



**Important:** Read and save these instructions. This guide to be left with equipment owner.



# Blower Packs

## Installation and Operation Manual

Includes installation, operation  
maintenance and troubleshooting  
information for all atmospheric  
humidifiers



***Thank you for choosing Nortec.***

INSTALLATION DATE (MM/DD/YYYY)

MODEL #

SERIAL #

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# Introduction



- **CAUTION: Servicing**
- Disconnect main power before any servicing.
- The plumbing and electrical compartments contain high voltage components and wiring. Access should be limited to authorized personnel only.
- During and following operation of the humidifier, the steam and components in contact with the steam such as the blower pack, steam lines, steam distributors, and condensate lines can become hot and can burn if touched.
- **Nortec Humidity Ltd** does not accept any liability for installations of humidity equipment installed by unqualified personnel or the use of parts/components/equipment that are not authorized or approved by **Nortec Humidity Ltd**.



- **CAUTION: Electrical**
- All electrical work should be done according to local and national electrical code.
- Electrical connection to be performed by a licensed electrician.



- **CAUTION: Plumbing**
- Plumbing to be performed by a licensed plumber.
- Drain water from humidifier and condensate from blower pack can be very hot. Do not drain to public sink.
- All plumbing work should be done according to local plumbing code.



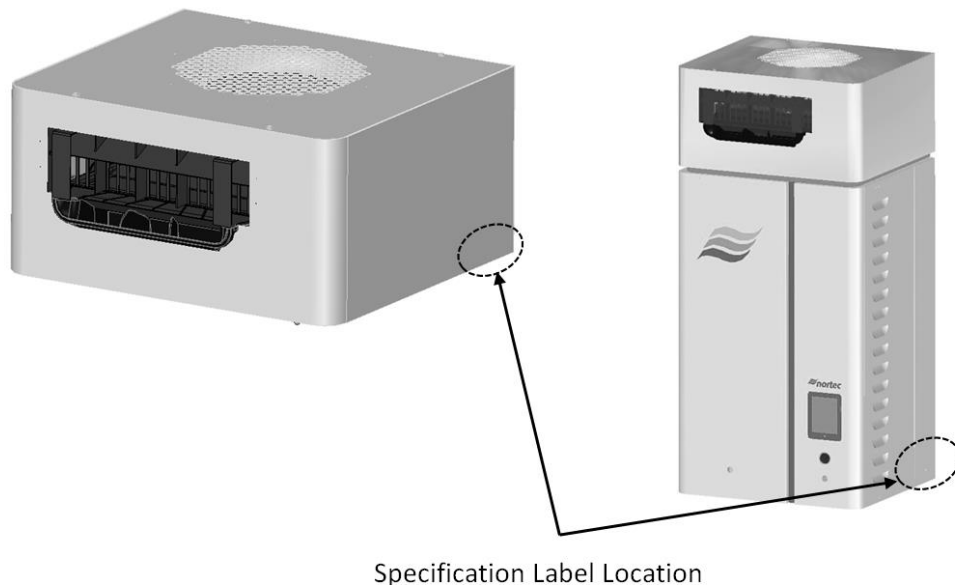
- **CAUTION: Installation**
- Do not mount on hot surfaces.
- Do not mount in area where freezing can occur.
- Do not mount on vibrating surface.
- Do not mount on floor.

## Receiving and Unpacking

1. Check packing slip to ensure ALL material has been delivered.
2. All material shortages are to be reported to Nortec within 48 hours from receipt of goods. Nortec assumes no responsibility for any material shortages beyond this period.
3. Inspect shipping boxes for damage and note damages on shipping waybill accordingly.
4. After unpacking, inspect equipment for damage and if damage is found, notify the shipper promptly.
5. All Nortec products are shipped on an FOB factory basis. Any and all damage, breakage or loss claims are to be made directly to the shipping company.

## Before Installation

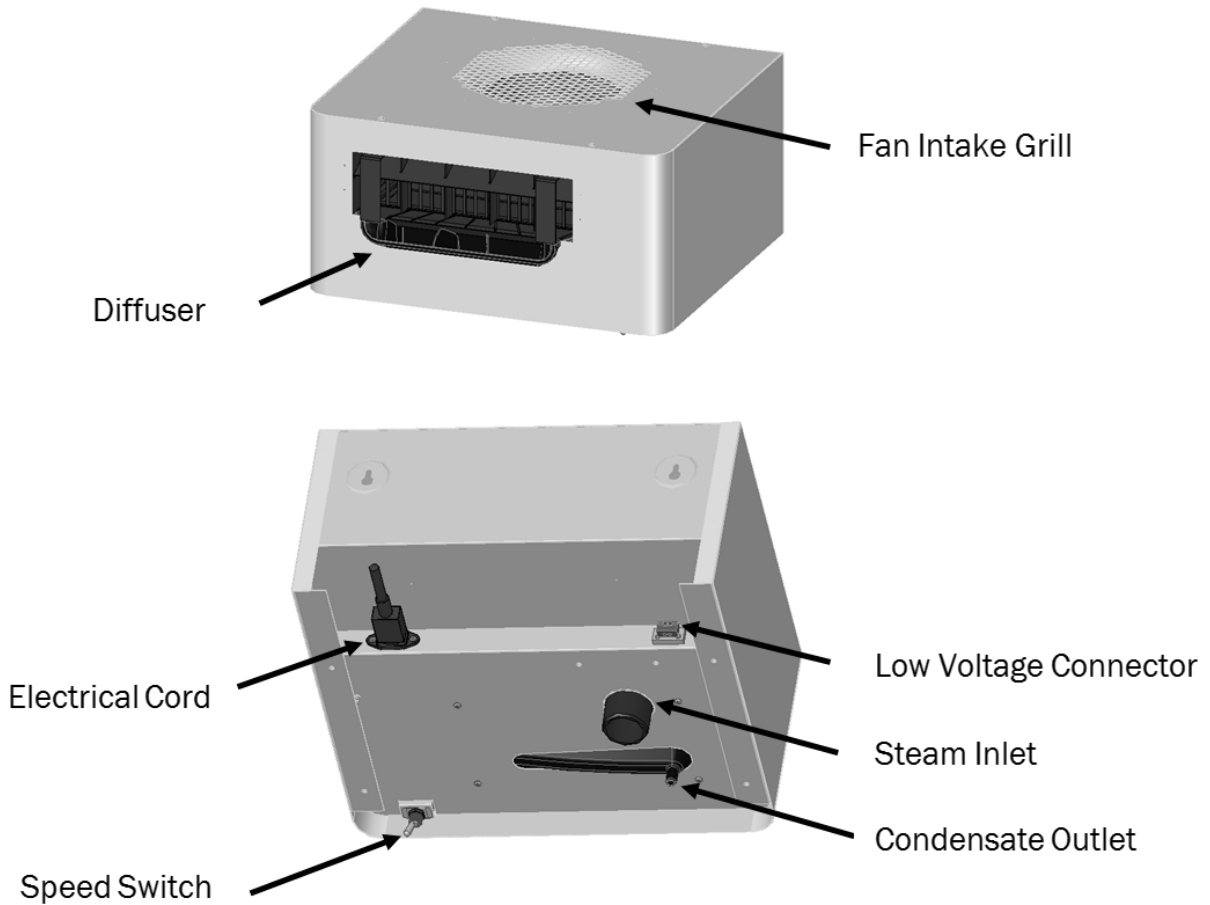
1. Ensure that available voltage and phase corresponds with Blower Pack voltage and phase as indicated on Blower Pack's specification label.
2. Ensure that the dedicated external fuse disconnect is of sufficient size to handle the rated amps as indicated on the specification label. Refer to local codes.
3. Report any discrepancy immediately to the site engineer.
4. Ensure sufficient clearances will be available as described in the "[Location and Mounting](#)" section.
5. Ensure steam lines can be routed to blower pack as described in the "[Steam Lines](#)" section.



