity Ltd. assumes no responsibility for any material shortages beyond this period.

  The standard delivery includes the Nortec RS steam humidifier with the options ordered (see *Section 3.4*) packed in cardboard boxes along with the installation manual (this document), operation manual and spare parts list.

– Unpack the parts/components and check for any damage.
  If parts/components are damaged, notify the shipping company immediately.

– Check whether the components are suitable for installation on your site according to model key shown on the specification label.

4.2 Storage and Transportation

Storing

Until installation store the Nortec RS in its original packaging in a protected area meeting the following requirements:

– Room temperature: 41 ... 104 °F (5 ... 40 °C)
– Room humidity: 10 ... 75 %rh

Transportation

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

WARNING!

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

Packaging

Keep the original packaging of the components for later use.

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

5 Mounting and Installation Work

5.1 Safety Notes on Mounting and Installation Work

Qualification of personnel

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

General notes

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

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

Safety

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

DANGER!
Danger of electric shock!

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

CAUTION!

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

Prevention: To protect these components against damage caused by electrostatic discharge (ESD protection) appropriate measures must be taken when the unit is open for installation work. A wrist strap should be worn to connect the maintenance specialist with a common ground point. For more information, refer to ANSI/ESD-S20.20.

5.2 Installation Overviews

Typical installation for duct humidification

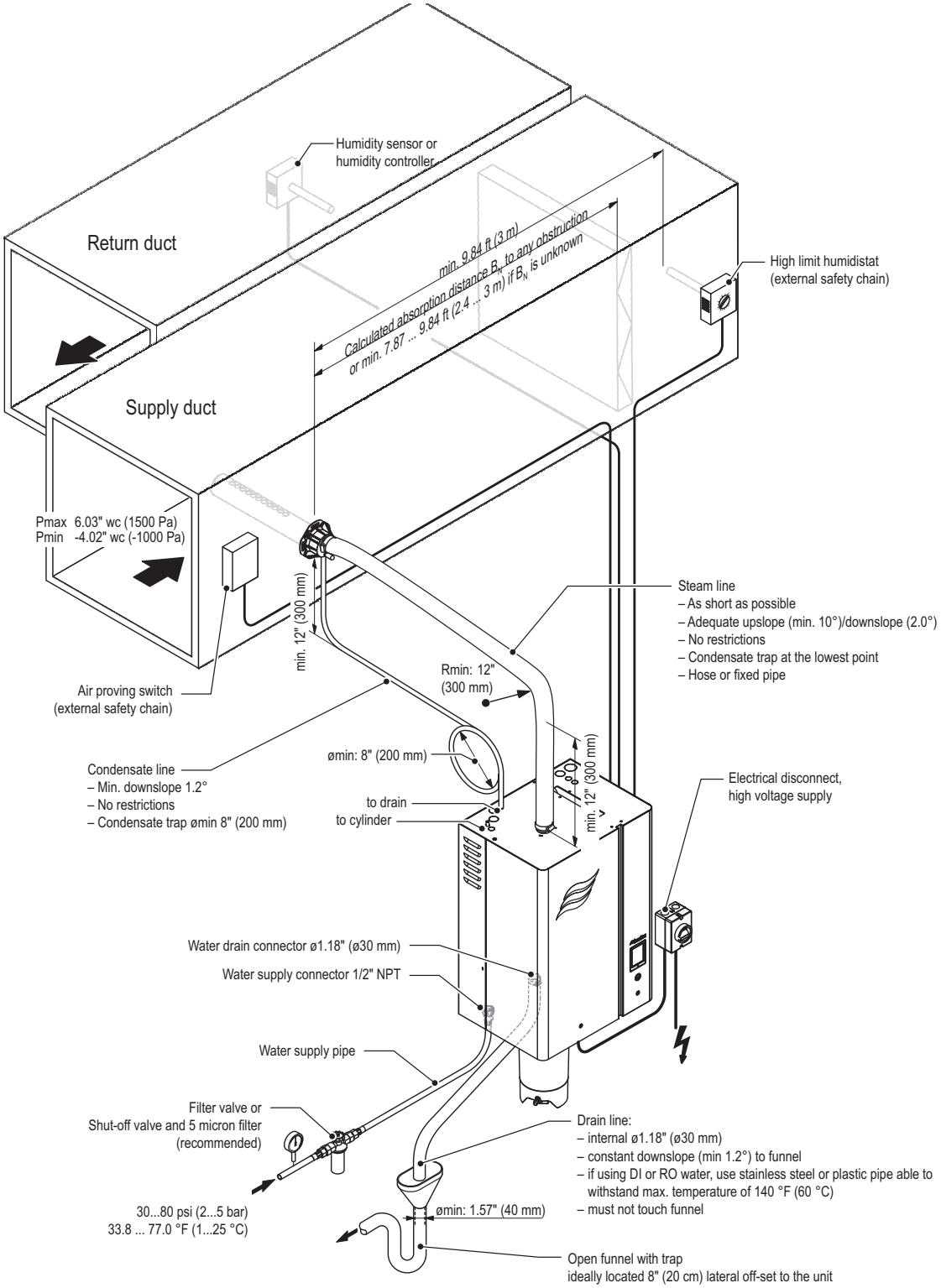


Fig. 4: Typical installation for duct humidification

Typical installation for room humidification

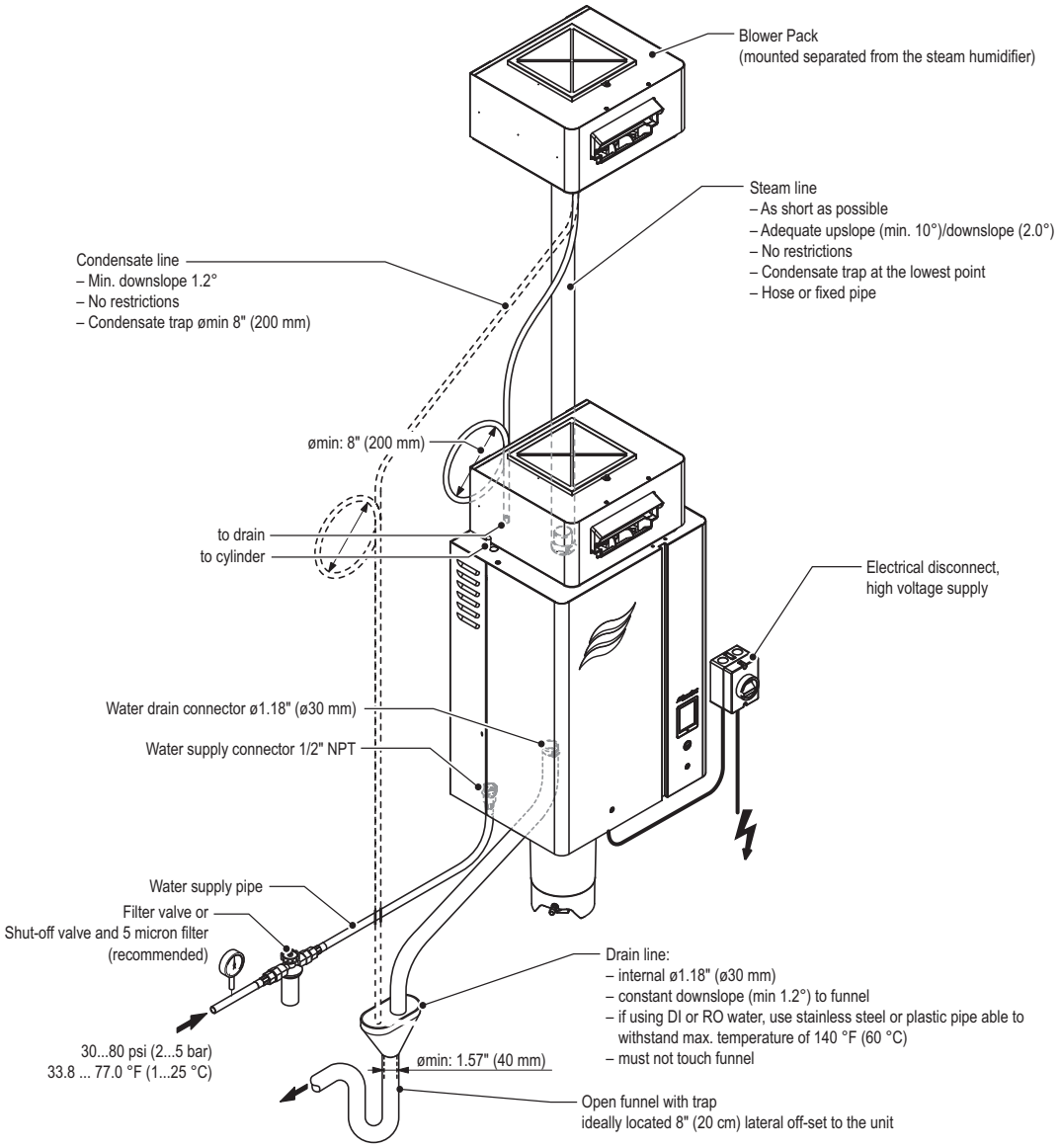


Fig. 5: Typical installation for room humidification

5.3 Mounting the Unit

5.3.1 Notes on Locating the Unit

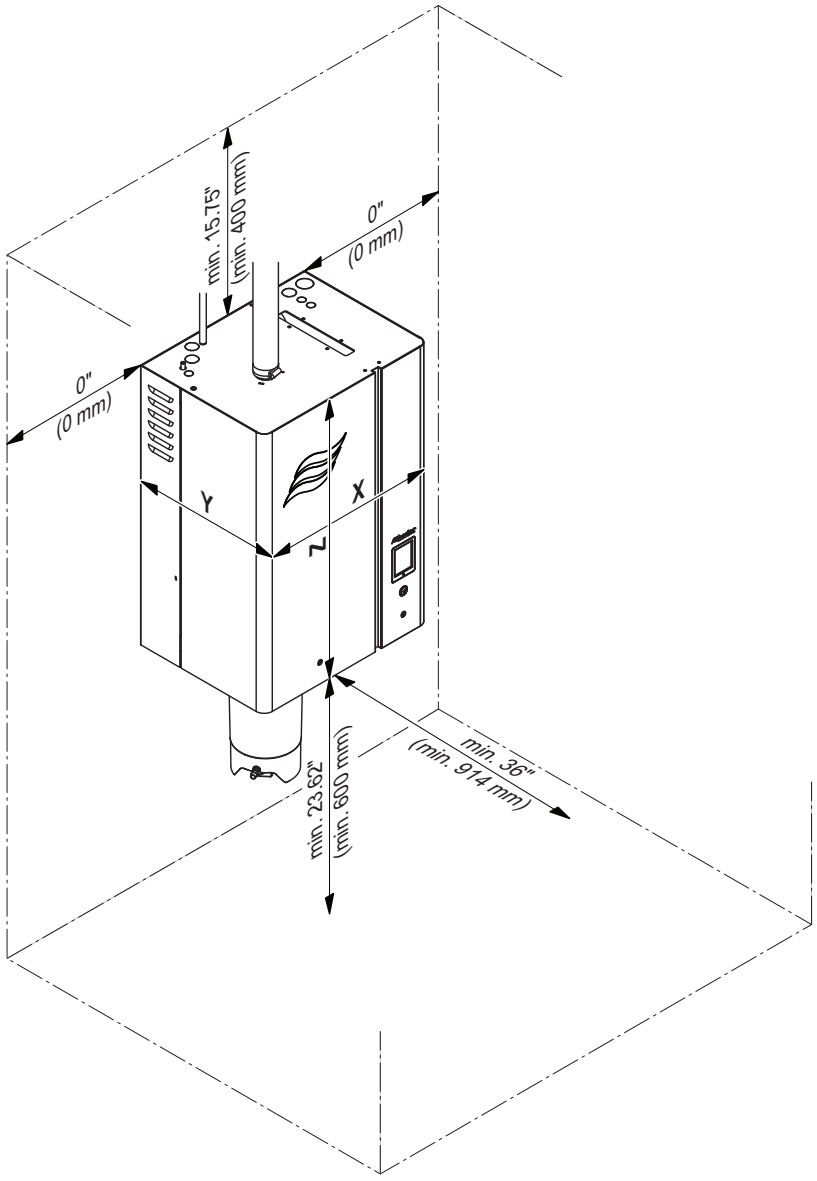


Fig. 6: Minimal clearances to be observed

Housing		Small	Medium	Large
Housing dimensions in inch (mm)	X	16.5" (420)	20.9" (530)	29.4" (1000)
	Y	14.6" (370)	16" (406)	16" (406)
	Z	26.4" (670)	30.7" (780)	30.7" (780)
Net weight in lb (kg)		60 (27.2)	89 (40.3)	179 (81.0)
Operating weight in lb (kg)		89 (40.2)	145 (65.8)	291 (132.0)

The installation site of the Nortec RS depends largely on the location of the steam distributor (see *Section 5.4.2* and *Section 5.4.3*). To **ensure proper functioning** of the steam humidifier and to **obtain an optimal efficiency**, the following points must be considered and observed when choosing the location for the steam humidifier:

- Install the steam humidifier so that:
  - the **length of the steam** line is kept as short as possible,
  - the **minimum bend radius for steam hoses (R= 12" / 300 mm)** and of **fixed pipes (5 x internal diameter)** is maintained,
  - the **minimum upslope 10**° and **downslope 2°** of the steam hose is maintained.
- For details of mounting the Nortec RS, refer to *Section 5.3.2*.

CAUTION!

Do **not** mount the steam humidifier directly to the ventilation duct.

- The back panel of the Nortec RS retains heat during operation (max. surface temperature of the metal housing approx. 140 - 158 °F / 60 - 70 °C). Make sure, therefore, that the construction (wall, pillar, etc.) to which the unit is to be mounted, does not consist of heat-sensitive material.
- Install the Nortec RS in such a manner that it is **freely accessible** with sufficient space available for maintenance purposes. The **minimum distances** shown in the adjacent illustration **must be maintained**.
- The Nortec RS is protected according to **IP21**. As a safeguard, the humidifier should be installed in a drip-proof location. Admissible ambient conditions must be complied with.
- Do **not** mount the Nortec RS to hot or very cold walls or near vibrating components.
- The steam humidifier Nortec RS must only be installed in rooms with a floor drain.