**Figure 1: Specification Label Location RM-BP and NH-EL Space**

# Humidifier Components

## RM-BP (Remote Mounted Blower Pack)

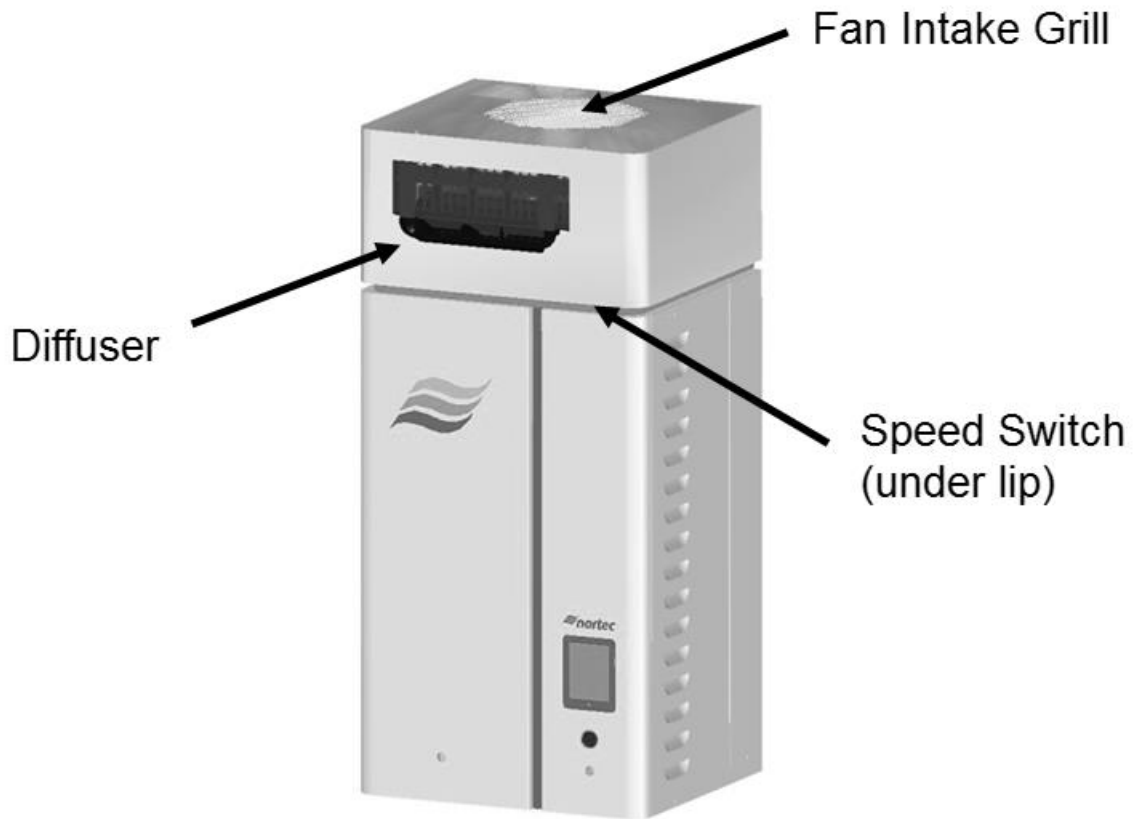


**Figure 2: Humidifier Components RM-BP**

**Table 1: Function of Components**

Component	Function of Component
Fan Intake Grill	Protects the fan from foreign objects
Speed Switch	Controls the fan speed between High and Low. High speed will generate a louder fan noise but achieve best absorption performance.
Diffuser	Provides uniform distribution of steam from blower pack
Steam Inlet	Connects to humidifier steam outlet with steam hose
Condensate Outlet	Provides egress for condensed steam inside blower pack. Connects to drain or drain water cooler
Electrical Cord	Used to provide power (115v) to humidifier
Low Voltage Connector	Provides feedback to humidifier when power is provided to blower pack

## NH-EL Space



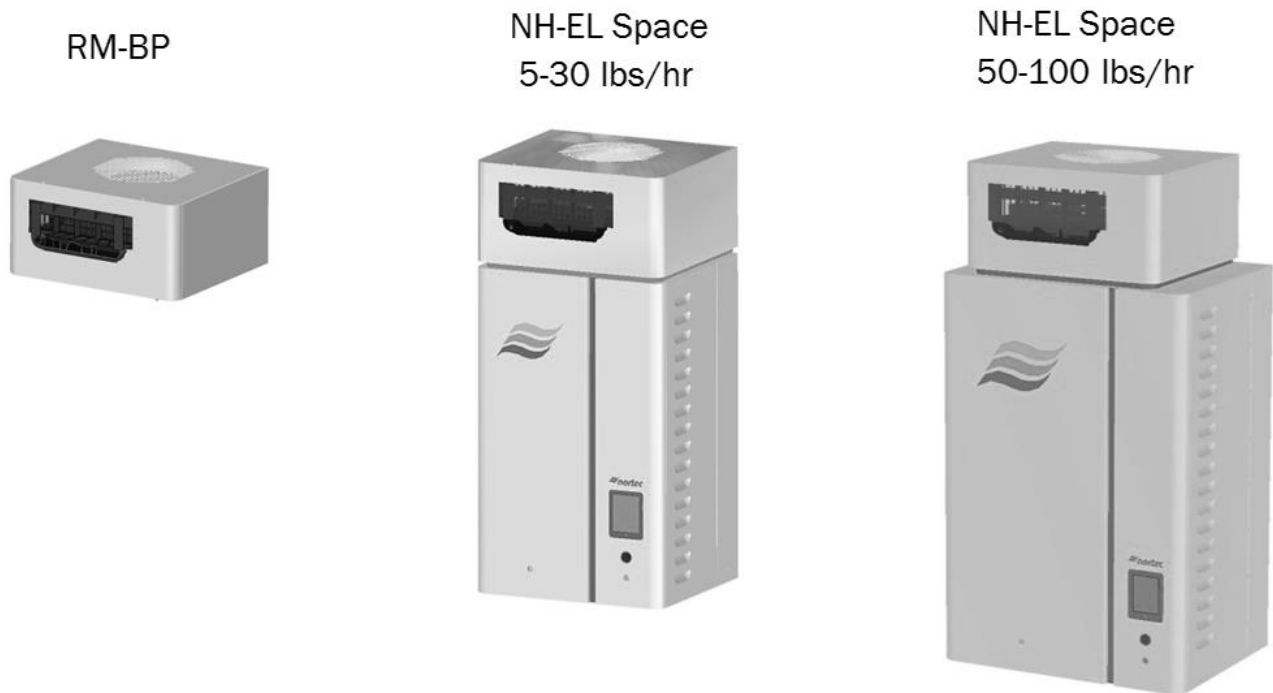
**Figure 3: Humidifier components NH-EL Space**

**Table 2 : Function of Components**

<b>Component</b>	<b>Function of Component</b>
Fan Intake Grill	Protects the fan from foreign objects
Speed Switch	Controls the fan speed between High and Low
Diffuser	Provides uniform distribution of steam from blower pack

## Models

Blower packs are an optional accessory used to directly distribute steam to localized areas or in structures that do not have a built-on air distribution system. The Remote Mounted Blower Pack (RM-BP) model requires field piping to be completed on site. The NH-EL Space humidifier models come pre-assembled with a Blower Pack mounted on the top. Both smaller steam capacity NH-EL models (5-30 lbs/hr) and medium steam capacity NH-EL models (45-100 lbs/hr) can be ordered for direct In-Space steam distribution.



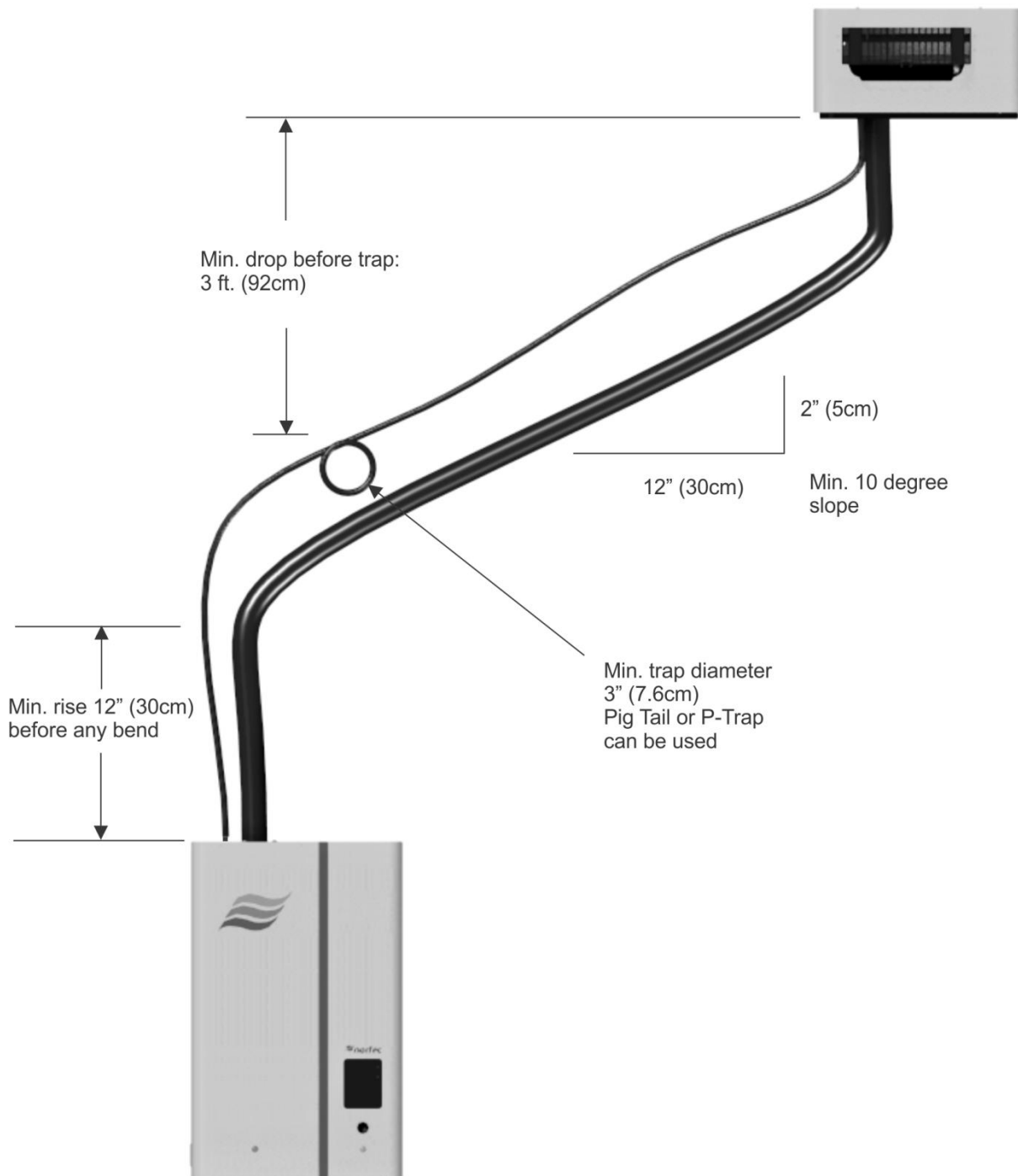
**Figure 4: Models for RM-BP and NH-EL Space**

For in-space distribution with large steam size humidifier capacities greater than 100lbs/hr, (Dual cylinder NH-EL 150, 200, GSTC, SETC) , the RM-BP (remote mounted blower pack) must be added to humidifier. See “[Installation](#)” section



# Installation

## Typical installation



**Figure 5: Typical Installation**

## Location and Mounting:

### NH-EL Space

Refer to NH-EL Installation and operation manual (2570435) for instructions on mounting the NH-EL.

### RM-BP

To wall mount the RM-BP, use 2 #12 x 3" long wood screws, supplied by others. These screws must be fastened securely on a 2 x 4 wood stud or equivalent support. If any spacer material is used between the bracket and the structural material such as drywall, increase the fastener length accordingly. DO NOT locate the humidifier any further then absolutely necessary from the blower pack location as net output will be reduced as a result of heat loss through the steam line.

- Blower packs have hot surfaces that could result in burns if touched.
- Mount blower pack on a suitable wall or vertical surface.
- Clearance dimensions shown are for reference only and are the minimum required for maintenance of the humidifier. Consult local and national codes before final location and installation. NORTEC does not accept responsibility for installation code violations.
- Install only in areas with ambient temperature 41-104 °F (5 – 40 °C) relative humidity 5 - 95% (non condensing).
- When possible, mount the blower pack at a height convenient for servicing.

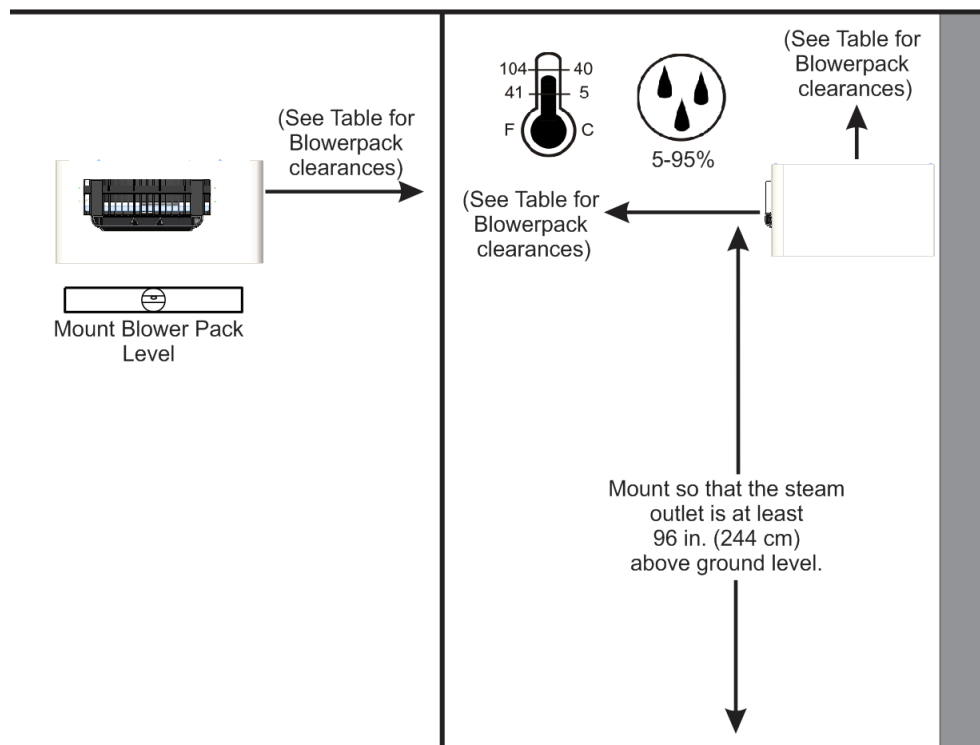


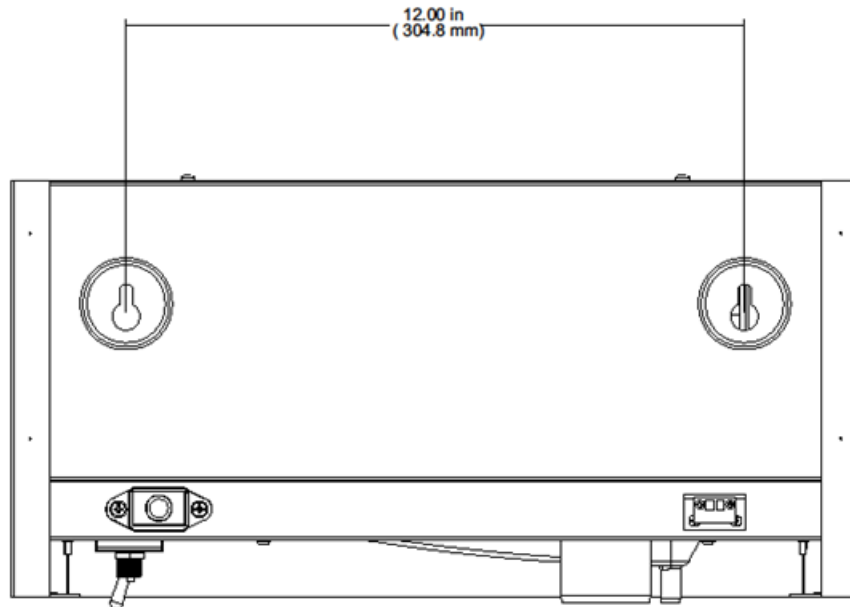
Figure 6: NH-EL Space Mounting Clearances