CAUTION!

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

- When mounting the Nortec RS use **only the mounting materials supplied with the unit**. If mounting with the materials supplied is not possible in your particular case, select a method of mounting that is of similar stability.
- The Nortec RS is designed for installation and operation within buildings (admissible temperature range 41... 104 °F / 5...40 °C). For outdoor operation the Nortec RS must be placed in a weather protective housing. If ambient temperatures near or below the freezing point have to be expected, the protective housing must be equipped with a thermostat controlled heating of sufficient capacity. The water supply pipe must be equipped with heat-tracing and must be insulated up to the protective housing. For outdoor operation, the Keep Warm function must be enabled. The installation of a normally open valve inside the building envelope that will drain water in case of power failure is highly recommended.

5.3.2 Mounting the Humidifier

5.3.2.1 Standard Mounting

Mark the mounting hole locations "A" and "B" on 2×4 wooden studs (or equivalent) in the mounting surface, as shown, and mount the Nortec RS unit using 1/4 × 2 in lag bolts and washers.

Overview standard mounting single units Small and Medium

Dimension	Housing size	
	Small	Medium
"a" in inch/mm	2.1" (54.0)	2.1" (54.0)
"b" in inch/mm	17.6" (446.0)	21.9" (556.0)
"c" in inch/mm	3.2" (80.2)	3.5" (88.6)
"d" in inch/mm	12.0" (304.8)	16.0" (406.4)

Weights	Housing size	
	Small	Medium
Net weight in lb/kg	60 / 27.2	89 / 40.3
Operating weight in lb/kg	89 / 40.2	145 / 65.8

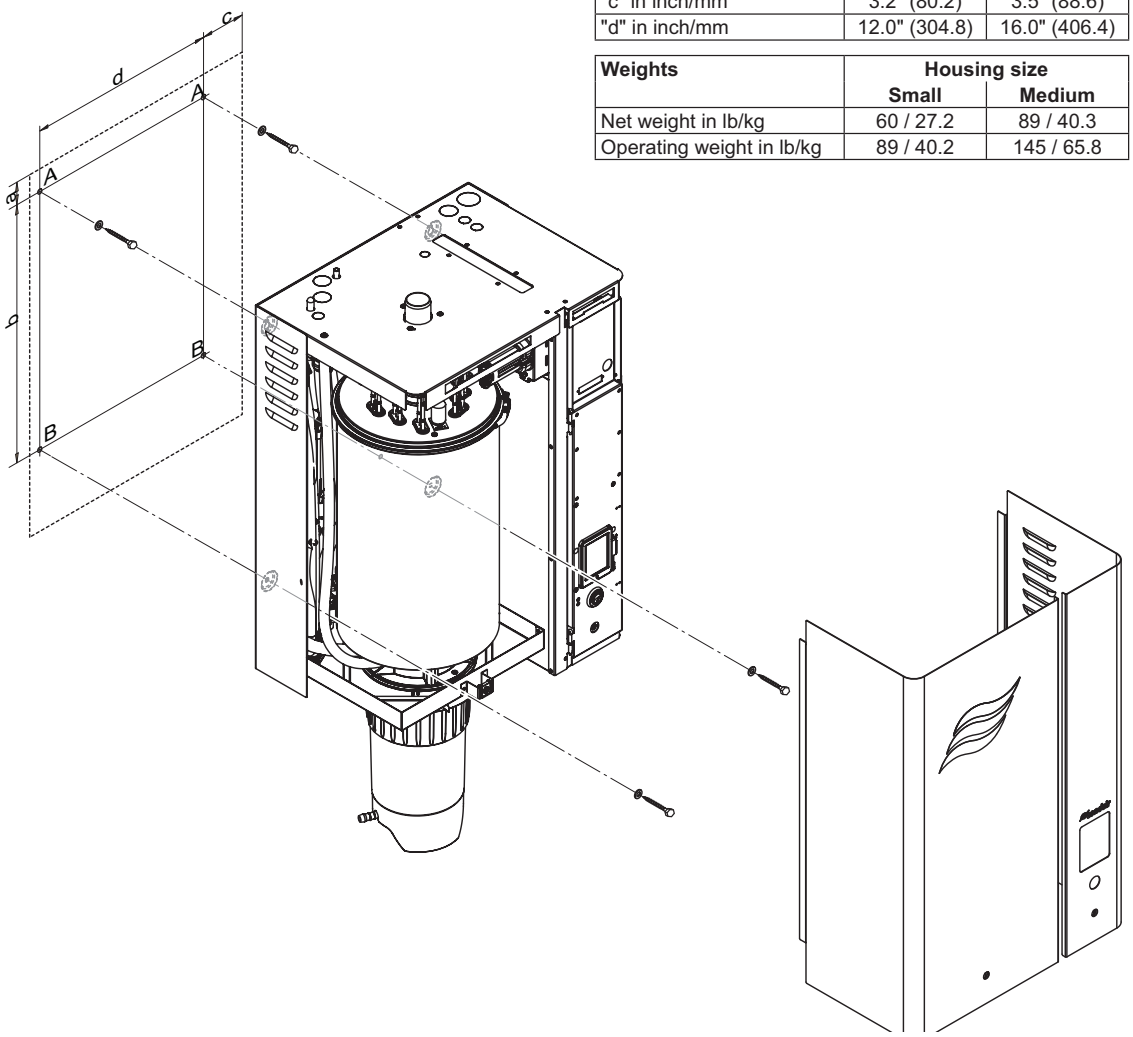


Fig. 7: Overview standard mounting single units Small and Medium

Overview standard mounting single units Large

Dimension	Housing size Large
"a" in inch/mm	6.5" (164.0)
"b" in inch/mm	16.8" (426.0)
"c" in inch/mm	4.6" (117.2)
"d" in inch/mm	16.0" (406.4)

Weights	Housing size Large
Net weight in lb/kg	179 (81.0)
Operating weight in lb/kg	291 (132.0)

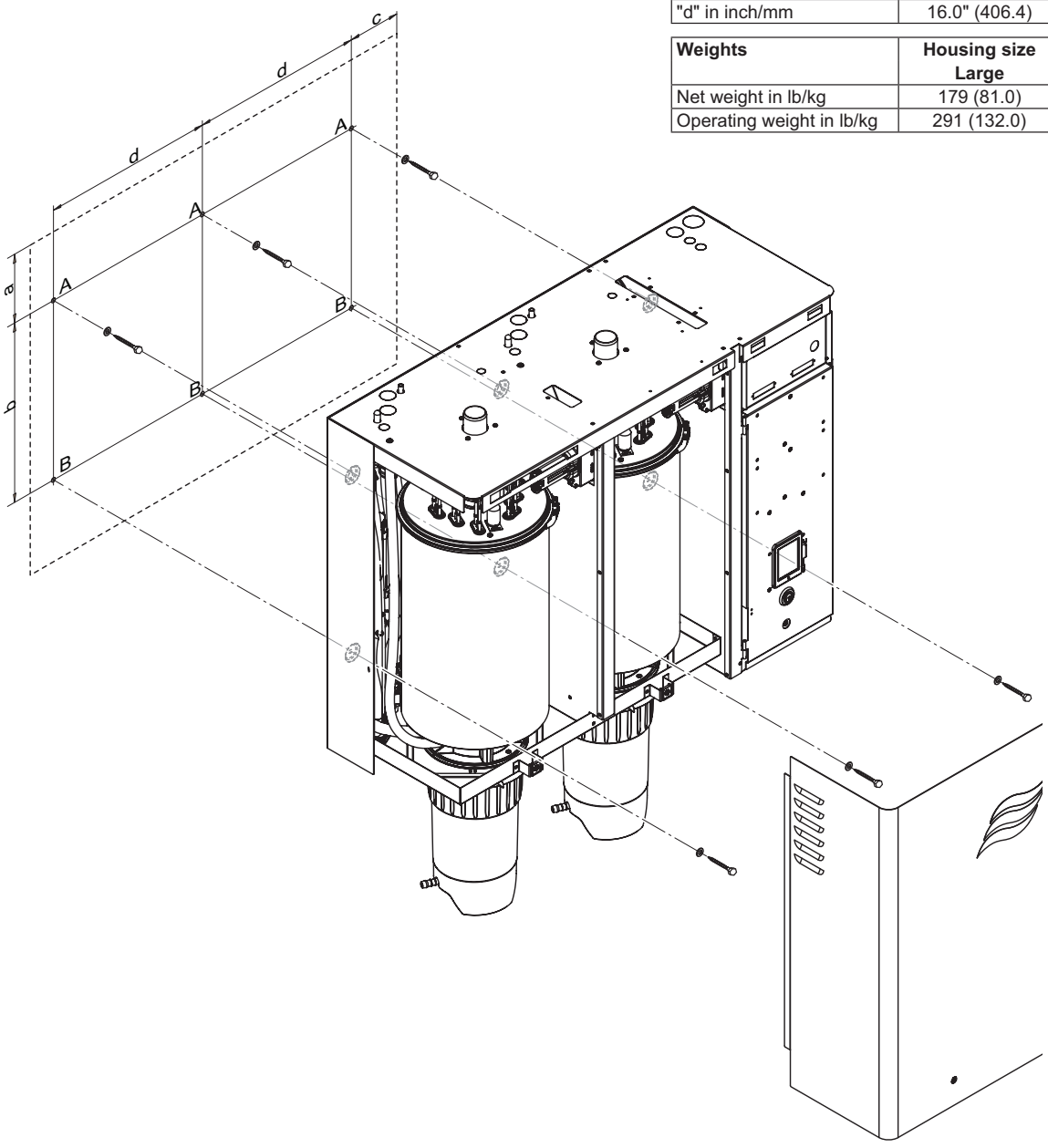


Fig. 8: Overview standard mounting single units Large

Mounting procedure standard mounting

1. Mark the attachment points "A" and "B" at the desired position in the mounting surface with the help of a level.
2. Install 1/4 × 2 in lag bolts and washers at attachment points "A". Allow the heads of the bolts to extend 1/4 in (5 mm) from the mounting surface so that the humidifier can be hung on the bolts.
3. Unlock the screws on the front panels of the unit, and remove the front panels.
4. Carefully raise the unit and hang it on the installed lag bolts.
5. Install additional 1/4 × 2 in lag bolts and washers through the rear panel of the humidifier into the mounting surface at attachment points "B".
6. Align the unit with the help of a level, then tighten the lag bolts.
7. Install the front panels and fasten them securely.

5.3.2.2 Wall Support Mounting (option)

Mark the mounting hole locations "A" on 2×4 wooden studs (or equivalent) in the mounting surface, as shown, and mount the wall support for the Nortec RS unit using 1/4 × 2 in lag bolts and washers.

Overview wall support mounting single units Small and Medium

Dimension	Housing size	
	Small	Medium
"a" in inch/mm	7.6" (193.5)	7.6" (193.5)
"b" in inch/mm	12.0" (304.8)	16.0" (406.4)
"c" in inch/mm	2.3" (57.6)	2.4" (61.8)

Weights	Housing size	
	Small	Medium
Net weight in lb/kg	60 / 27.2	89 / 40.3
Operating weight in lb/kg	89 / 40.2	145 / 65.8

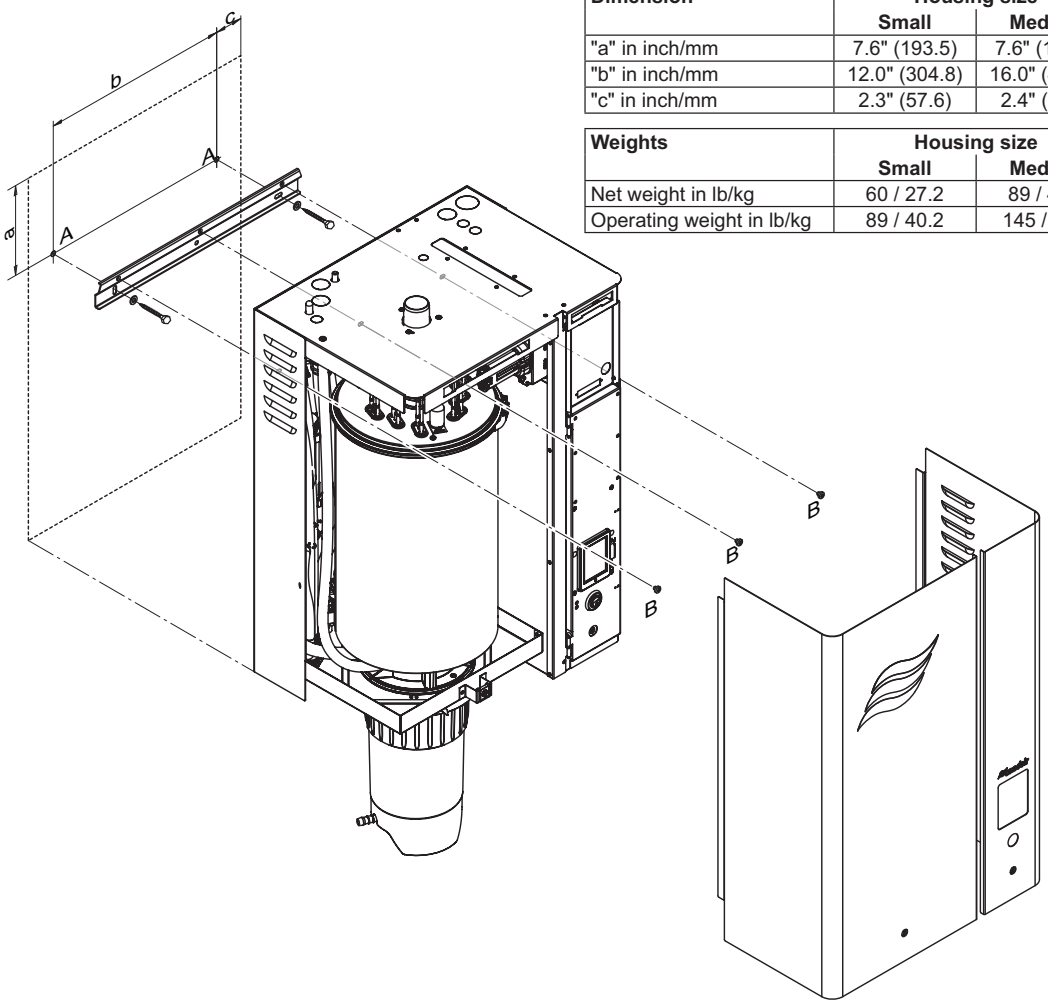


Fig. 9: Overview wall support mounting single units Small and Medium

Mounting overview wall support mounting single units Large

Dimension	Housing size Large
"a" in inch/mm	10.4" (263.5)
"b" in inch/mm	16.0" (406.4)
"c" in inch/mm	4.6" (117.2)

Weights	Housing size Large
Net weight in lb/kg	179 (81.0)
Operating weight in lb/kg	291 (132.0)

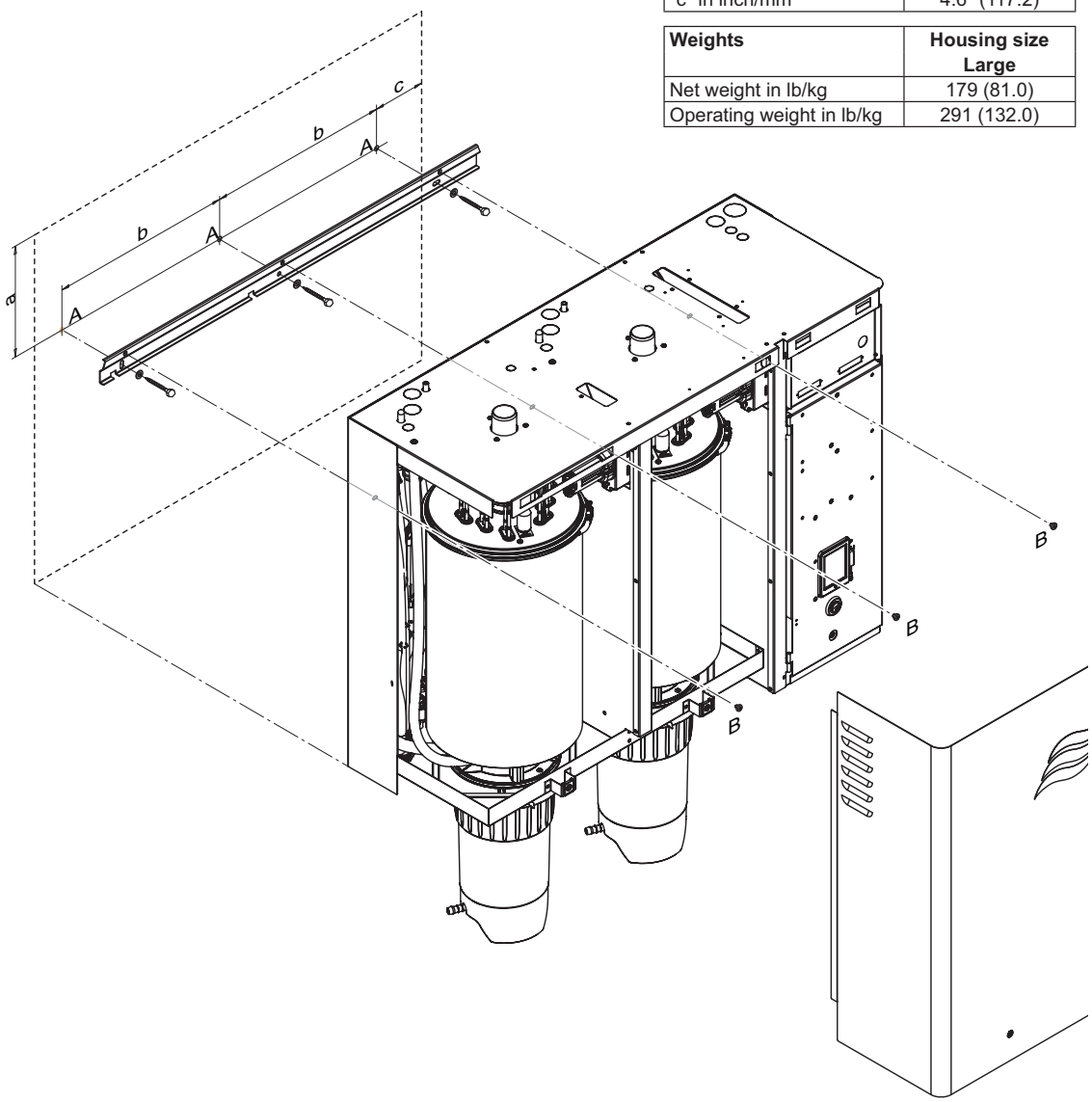


Fig. 10: Overview wall support mounting single units Large

Procedure

1. Mark the attachment points "A" for the wall support at the desired position with the help of a level.
2. Attach the wall support to 2×4 wooden studs (or equivalent) in the mounting surface with 1/4 × 2 in lag bolts and washers. Adjust the wall support horizontally using a level, and tighten the bolts.
3. Unlock the screws on the front panels of the unit, and remove the front panels.
4. Carefully raise the unit and hang it on the wall support.
5. Secure the unit to the wall support with the supplied pop-rivets at points "B".
6. Install the front panels and fasten them securely.

5.3.3 Inspecting the Installed Unit

Check the following points:

- ☐ Is the unit installed in the correct place (see *Section 5.3.1*)?
- ☐ Is the supporting surface stable enough?
- ☐ Is the unit correctly aligned, vertically and horizontally?
- ☐ Is the unit properly secured (see *Section 5.3.2*)?

5.4 Steam Line Installation

5.4.1 Overview Steam Line Installation for Duct Humidification

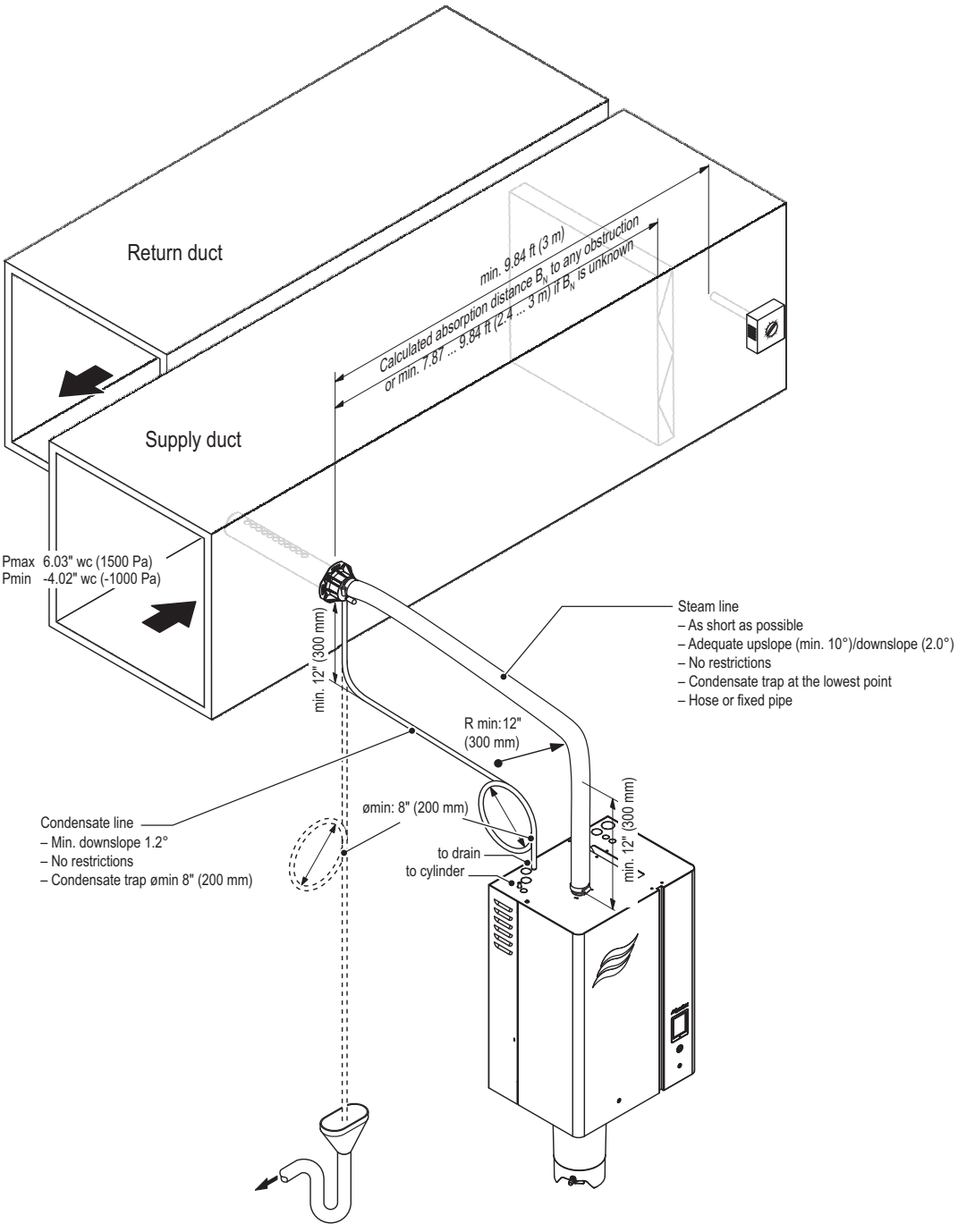


Fig. 11: Overview steam installation for duct humidification

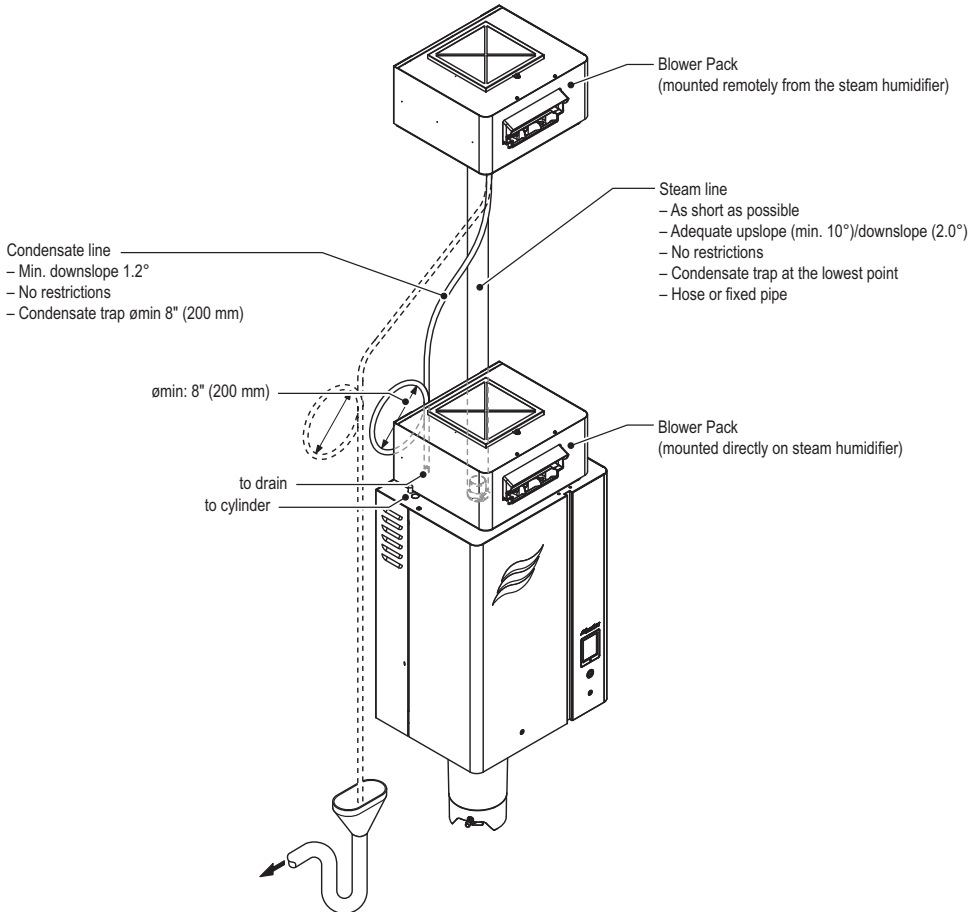


Fig. 12: Overview steam for room humidification

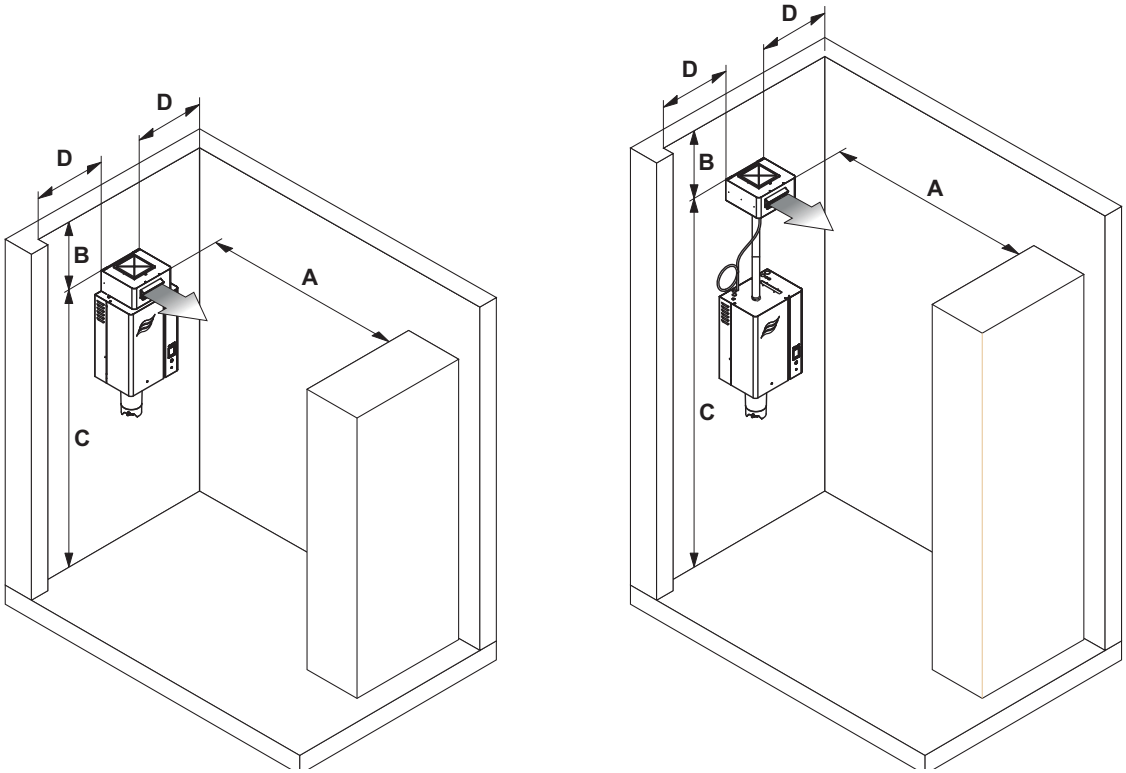
5.4.2 Installing the Steam Distributors

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

5.4.3 Positioning and Mounting the Blower Packs

The blower packs can either be mounted directly on the humidifier or separately above the humidifier to the wall. To allow the steam coming from the blower pack to spread out evenly, without condensing on obstacles (ceilings, joists, pillars, etc.), the following minimum dimensions must be observed when selecting the location for the blower pack.