**Note:** Do not mount on hot surfaces, where freezing can occur, vibrating surface, or floor.



- Keyholes are spaced 12 in. (30.48 cm) apart center to center. Insert screws into the studs until there is 1/4 in. (0.64cm) of screw exposed. Be sure the screws are level to each other.
- Raise the unit and place the screws through the keyholes. Make sure the unit is level, then tighten the screws to secure the unit in place.
- Place L Shaped brackets on top of the unit, with holes inline with the studs. Using the appropriate sized wood screw, fasten the “L” brackets to the studs, securing the unit from any upward motion

**Note:** Use screws longer than 3/4” (7.5 cm) if drywall or other spacer is present.



**Figure 7: RM-BP Mounting Detail**

Do NOT use blower packs as ducted blowers. The air volume from a blower pack is not sufficient for proper operation in a ducted system.

**Table 3: Clearances for Blower Packs on Low Speed\***

<b>Humidification Capacity lbs/hr (kg/hr)</b>	<b>Minimum No. of Blower Packs</b>	<b>Min. Frontal Clearance Inches (cm)</b>	<b>Min. Overhead Clearance Inches (cm)</b>	<b>Min. Left side Clearance Inches (cm)</b>	<b>Min. Right side Clearance Inches (cm)</b>
5 (2.2)	1	9 (23)	12 (31)	12 (31)	12 (31)
10 (4.5)	1	18 (46)	12 (31)	12 (31)	12 (31)
20 (9.1)	1	75 (191)	12 (31)	12 (31)	12 (31)
30 (13.6)	1	86 (219)	12 (31)	12 (31)	12 (31)
50 (22.6)	1	174 (442)	12 (31)	12 (31)	12 (31)
75 (34.1)	1	189 (481)	48 (122)	30 (77)	30 (77)
100 (45.4)	1	248 (630)	84 (214)	30 (77)	30 (77)
Sound measurement: 57.4 db					

**Table 4: Clearances for blower Packs on High Speed\***

<b>Humidification Capacity lbs/hr (kg/hr)</b>	<b>Minimum No. of Blower Packs</b>	<b>Min. Frontal Clearance Inches (cm)</b>	<b>Min. Overhead Clearance Inches (cm)</b>	<b>Min. Left side Clearance Inches (cm)</b>	<b>Min. Right side Clearance Inches (cm)</b>
5 (2.2)	1	6 (16)	12 (31)	12 (31)	12 (31)
10 (4.5)	1	6 (16)	12 (31)	12 (31)	12 (31)
20 (9.1)	1	60 (153)	12 (31)	12 (31)	12 (31)
30 (13.6)	1	71 (181)	12 (31)	12 (31)	12 (31)
50 (22.6)	1	132 (336)	12 (31)	12 (31)	12 (31)
75 (34.1)	1	153 (389)	12 (31)	30 (77)	30 (77)
100 (45.4)	1	218 (554)	12 (31)	30 (77)	30 (77)
Sound measurement: 64.1 db					

\*NOTES:

Nominal Conditions 72 °F (21.1 °C), 40% RH.

Low speed not recommended for 100 lbs/hr humidifier.

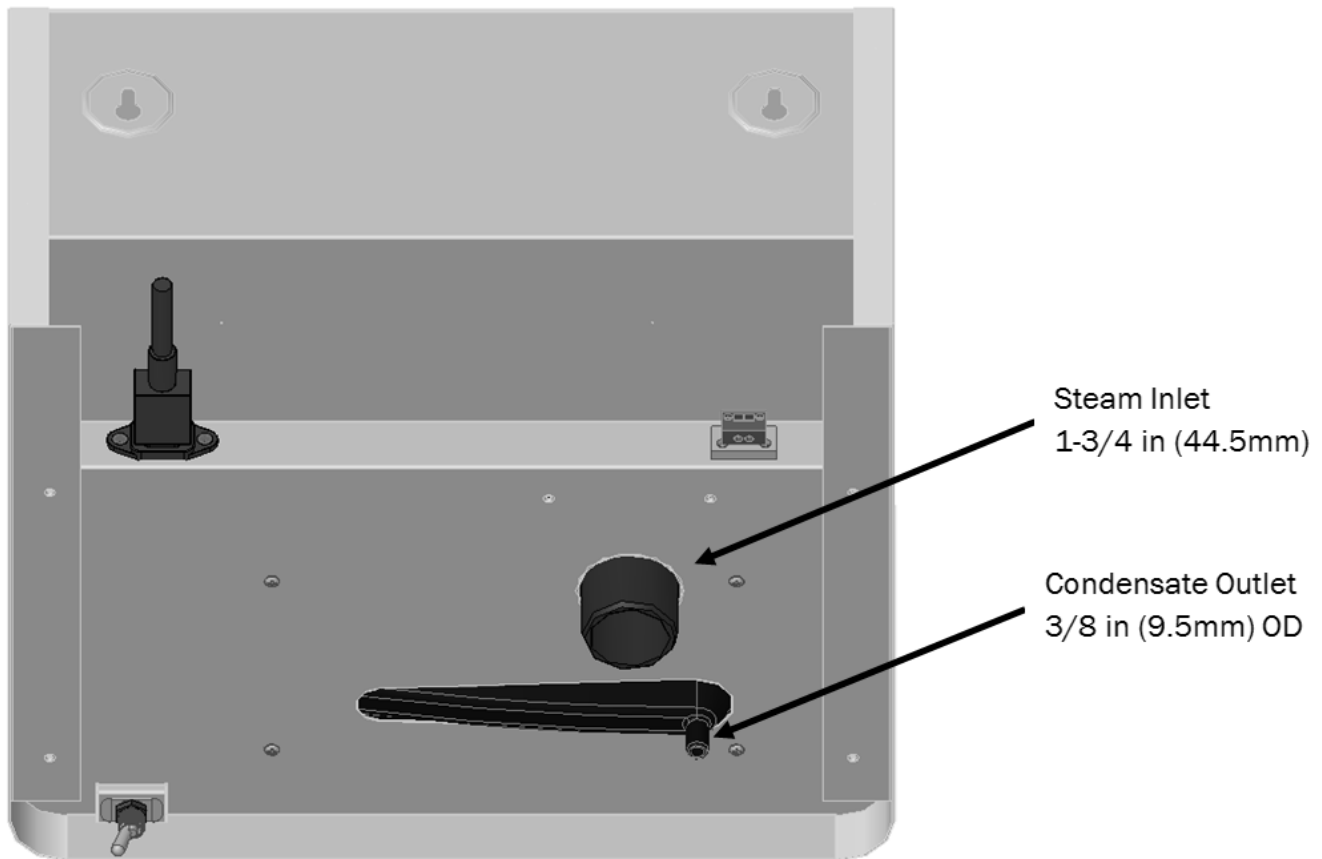
Blower Pack should not be installed near cold surfaces or where dew point may be reached.