Even small objects that encroach into the steam distribution area may create condensation and reduce efficiency.



WARNING!
Risk of burn injuries!

The blower pack discharges hot steam and presents a burn hazard. Care must be taken when the humidifier is in operation and when in the vicinity of the blower pack.

Humidifier Model	Max Capacity lb/hr (kg/hr)	Fan Speed	Min. Clearance Required, in (cm)			
			A	B	C	D
RS 010	up to 11.4 (5.2)	Low	18 (46)	12 (31)	96 (244)	12 (31)
		High	6 (16)	12 (31)	96 (244)	12 (31)
RS 015	up to 17.6 (8.0)	Low	75 (191)	12 (31)	96 (244)	12 (31)
		High	60 (153)	12 (31)	96 (244)	12 (31)
RS 020	up to 22.8 (10.3)	Low	75 (191)	12 (31)	96 (244)	12 (31)
		High	60 (153)	12 (31)	96 (244)	12 (31)
RS 030	up to 31.8 (14.4)	Low	86 (219)	12 (31)	96 (244)	12 (31)
		High	71 (181)	12 (31)	96 (244)	12 (31)
RS 045	up to 47.9 (21.7)	Low	174 (442)	12 (31)	96 (244)	12 (31)
		High	132 (336)	12 (31)	96 (244)	12 (31)

Humidifier Model	Max Capacity lb/hr (kg/hr)	Fan Speed	Min. Clearance Required, in (cm)			
			A	B	C	D
RS 065	up to 71.9 (32.6)	Low	189 (481)	48 (122)	96 (244)	30 (77)
		High	153 (389)	12 (31)	96 (244)	30 (77)
RS 090	up to 95.4 (43.3)	Low	248 (630)	84 (214)	96 (244)	30 (77)
		High	218 (554)	12 (31)	96 (244)	30 (77)

Note: Sound measurement at low speed: 57.4 dB; high speed: 64.1 dB taken 3 ft (1 m) from the blower pack.
Note: The minimum spaces in the table apply for a room atmosphere of 72ºF (21ºC), and max 40% RH. For lower temperatures and/or higher humidity the clearance values will increase, and should be adjusted accordingly.

Note: In order to achieve a uniform distribution of the humidity within the room, additional factors such as the room size, the room height, etc., must be taken into consideration besides observing the minimum distances for the blower packs. If you have questions concerning the direct room humidification, please contact your Nortec representative.

Further information is provided in the separate installation and operating instructions for the corresponding blower pack.

5.4.4 Installing the Steam and Condensate Lines

Installations notes

- Use **original steam and condensate hose** from your Nortec representative or **solid steam pipes from copper (MED-L) or stainless steel (min. AISI 304) exclusively**. Steam and condensate lines of other material may cause undesired operational malfunctions. For installations with reverse osmosis or de-ionized water supply, do not use copper steam lines.
- Initially, lead the steam line **upright upwards min. 12" (300 mm) above the humidifier**. Then lead the steam line with a **minimum upslope of 10°** or a **minimum downslope of of 2°** to the steam distributor.
- The condensate hose from the steam distributor is led down to the humidifier with a **minimum downslope of 1.2°**, via a condensate trap (**min. hose bend diameter Ø8" (ø200 mm))** and there it is to be connected to the appropriate connector on top of the unit.
  Important! Before putting the unit into operation, the condensate trap of the condensate hose must be filled with water.
- The steam line should be kept as short as possible, as per *Table 1 on page 31*. Ensure the the minimum bend radii are observed: 12" (300 mm) for steam hoses or 5x internal diameter for solid pipes.
  Important! Allowance must be made for a **pressure loss** from elbows, according to equivalent length tables.
- **Important!** When deciding on the length and layout of steam hoses, it should be noted that steam hoses may become shorter and/or longer depending on temperature and age.
- The steam hose must be secured to the steam distributor and humidifier steam outlet by means of **hose clamps**. Solid steam pipes should be connected to the steam distributor and steam humidifier with short lengths of steam hose secured with hose clamps.
  Caution! Do not overtighten the hose clamp on the steam connector of the steam humidifier.
- Steam lines made of solid pipes (copper or stainless steel) must be insulated over the entire length to minimize condensate formation. Condensate created due to thermal loss in steam lines will reduce the operational efficiency of the humidification system and reduce the moisture supply to the conditioned environment.

DANGER!

Reducing the cross section or the complete closure of the steam line 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. All installations must comply with the following instructions.

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

– Steam hoses must be prevented from sagging (condensate pockets); if necessary, support steam hose with pipe clamps, trough, or wall brackets, and install a condensate drain at any low points in the steam line.

– It is **not permitted to install a stop valve** (e.g. a manually controlled isolation valve, solenoid valve, etc.) in the steam line, due to an inadmissible increase of pressure in the steam cylinder if the valve is closed during the operation.

Table 1. Recommended Steam Line Material, Maximum Length, Losses*

Humidifier Model	Maximum Steam Line Length**		MED-L Copper Tube	Stainless Steel Tube	Possible Steam Losses (based on 1" insulated copper pipe)	
	ft	m			lb/hr per ft	kg/hr per m
RS 010	24	7.3	(1 line) 1.5" MED-L Tubing (1.625" OD)	(1 line) 1.75" SS Tubing (0.065" thick)	0.11	0.16
RS 015	25	7.6				
RS 020	27	8.2				
RS 030	30	9.1				
RS 045	35	10.7				
RS 065	45	13.7				
RS 090 (M)	50	15.2				
RS 90 (L)***	35	10.7	(2 lines) 1.5" MED-L Tubing (1.625" OD)	(2 lines) 1.75" SS Tubing (0.065" thick)		
RS 130***	45	13.7				
RS 180***	50	15.2				
Nortec Steam Hose						
All Models	10	3	P/N 1328820		0.15	0.22

Notes:
* The use of steam line other than copper, stainless steel tube, or Nortec supplied steam line will void the warranty and may adversely affect the operation of the humidifier.
** Long steam runs affect accuracy of humidifier and its ability to quickly respond to changes in demand. When tight control is required, ensure steam line run is as short as possible.
*** Steam line per boiling tank. Do not combine steam lines except at distributor using a Nortec adapter designed for that purpose and only if humidifiers operate in parallel.

Installation examples

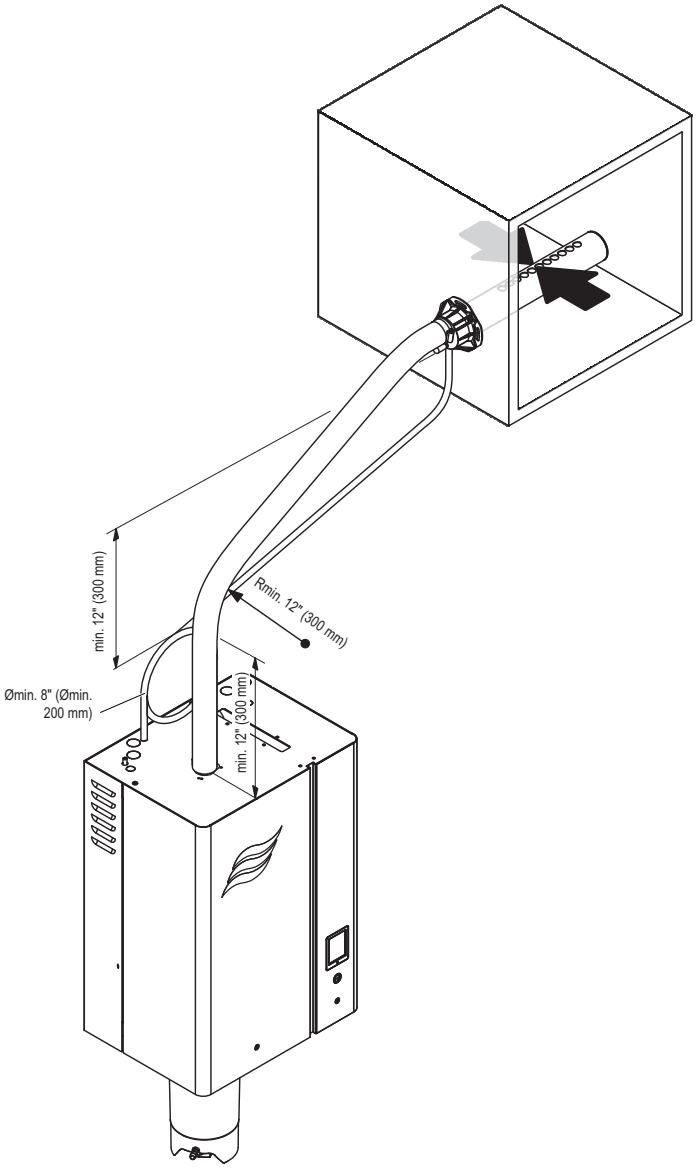


Fig. 13: Steam distributor mounted more than 20" (500 mm) above the top edge of the humidifier

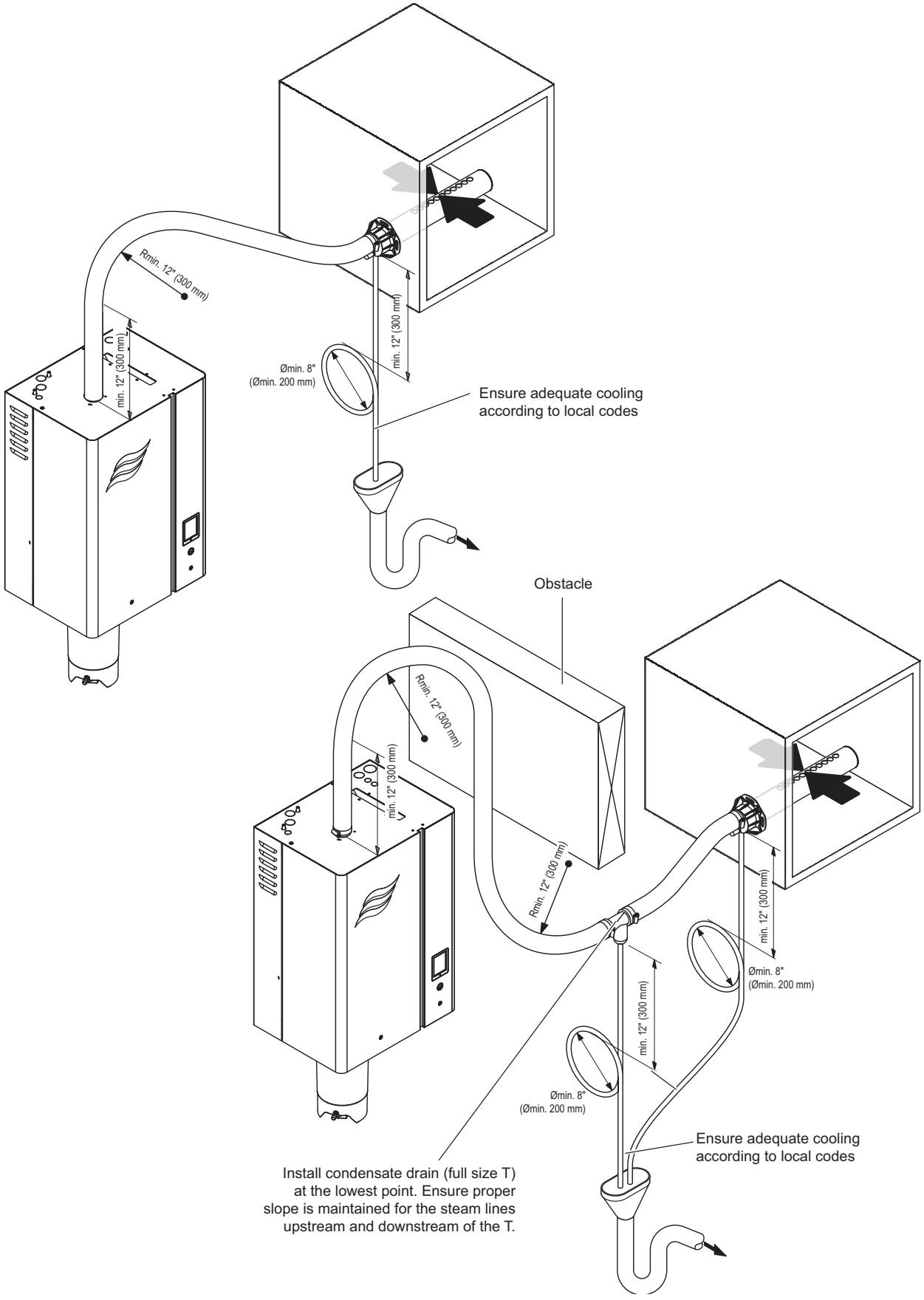


Fig. 14: Steam distributor mounted less than 20" (500 mm) above the top edge of the humidifier

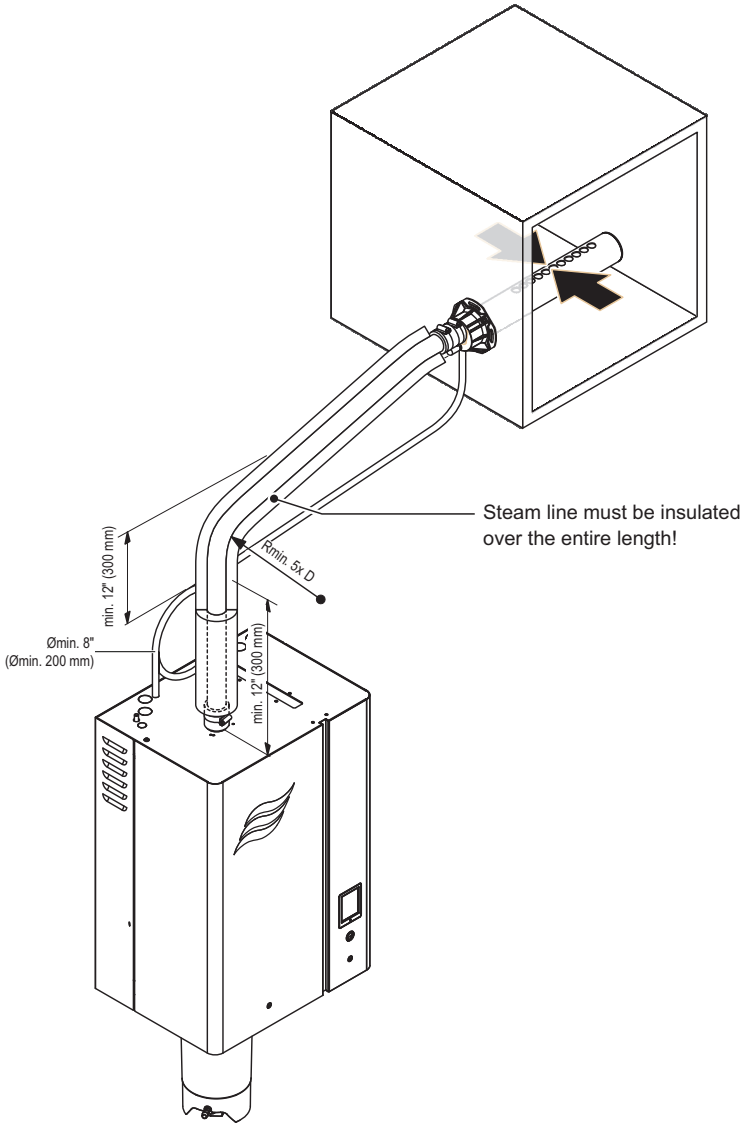
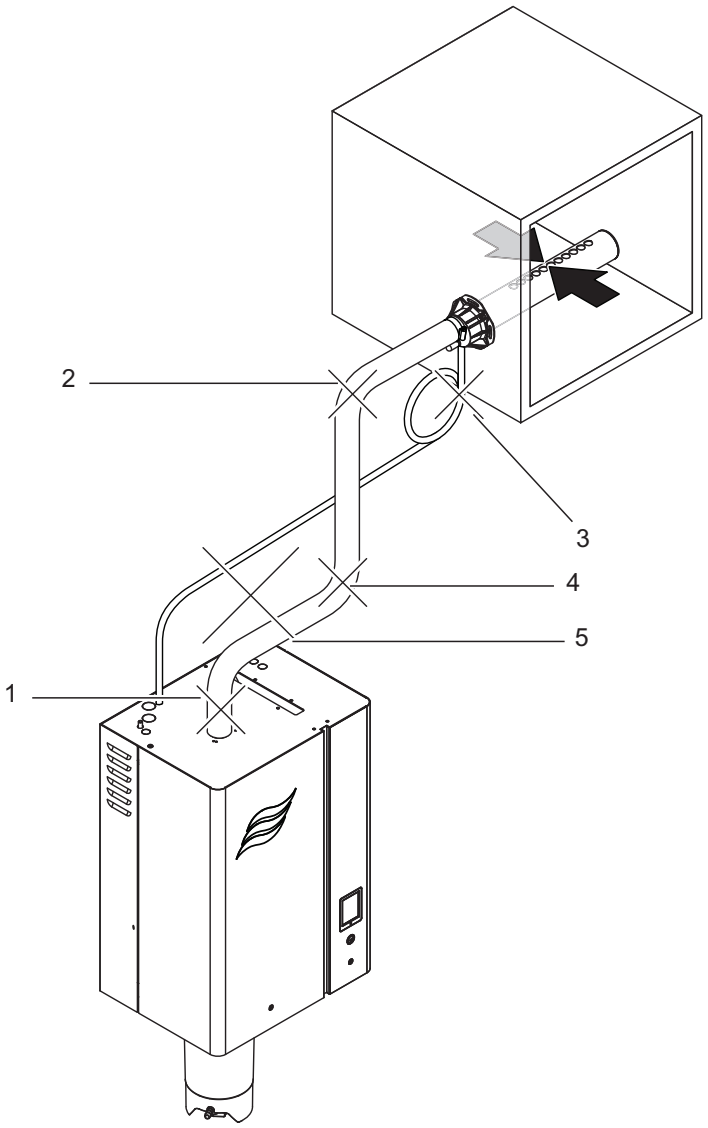


Fig. 15: Steam line with solid piping and insulation

5.4.5 Common Steam and Condensate Line Errors



	Wrong	Correct
1	Steam line not led at least 12" (300 mm) perpendicularly upwards before first bend (forming of condensate).	Lead steam line at least 12" (300 mm) perpendicularly upwards before first bend.
2	Minimum bend radius of steam hose/solid steam line not maintained (forming of condensate).	The minimum bend radius of 12" (300 mm) for steam hoses or 5 times steam line internal diameter for solid steam lines must be maintained.
3	Condensate trap not sufficiently high and installed too near at the steam distributor.	The condensate trap must be at least 300 mm below the connector on the steam distributor and it must have a minimum height of 200 mm (ø200 mm).
4	No condensate trap installed at vertical transition.	Install condensate trap at all low points and before vertical transitions.
5	Steam line and condensate hose not sloped.	Install steam line always with constant up (min 10%) or downslope (min 2%), and condensate hose with constant downslope of min 1.2%.

5.5 Inspecting the Steam Installation

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

- Steam distributor
  - ☐ Steam distributors (steam distribution pipe or SAM-e steam distribution system) correctly positioned and secured (screws tightened)?
  - ☐ Are the outlet orifices at right angles to the air flow for horizontal installation, or at 45 degree angle for vertical installation?
- Steam hose
  - ☐ Steam hose material: copper (potable water only), stainless steel or Nortec plastic hose?
  - ☐ Maximum length, as per table shown in *Section 5.4.4*?
  - ☐ Minimum bend radius of 12" (300 mm) (5 x internal diameter with fixed piping)?
  - ☐ Have the instructions for hose layout been followed?
  - ☐ Steam hose: no sagging (condensate pocket) or condensate drain with trap (hose bend with a minimum diameter of 8" (200 mm)) installed at the lowest point?
  - ☐ Fixed steam lines: properly insulated? Correct installation material used? Minimum internal diameter maintained?
  - ☐ Steam hose or steam hose pieces securely attached with clamps?
  - ☐ Heat expansion during operation and shortening of the hose with ageing taken into consideration?
- Condensate hose
  - ☐ Downslope of at least 1.2°?
  - ☐ Trap min. ø8" (ø200 mm) in place and filled with water?
  - ☐ Condensate hose correctly connected and supported and not kinked?

5.6 Water Installation

5.6.1 Overview Water Installation

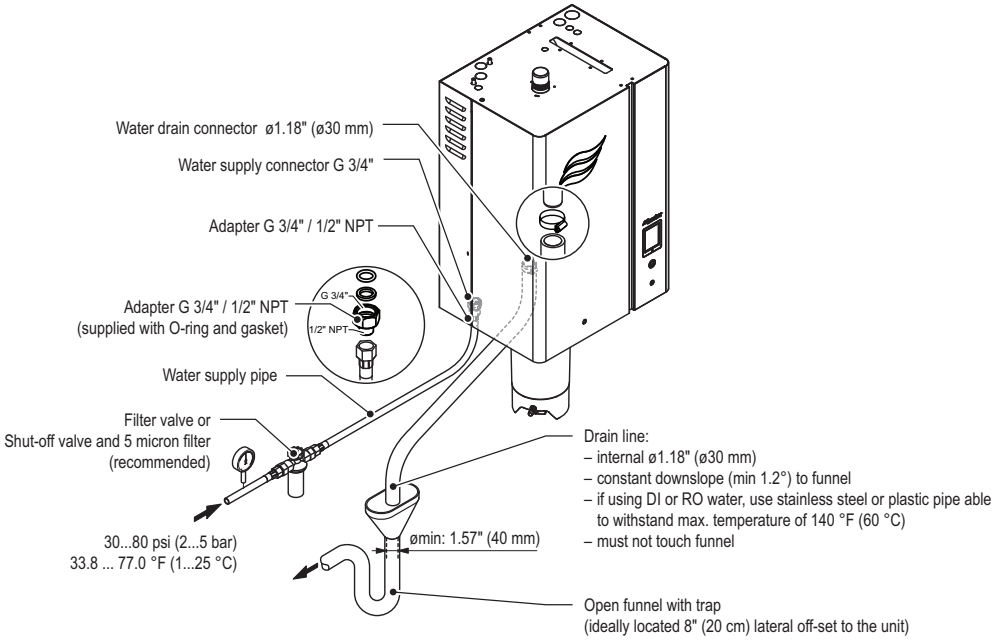


Fig. 16: Overview water installation for single units Small and Medium

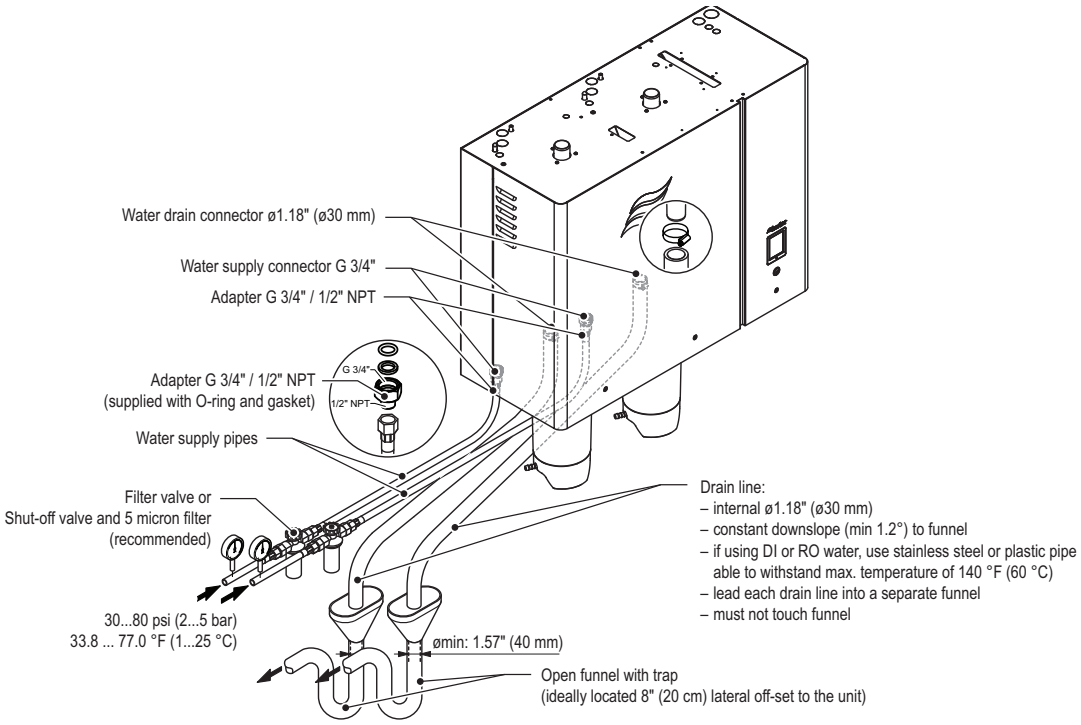


Fig. 17: Overview water installation for single units Large

5.6.2 Notes on Water Installation

Water supply

The water supply is to be carried out according to the figure found in *Section 5.6.1* and the applicable local regulations for water installations. The indicated connection specifications must be observed.

- The installation of a **filter valve** (alternatively a shut-off valve and a 5 micron water filter can be used) should be made as close as possible to the steam humidifier.
- Admissible mains pressure **30...80 psi (2...5 bar) (hammer-free system)**
  For mains pressures > 80 psi (5 bar), the connection must be made via a pressure reducing valve (adjusted to 30 psi (2 bar)). For mains pressures <30 psi (2 bar) please contact your Nortec supplier.
- **Notes on water quality**:
  - For the water supply of the Nortec RS, use exclusively **untreated drinking water,** water from RO system or de-ionized water.
  - The use of **additives** such as corrosion inhibitors, disinfectants, etc. is **not allowed**, since these additives may endanger health and affect proper operation.
  - Conductivity should be between 1 and 1500 µS/cm. Note that conductivity less than 1 µS/cm is very aggressive water (this is equivalent to a resistivity of 1 MΩ or greater). It is recommended to blend such water with other less-treated water to ensure the supply is not overly aggressive.
  - Hardness should be between 0 and 12 grains/gallon.
  - Silica content should be between 0 and 12 ppm.
  - pH should be between 6.5 and 7.5.
  - Chloride content should be between 0 and 50 ppm.
- The connection material must be pressure-proof and certified for use with the particular supply (drinking water, RO, or DI water)..
- **Important!** Before connecting the water line**, the line must be well flushed out**.