Higher humidity or lower room temperature may result in longer absorption distances.

Sound data taken at average of 3 feet from blower pack

## Plumbing

RM-BP Plumbing consists of steam and condensate line connections located at the bottom of the blower pack. The steam line connection is of size 1.75" OD. The Blower Pack is designed to work for up to 100lbs/hr. Ensure that the steam inlet on the bottom of the blower pack is unobstructed.



**Figure 8: Plumbing Connections**

- Use Nortec Hose to connect to RM-BP steam inlet. A hose gear clamp can be used to ensure tight fit. **DO NOT OVERTIGHTEN** the gear clamp.
- The Condensate line should not terminate in a sink used frequently by personnel, or where plumbing codes prohibit it. Route to a floor drain or equivalent for safety reasons.
- Insure condensate line is adequately sized and sloped to provide free and easy draining and that an air gap is installed as shown
- Do not use hose other than Nortec Hose. Other acceptable plumbing material includes Copper MED-L grade and Stainless Steel, Do not use black iron pipe. (see table 5)

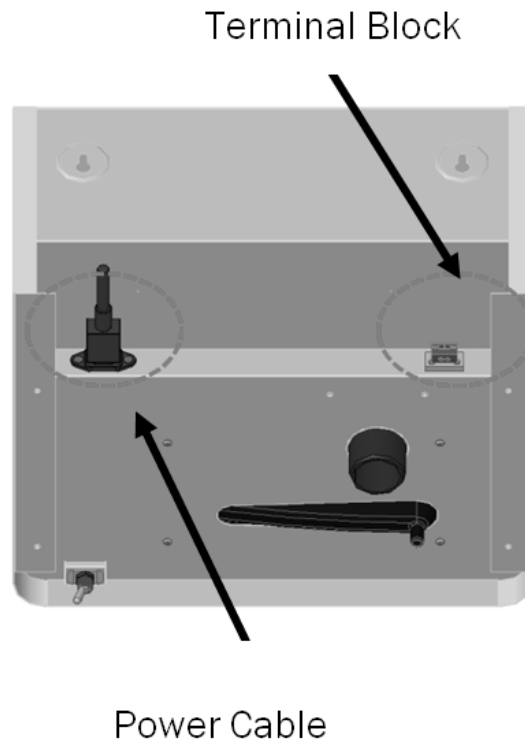
## Electrical

The RM-BP uses a 110-120V single phase power source and comes with a minimum 5 ft (1.5 m) long electrical cord connection and termination.

Low voltage control wiring is also required between the blower pack and the humidifier (use class 1 circuit wiring). The Blower Pack low voltage terminal block consists of a plastic connector. Wires should be run from the blower pack terminal block through the wire chase, and to the humidifier landing on terminals 8 and 9 on the NH-EL low voltage terminal strip.

If used with other Nortec humidifier technologies, place low voltage connection in series with humidifier safety loop.

Field wiring of remote blower packs must conform to national and local electrical codes. Refer to wiring diagram supplied at the back of this manual.



**Figure 9: Electrical Connections**

## Steam Lines

Prior to connecting the steam hose ensure proper inlet size.



The following instructions must be followed for installation of steam lines for remote blower packs. Failure to use material recommended in Table 3, exceeding maximum recommended length in Table 3, or failure to follow any other steam line installation instructions will result in improper operation and could void the warranty.

### **Danger:**

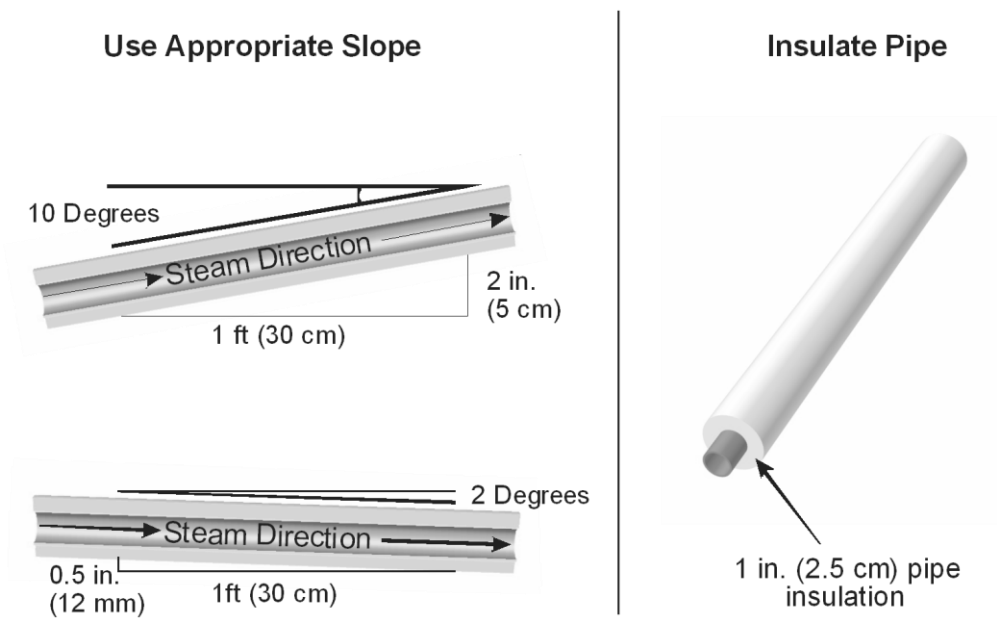
*Installing any humidifier in such a way that backpressure can develop during operation could result in serious injury or damage to property.*



**Table 5. Recommended Steam Line Material\*, Maximum Length, Losses**

NH-EL 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/ft	(kg/hr/m)
5**	7	(2)	3/4	0.875 X 0.049W	0.06	(0.09)
10**	12	(3.5)				
20**	17	(5)				
30**	22	(6.5)				
50	43	(13)	1 1/2	1.75 X 0.065W	0.11	(0.16)
75/150***	47	(14)				
100/200***	50	(15)				
<b>Oversized Steam Line (Use for longer steam runs)****</b>						
5**	14	(4)	1	1.125 X 0.049W	0.06	(0.09)
10**	24	(7)				
20**	34	(10)				
30**	44	(13)				
50	86	(26)	2	2.0 X 0.065W	0.11	(0.16)
75/150***	94	(28)				
100/200***	100	(30)				
<b>Nortec Steam Hose</b>						
5-30**	10	(3)	Pt No 1328810 (7/8")		0.1	(0.15)
50-200***	10	(3)	Pt No. 1328820 (1 3/4")		0.15	(0.22)

- Note:**
- \* 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
  - \*\* These specific models will require the steam line to be expanded at blower pack. See Options for steam line adapters.
  - \*\*\* Use steam line per cylinder for NH-EL 150-200 humidifiers. Do not combine lines except at distributor using a Nortec adapter designed for that purpose and only if humidifiers operate in parallel.
  - \*\*\*\* These diameters require a reducer at humidifier and steam distribution connection