CAUTION!

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

Water drain

The water drain is to be carried out according to the figure found in *Section 5.6.1* and the applicable local regulations for water installations. The indicated connection specifications must be observed.

- Make sure that the drain pipe is correctly fixed and easily accessible for inspections and cleaning purposes.
- The draining temperature is maximum 140ºF (60ºC). Use temperature-resistant materials only!
- Lead drain line down to the funnel with a constant downslope (min. 1.2°).
  Note: On units with two steam tanks, each drain line must be led into a separate funnel with trap.
- Attach drain line in such a way, that it cannot slip out of the funnel or bottom out in the funnel.
- The open end of the drain line must not touch the funnel (min. air gap 0.79" (2 cm)).
- We recommend to install the funnel with an lateral off-set of 8" (20 cm) to the side of the unit, to prevent damage to humidifier due to rising steam.

5.6.3 Inspecting the Water Installation

Check the following topics:

– Water supply
  - ☐ Has shut-off valve and (optionally) 5 micron water filter been installed?
  - ☐ Has acceptable water pressure (30 - 80 psi (2 to 5 bar)) and acceptable water temperature (without drain water cooling: 34 - 77ºF (1 - 25ºC) been observed?
  - ☐ Is the minimum inside diameter of the water supply pipe maintained throughout the entire length?
  - ☐ Are all components and pipes properly secured and are all threaded connections securely tightened?
  - ☐ Is the water system properly sealed?
  - ☐ Does the water supply installation meet the requirements of the local regulations for water installations?
– Water drain
  - ☐ Is the minimum inside diameter of the drain pipe of 1.18" (30 mm) maintained throughout the entire length?
  - ☐ Has drain pipe been installed with a downslope of at least 1.2°?
  - ☐ Has the heat resistance of the material used been verified to be at least 140ºF (60ºC)?
  - ☐ Is the drain hose properly secured (hose clamps at unit connection tightened)?
  - ☐ Does the water drain installation meet the requirements of the local regulations for water installations?

5.7 Notes on Humidity Control Systems/Humidity Control

5.7.1 Control Device Locations

The following schematic describes a potential system setup with respect to control devices.

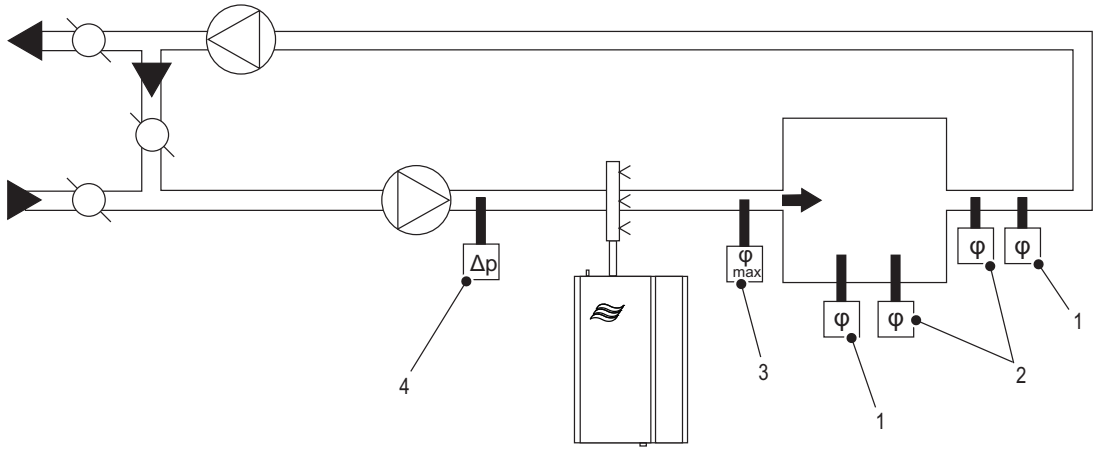


Fig. 18: System Setup Schematic

1 Humidistat
2 Humidity sensor
3 High limit humidistat
4 Air proving switch

Notes:

- Locate the air proving switch in the same duct as the humidifier's distributor so that it can sense air flow (or lack thereof).
- Locate the high limit humidistat downstream of the humidifier's distributor so that it can sense a duct that is over-humidified. Recommended setting is 85% RH. Locate it downstream of the distributor at least 5x the absorption distance. If the absorption distance is not known, locate at least 10 feet (3m) downstream of the distributor. Can be a humidistat (modulating or On/Off), or a humidity sensor.
- Humidity sensors and humidistats can be modulating or On/Off. Preferred location is in the return duct, as the supply air is well mixed with the room air at this location. Avoid placing near discharge diffuser, near doorways, in sunlight, or in airflow "dead-zones".

5.7.2 Admissible Control Signals

Control with external controller **Control signals**	**Control with internal PI controller** **Humidity sensor signals**
0...5 VDC	0...5 VDC
1...5 VDC	1...5 VDC
0...10 VDC (Potentiometer 140 Ω ... 10 kΩ)	0...10 VDC (Potentiometer 140 Ω ... 10 kΩ)
2...10 VDC	2...10 VDC
0...20 VDC	0...20 VDC
0...16 VDC	0...16 VDC
3.2...16 VDC	3.2...16 VDC
0 ... 20 mA	0 ... 20 mA
4 ... 20 mA	4 ... 20 mA
Digital signals (building automation)	Digital signals (building automation)
Humidistat (24 V On/Off)	

5.8 Electrical Installation

5.8.1 Notes on Electrical Installation

DANGER!
Danger of electric shock

The Nortec 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.

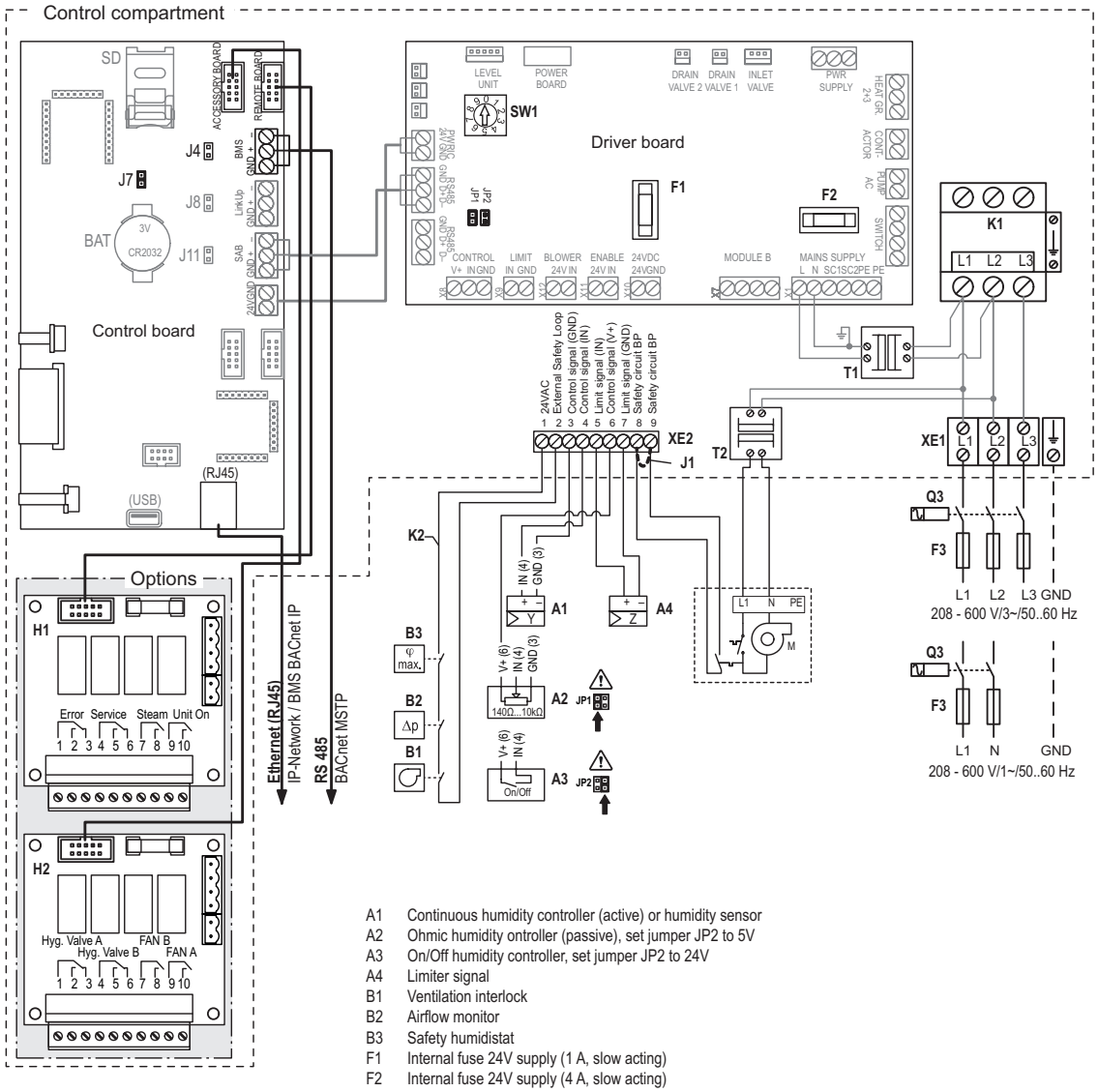
Prevention: The Nortec RS unit must be connected to the mains only after all mounting and installation work has been completed, all installations have been checked for correct workmanship and the unit is closed and properly locked.

CAUTION!

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

- All work concerning the electrical installation must be performed only by **skilled and qualified technical personnel (e.g. electrician with appropriate training) authorised by the owner.** It is the owner's responsibility to verify proper qualification of the personnel.
- The electrical installation must be carried out according to the corresponding wiring diagram (see *Section 5.8.2* and *5.8.3*), the notes on electrical installation as well as the applicable local regulations. All information given in the wiring diagrams and notes must be followed and observed.
- All cables must be lead into the unit, via appropriate cable strain relief or grommets. The cable for the heating voltage supply must be lead into the unit from the bottom via the cable opening equipped with the clamp. Fix the cable with the clamp strap.
- Make sure the cables are adequately clamped, do not rub on any components or become a tripping hazard.
- Observe and maintain maximum cable length and required cross section per wire according to local regulations.
- The mains supply voltages (heating and control voltage supply) must match the respective voltage stated on the specification label.

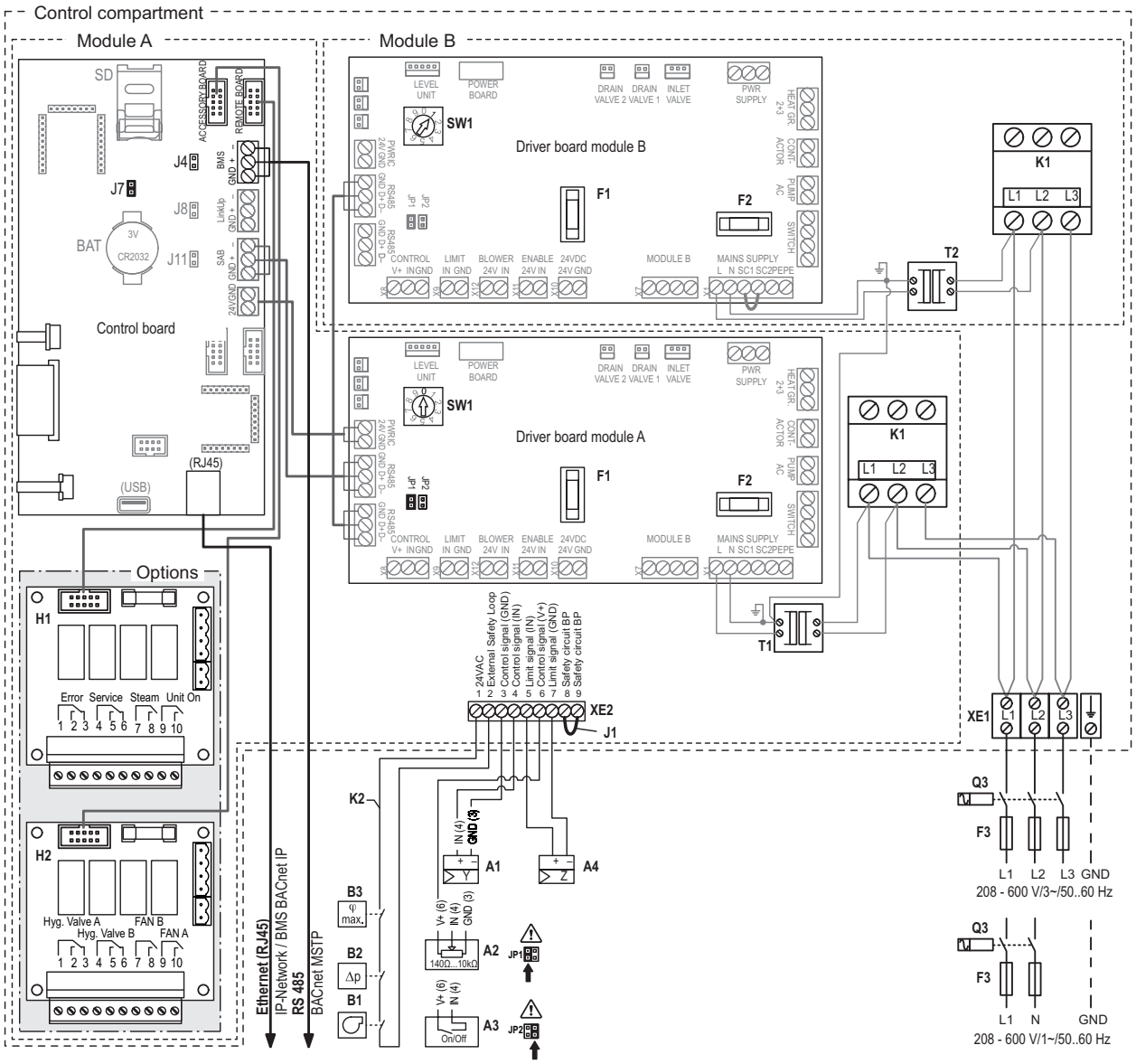
5.8.2 Wiring Diagram Nortec RS - Small and Medium Units