**Figure 9: Steam Line Slope**



**MAIN RULES FOR ATMOSPHERIC STEAM LINES**

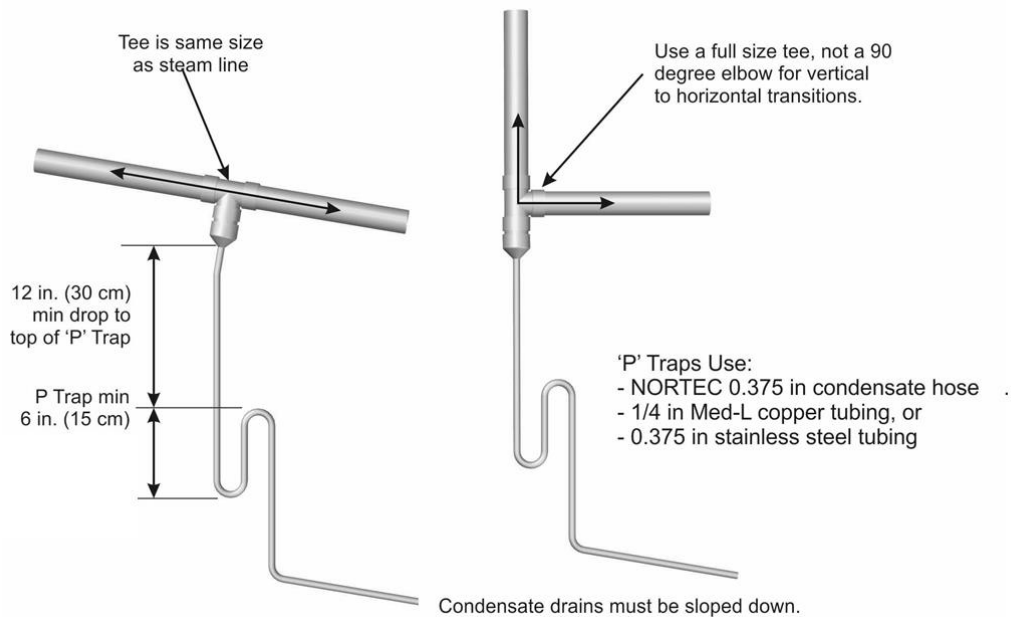
- Steam lines must not have any restrictions which could cause back pressure.
- Follow recommended materials, size and length; see respective tables.
- Slope the steam lines.
- Insulate with 1.0 in. (2.5 cm) pipe insulation minimum.
- Trap condensate (Use full size 'T' for Traps).
- Do not over tighten hose clamp at cylinder steam outlet. The maximum torque is 12 in-lbs for 7/8" Nortec steam hose and 16 in-lbs for 1 3/4" Nortec steam hose.
- Support steam line so weight is not on cylinder and so that steam line does not create low points



## Trap Condensate



- Trap at all low points and recommended intervals using full size 'T' for traps.
- Condensate should not be routed to a sink used frequently by personnel. Route to a floor drain or equivalent. Condensate normally cools in traps but is still hot. A larger steam line generates more condensate and water may not cool in the trap. A drain water cooler option may be installed if required by code.
- Route condensate to floor drain or equivalent in multi-unit to single RM-BP.
- Do not install electric zone valves on steam lines. Improper adjustment will over-pressurize the humidifier.



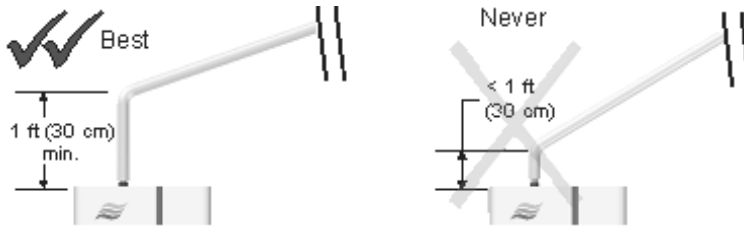
**Figure 10: Steam Line Condensate Plumbing**

## Steam Line Rules

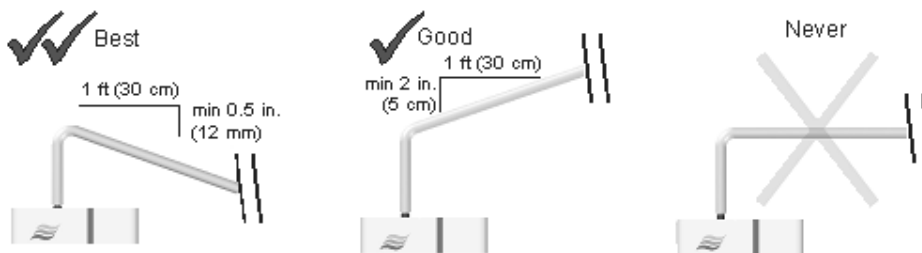
The following 10 points provide rules for installing steam lines connecting the NH-EL humidifier to RM-BP. In addition to these rules never use unapproved material for steam lines.



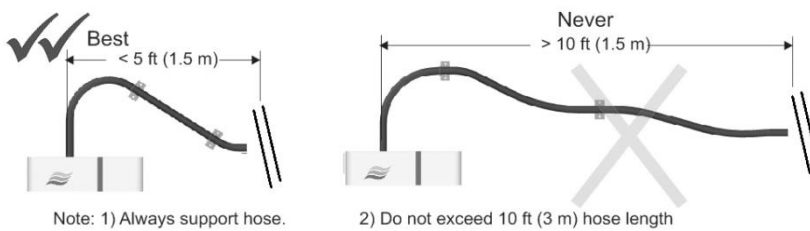
**1. Allow minimum of 12 in. (30 cm) before first bend in steam line**



**2. Slope the steam lines**



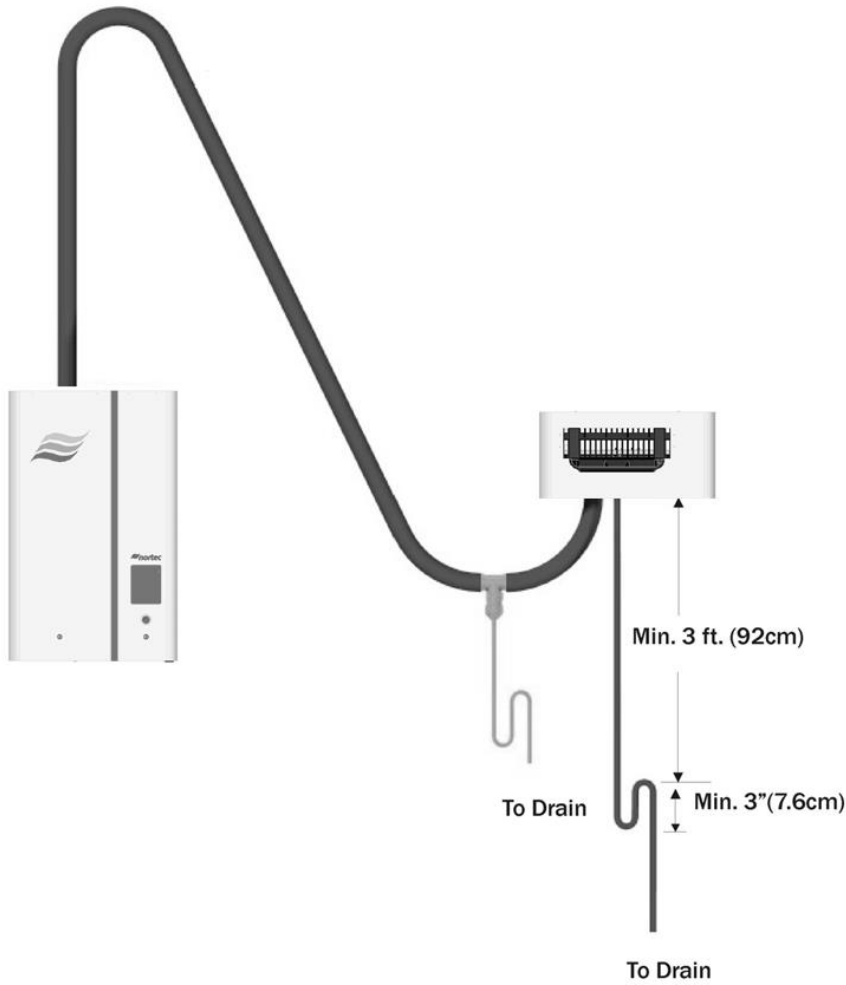
**3. Use steam hose only for short distances**



**4. For steam hose maintain minimum 12 in. (30 cm) bend radius**



5. **Install traps on blower pack condensate line at least 3 feet. (0.9m) below connection, ensure P trap 3 inches height**



A condensate trap must be installed at least 3 ft (1 m) below the condensate outlet on the blower pack to prevent steam from escaping. Trap depth must be equal or more than 3" (76 mm).