A1 Continuous humidity controller (active) or humidity sensor
A2 Ohmic humidity ontroller (passive), set jumper JP2 to 5V
A3 On/Off humidity controller, set jumper JP2 to 24V
A4 Limiter signal
B1 Ventilation interlock
B2 Airflow monitor
B3 Safety humidistat
F1 Internal fuse 24V supply (1 A, slow acting)
F2 Internal fuse 24V supply (4 A, slow acting)
F3 External fuse heating voltage supply (see table in *Section 5.8.4.1*)
F5 Internal fuse control module (200 mA, quick acting)
H1 Remote operating and fault indication (option)
H2 Accessory board (option) for the control of an external fan of the AHU as well as the optional external valve for the water supply line flushing
J1 Jumper, install if no blower pack is connected
J4 Jumper for activating the terminating resistor for Modbus network (Jumper must be connected, if Nortec RS is the last unit in the Modbus network)
J7 Jumper for activating Modbus or BACnet MSTP communication via RS485 interface (J6). If jumper is not in place no communication will take place through the RS485 interface
K1 Mains contactor (heating voltage)
K2 External safety circuit (safety humidistat, airflow monitor, etc.)
M Motor Blowepack
Q3 External main switch high voltage supply
SW1 Rotary switch module identification (must be left on position "0")
T1 Tranformer control voltage supply Module A
T2 Transformer blower pack supply
XE1 High voltage terminal block
XE2 Control terminal block

Fig. 19: Wiring diagram Nortec RS - Single units Small and Medium

5.8.3 Wiring Diagram Nortec RS - Large Units

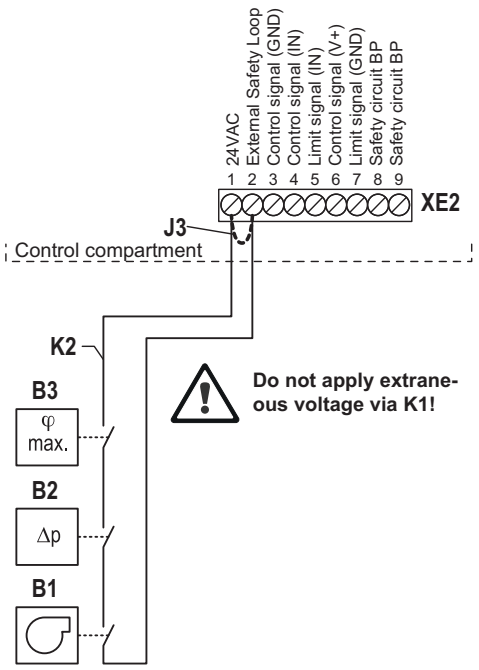


A1 Continuous humidity controller (active) or humidity sensor
A2 Ohmic humidity ontroller (passive), set jumper JP2 to 5V
A3 On/Off humidity controller, set jumper JP2 to 24V
A4 Limiter signal
B1 Ventilation interlock
B2 Airflow monitor
B3 Safety humidistat
F1 Internal fuse 24V supply (1 A, slow acting)
F2 Internal fuse 24V supply (4 A, slow acting)
F3 External fuse high voltage supply (see table in *Section 5.8.4.1*)
H1 Remote operating and fault indication (option)
H2 Accessory board (option) for the control of an external fan of the AHU as well as the optional external valve for the water supply line flushing
J1 Jumper, **do not remove**
J4 Jumper for activating the terminating resistor for Modbus network (Jumper must be connected, if Nortec RS is the last unit in the Modbus network)
J7 Jumper for activating Modbus or BACnet MSTP communication via RS485 interface (J6). If jumper is not in place no communication will take place through the RS485 interface
K1 Mains contactor (heating voltage) unit A/unit B
K2 External safety circuit (safety humidistat, airflow monitor, etc.)
Q3 External main switch high voltage supply
SW1 Rotary switch module identification (Master Module A: 0, Module B: 1)
T1 Transformer control voltage supply Module A
T2 Transformer control voltage supply Module B
XE1 Supply voltage terminal block
XE2 Control terminal block

Fig. 20: Wiring diagram Nortec RS - Large units

5.8.4 Installation Work – External Connections

Connecting the external safety chain



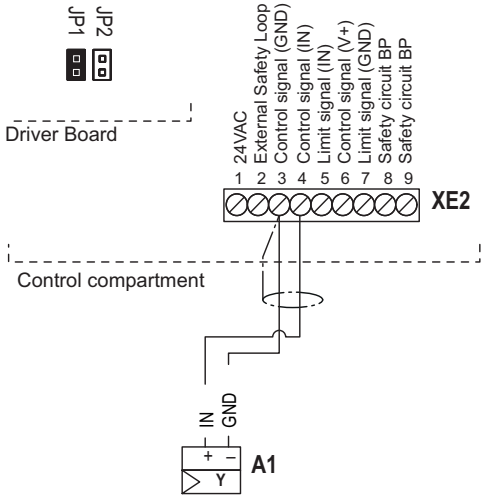
The potential-free contacts of external monitoring devices (e.g. ventilation interlock, safety high limit humidistat, airflow monitor, etc.) are connected in series (safety chain "K2") to the terminals "1" and "2" of the control terminal block "XE2" inside the control compartment in accordance with the wiring diagram.
The connecting cable must be led through a cable gland into the control compartment.

Caution! A **high limit humidistat is highly recomended** to prevent risk of over-humidification and potential damage to property.

Note: If, for whatever reason, no external monitoring devices are connected, a jumper "J3" must be installed on the contacts "1" and "2" of the control terminal block.

CAUTION! Do not apply any extraneous voltage to contacts "1" and "2" via the contacts of the external monitoring devices.

Connecting the demand or humidity signal

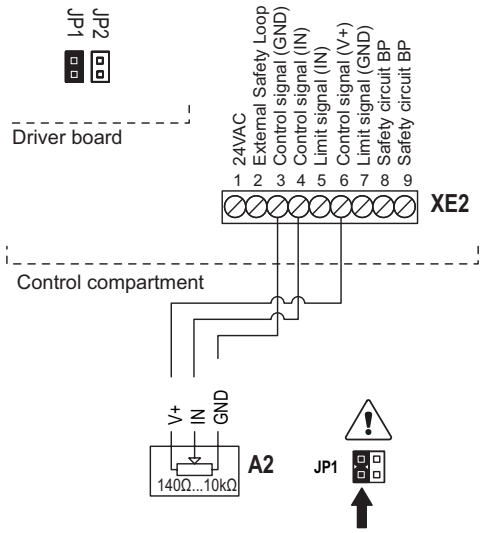


The signal cable of an external controller or of a humidity sensor (if the internal P/PI controller is used) are to be connected according to the wiring diagram to the terminals "3" (GND) and "4" (IN) of the control terminal block "XE2" inside the control compartment. The admissible signal values can be found in the technical data table in the operation manual. The connecting cable must be led through a cable gland into the control compartment.

Note: The admissible humidity control signal values can be found in the technical data table in the operation manual.

If a shielded signal cable is used, connect the shielding to terminal "3" (GND).
Caution! If the shielding of the control signal is **already connected to a potential or a grounded conductor, do not** connect it to terminal "3" (GND).
Ensure that JP1 is connected.

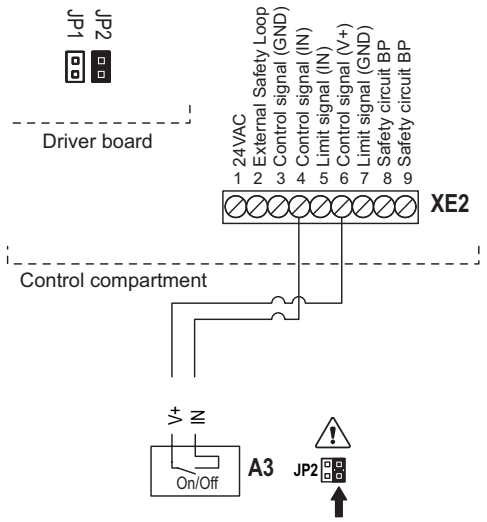
Ohmic humidity controller (passive)



The signal cable of an ohmic humidity controller (140Ω...10kΩ) is to be connected according to the wiring diagram to the terminals "3" (GND), "4" (IN) and "6" (V+) of the control terminal block "XE2" inside the control compartment.
The connecting cable must be led through a cable gland into the control compartment.

Note: when connecting an ohmic humidity controller Jumper "JP2" must be removed and Jumper "JP1" must be connected on the driver board and the control signal type must be set to 0-10V in the control settings of the control software.

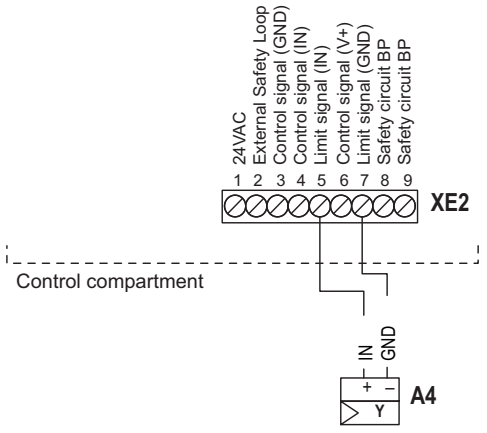
24V On/Off humidistat



The signal cable of 24V On/Off humidistat is to be connected according to the wiring diagram to the terminals "4" (IN) and "6" (V+) of the control terminal block "XE2" inside the control compartment.
The connecting cable must be led through a cable gland into the control compartment.

Note: when connecting a 24V On/Off humidistat Jumper "JP1" must be removed and Jumper "JP2" must be connected.

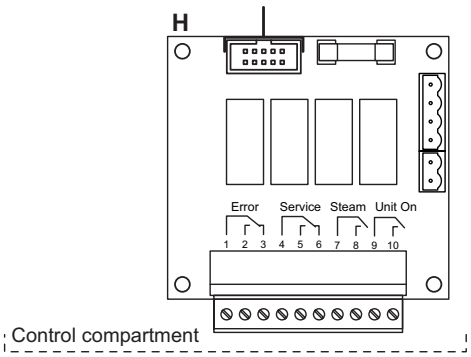
Limiter signal



The signal cable of an external limiter (P/PI continuous controller) is to be connected according to the wiring diagram to the terminals "5" (Limit signal IN) and "7" (Limit signal GND) of the control terminal block "XE2" inside the control compartment .
The connecting cable must be led through a cable gland into the control compartment.

Note: The limiter must be activated and configured via the control software. The admissible limiter signal values can be found in the technical data table in the operation manual.

Connecting the remote operating and fault indication (Option)



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

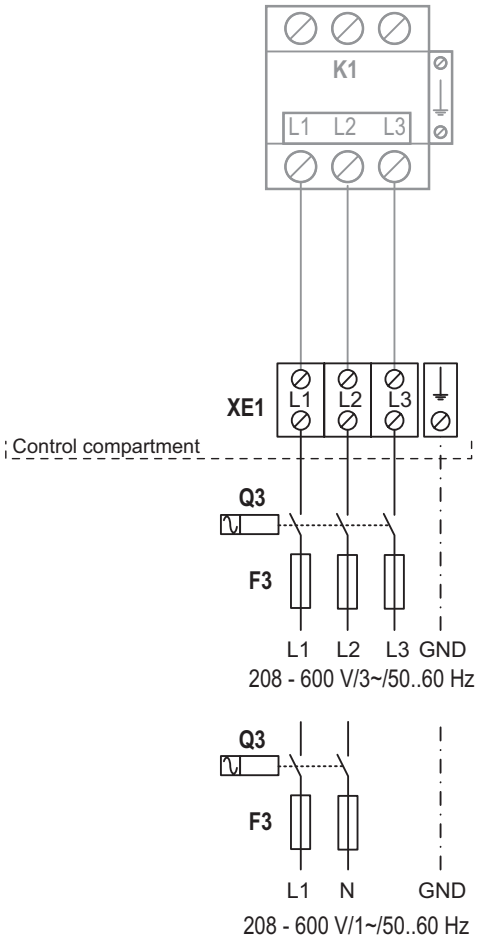
– "Error":
  This relay is activated if an error is present.
– "Service":
  This relay is activated when the set maintenance interval has elapsed.
  Note: this relay can be configured in the control software to close either when maintenance is required or when maintenance is required and when a warning is indicated.
– "Steam":
  This relay closes as soon as the Nortec RS humidifies.
– "Unit on":
  This relay closes as soon as the voltage supply to the control compartment of the Nortec RS is switched on.

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

The **maximum contact loading** is **24V/8A**.

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

Connecting the voltage supply



The **voltage supply** (L1, L2, L3 and GND or L1 and) is to be connected in accordance with the wiring diagram to the corresponding terminals of the main contactor in the control compartment. The earth conductor is to be connected to the earth terminal right beside the main contactor. The supply wiring is to be fed into the unit via the clamp strap on the bottom of the unit. Note: Double units have separate heating voltage supplies for each steam cylinder.

The installation of the **fuse F3**, the **electrical isolator "Q"** (all pole disconnecting device with a minimum contact clearance of 3 mm) and a fault current protection switch with 30 mA trigger current (by client) in the mains supply line are mandatory.

Note: a table with the values for the fuses "F3" is to be found at the end of this chapter.

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

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

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

Connecting the blower pack

See separate documentation for blower pack.

5.8.4.1 Fuses "F3" Voltage Supply

	208 V/1~/50...60 Hz			240 V/1~/50...60 Hz			480 V/1~/50...60 Hz			600 V/1~/50...60 Hz		
	Max output (kW)	Max current (A)	Max external fuse, F3 (A)	Max output (kW)	Max current (A)	Max external fuse, F3 (A)	Max output (kW)	Max current (A)	Max external fuse, F3 (A)	Max output (kW)	Max current (A)	Max external fuse, F3 (A)
RS 10	3.7	17.8	25	3.7	2.5	20	3.3	6.9	15	3.9	6.5	15
RS 15	5.4	26	35	4.9	4	25	4.8	10	15	5	8.3	15
RS 20	7.2	34.7	50	7.2	10	40	6.4	13.3	20	6.7	11.1	15
RS 30	10.8	52	70	10.8	16	60	10.7	22.3	30	10.7	17.8	25
RS 45	—	—	—	—	—	—	—	—	—	—	—	—
RS 65	—	—	—	—	—	—	—	—	—	—	—	—
RS 90	—	—	—	—	—	—	—	—	—	—	—	—
RS 130	—	—	—	—	—	—	—	—	—	—	—	—
RS 180	—	—	—	—	—	—	—	—	—	—	—	—

	208 V/3~/50...60 Hz			240 V/3~/50...60 Hz			480 V/3~/50...60 Hz			600 V/3~/50...60 Hz		
	Max output (kW)	Max current (A)	Max external fuse, F3 (A)	Max output (kW)	Max current (A)	Max external fuse, F3 (A)	Max output (kW)	Max current (A)	Max external fuse, F3 (A)	Max output (kW)	Max current (A)	Max external fuse, F3 (A)
RS 10	3.7	10.3	15	3.7	8.9	15	3.8	4.6	15	3.8	3.6	15
RS 15	5.4	15	20	4.9	11.9	15	5	6	15	6	5.8	15
RS 20	7.2	20	25	7.2	17.3	25	6.6	7.9	15	7.7	7.4	15
RS 30	9.8	27.2	35	10.8	26	35	10.7	12.9	20	10.7	10.3	15
RS 45	16.2	45	60	16.3	39.2	50	15.4	18.5	25	16	15.4	20
RS 65	24.3	67.5	90	24.5	58.8	80	21.4	25.8	35	24	23.1	30
RS 90	32.4	90	125	32.1	77.4	100	32.1	38.7	50	32	30.8	40
RS 130	48.6	135	175	48.2	116	150	42.8	51.6	70	48	46.2	60
RS 180	—	—	—	—	—	—	64.2	77.3	100	64	61.6	80

5.8.5 Inspecting the Electrical Installation

Check the following points:

- ☐ Do the supply voltages for heating and control voltage comply with the relevant voltages stated on the specification label?
- ☐ Is the high voltage supply correctly fused?
- ☐ Are all components correctly connected according to the wiring diagram?
- ☐ Are all connecting cables fastened?
- ☐ Are the connecting cables free of tension (passed through cable glands?)
- ☐ Does the electric installation meet the applicable local regulations for electric installations?
- ☐ Is the unit reassembled correctly and the front panel fixed with the screw?

6 Appendix

6.1 Unit Dimensions

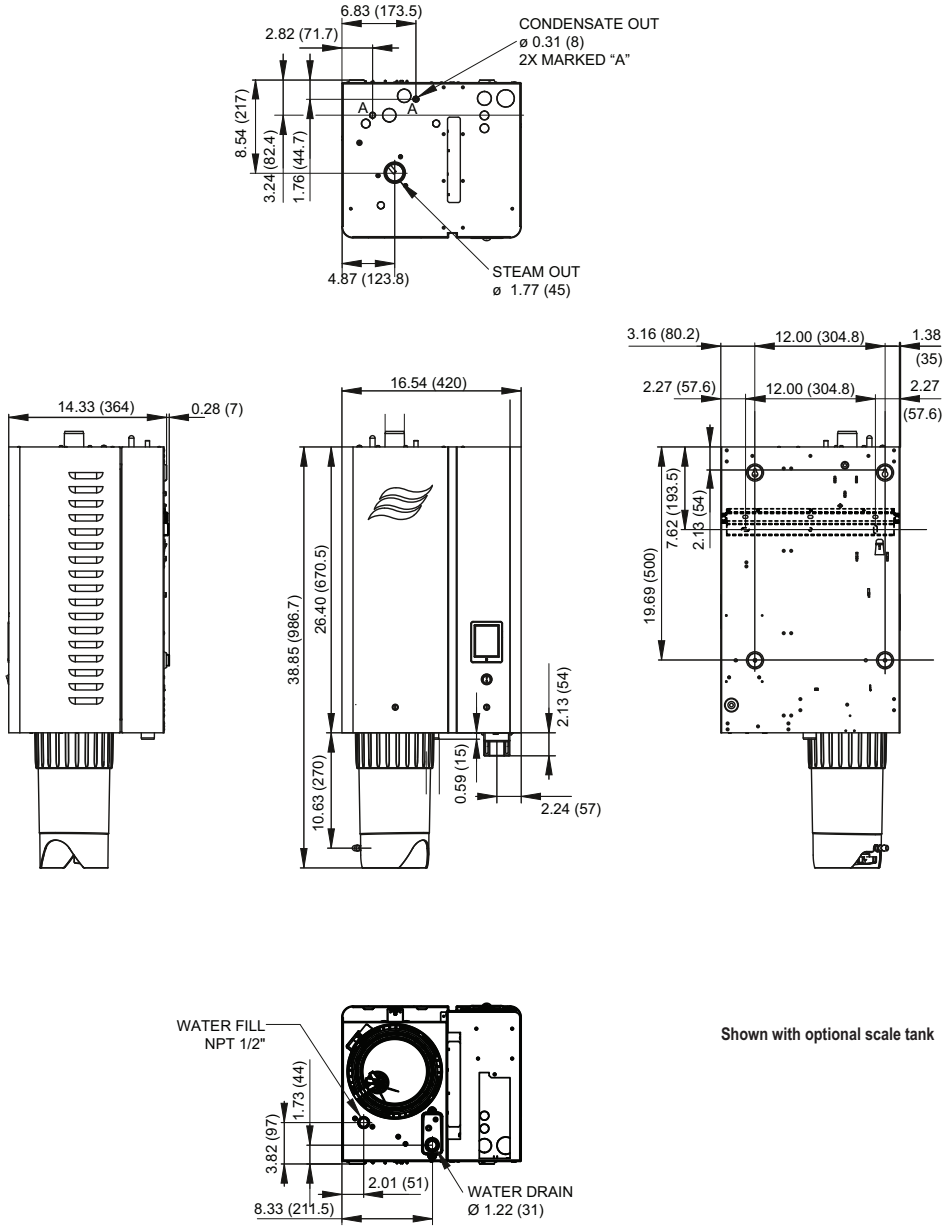


Fig. 21: Unit dimensions unit "Small" - dimensions in Inch (mm)

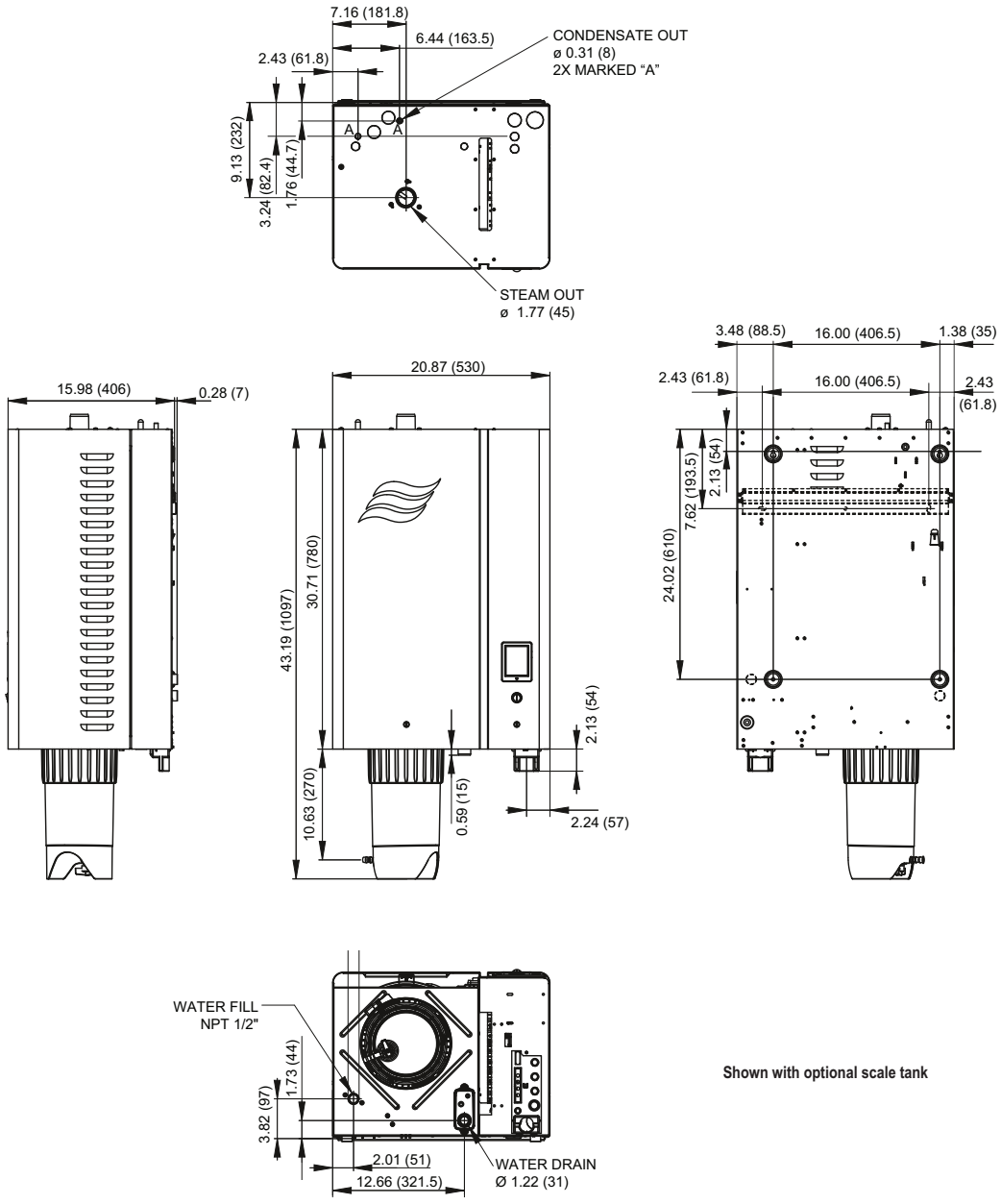
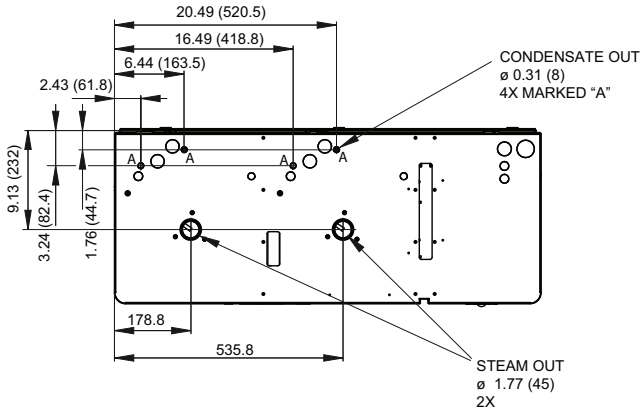
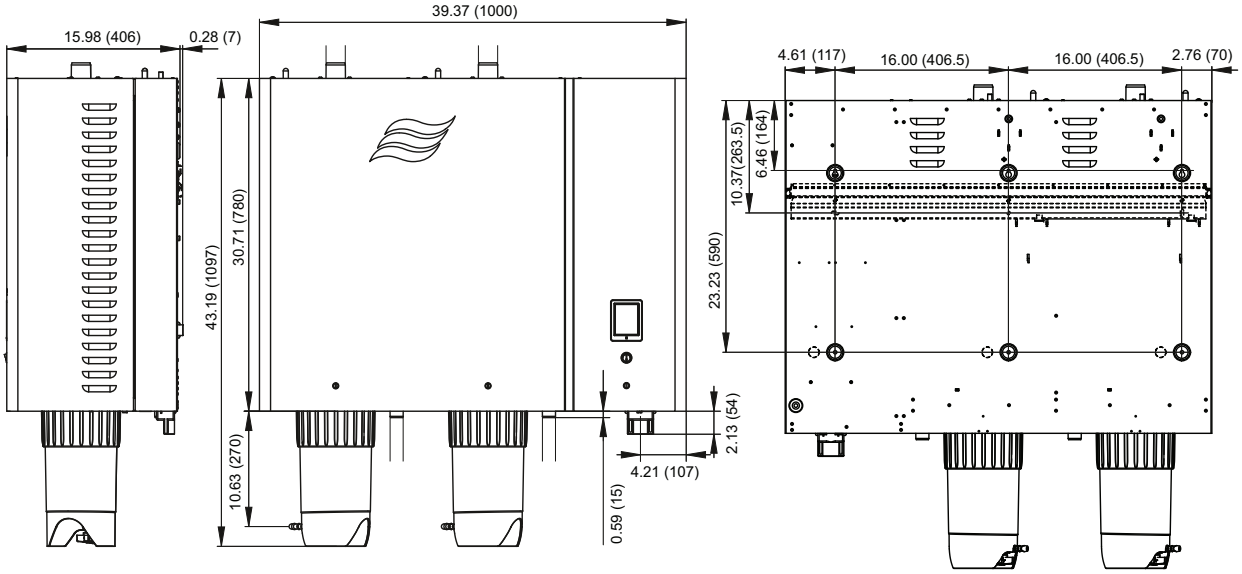
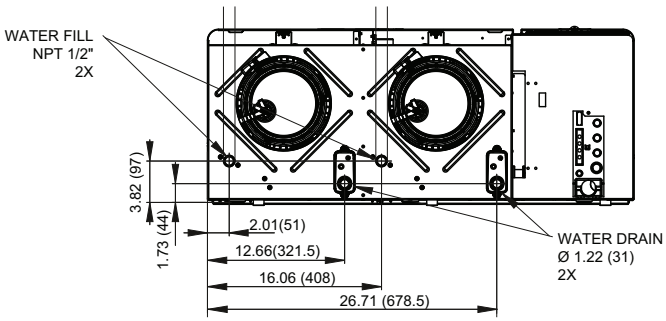


Fig. 22: Unit dimensions unit "Medium"- dimensions in Inch (mm)







Shown with optional scale tank