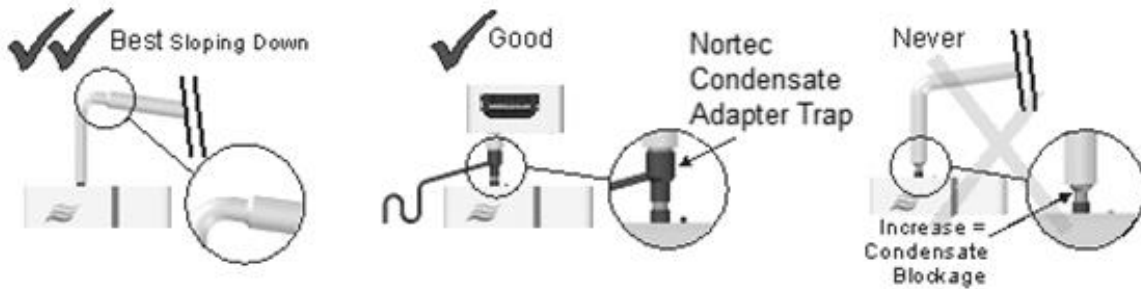
6. **Do not combine NH-EL steam lines before RM-BP**



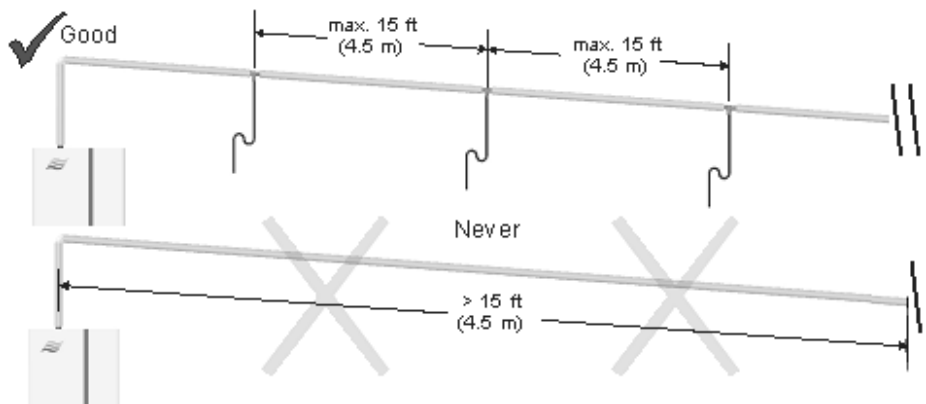
**7. Install condensate traps at low points and horizontal to vertical transitions**



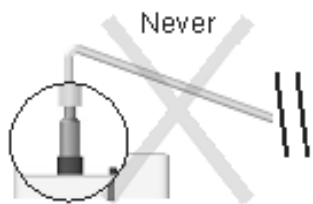
**8. Increase diameter either on down slope or install condensate adapter trap (Part# 2572634 field or 2577149 factory )**



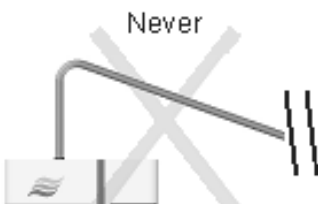
**9. Install condensate traps if steam line > 15 ft (4.5 m)**



**10. In addition never:**



Reduce Steam Line Size



Install Copper or SST without Insulation



Install a valve or other obstruction

***After Installation Always:***

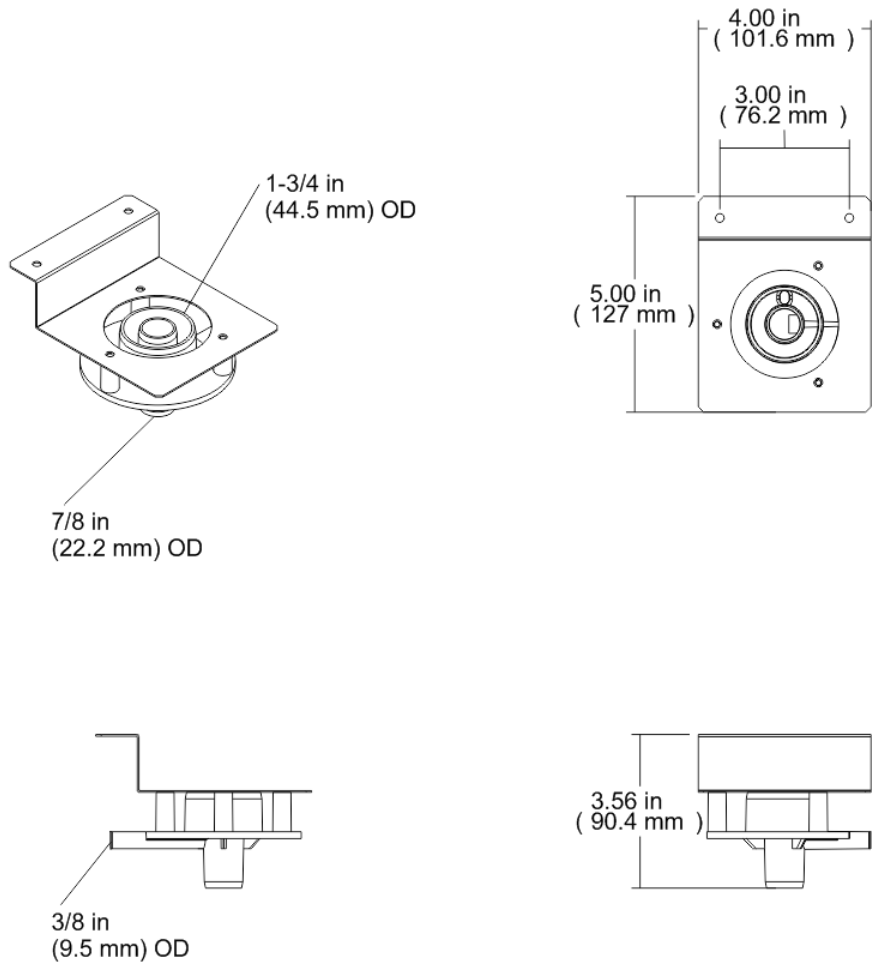
- Purge Steam lines to remove any contaminants and installation materials
- Ensure all condensate lines / traps flow.



# Accessories

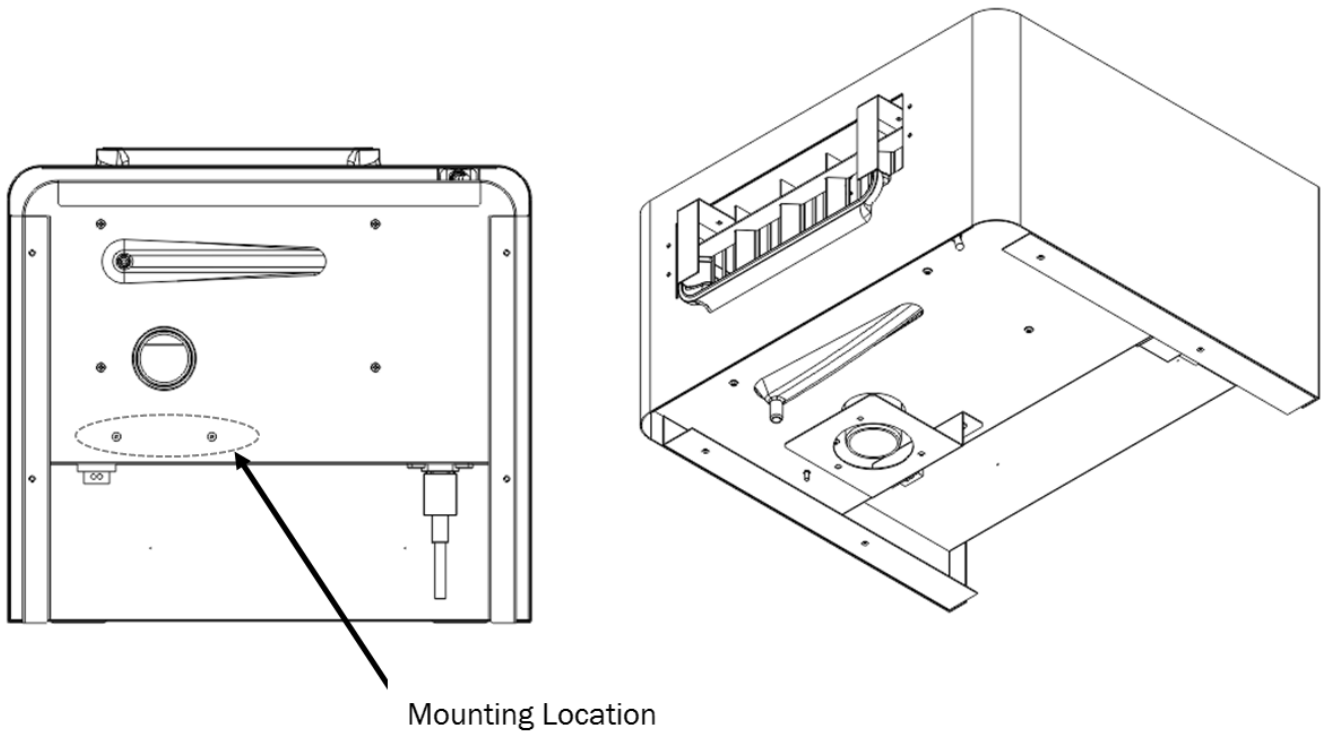
## Steam Adapter

If using a humidifier with 7/8" OD steam line and RM-BP, Nortec offers an optional adapter (Factory #2577149, or Field Part #2572634 ). This part facilitates the pipe reduction needed to connect the smaller capacity humidifier to RM-BP. The adapter readily mounts to the bottom of the RM-BP or can be placed where transition is required. The Adapter consists of a plastic expansion and a steel mounting bracket. The bottom inlet, 7/8" (22mm) OD, is easily fitted to smaller capacity NH-EL humidifiers (5-30 lbs/hr). The top of the Adapter is the outlet in 1-3/4" (44.5mm) OD which matches the RM-BP inlet diameter. A 2" length of steam line along with two hose clamps will be required to link the adapter to the RM-BP inlet. Finally, the adapter uses a 3/8" (9.5mm) condensate trap to remove condensate buildup during the expansion.

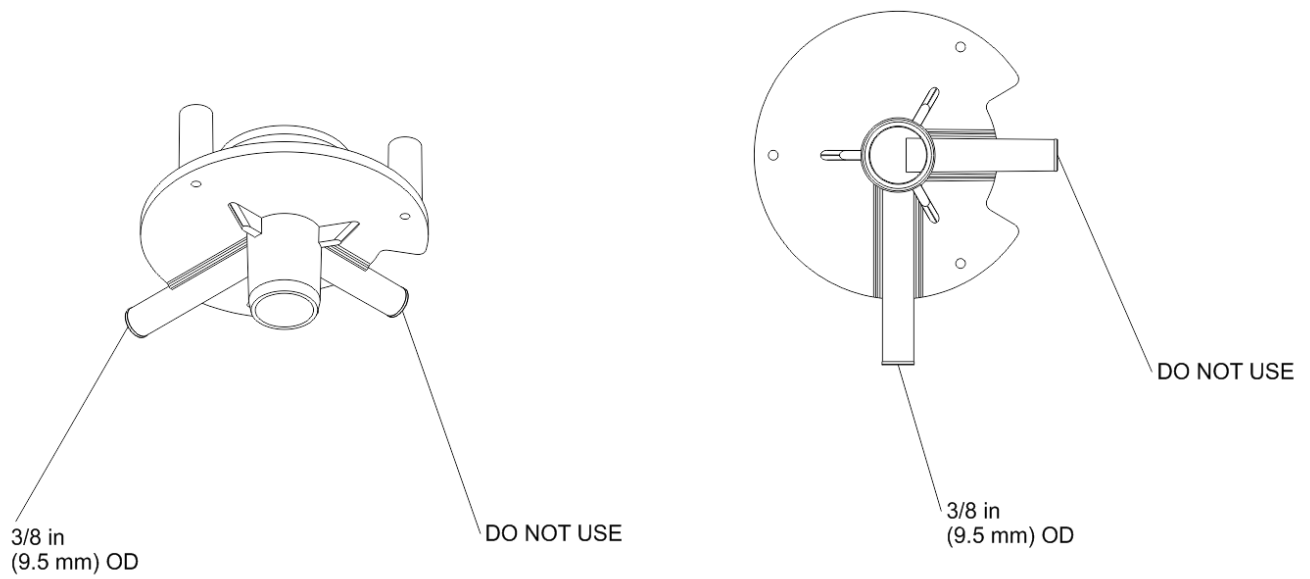


**Figure 11: Nortec Optional Adapter**

# Blower Pack



**Figure 12: Optional Adapter Mounting Location**



**Figure 13: Optional Adapter Detail**

## Startup/Operation

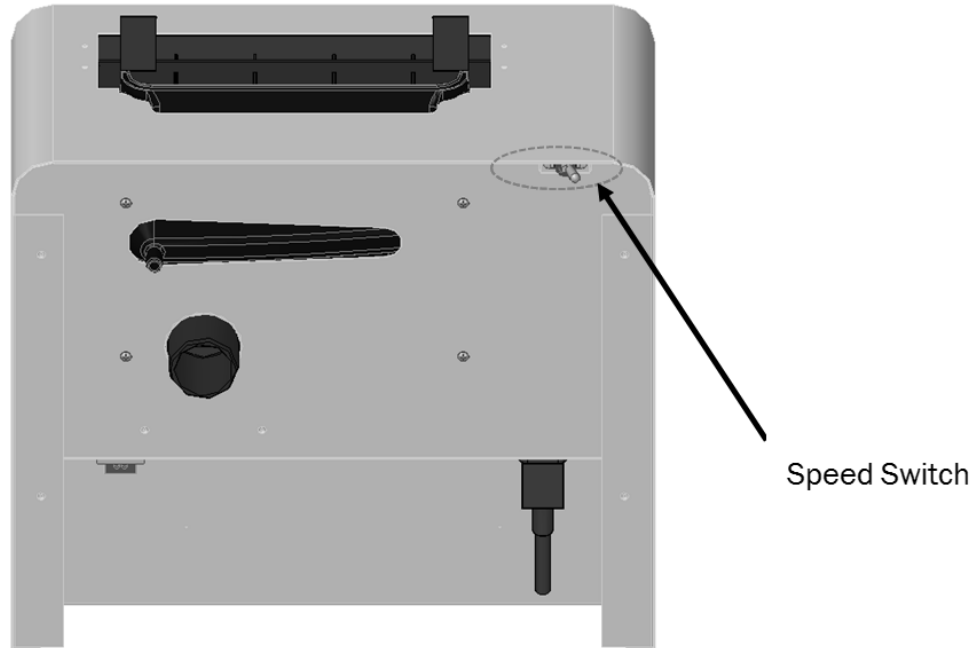
The RM-BP is designed to distribute atmospheric steam directly into a space. The RM-BP may be used in conjunction with the NH-EL Humidifier, as well as other Nortec Humidifiers, including the Resistive, Gas and Steam Exchange models. The RM-BP is equipped with a 5 foot (1.5m) long power cable which can be plugged into conventional wall circuits (15 amp single phase). A single RM-BP can hold a capacity of 100 lbs/hr of atmospheric steam.

The NH-EL Space humidifier is already equipped from factory with a built on blower pack and can be used for direct room applications.

## Sequence of Operation

Once hot steam is generated and reaches the blower pack, a control thermostat located inside the blowerpack starts the blower fan and allows for steam distribution. The blower pack is equipped with a security loop which should be wired with the respective humidifier safety. The purpose of the security loop is to prevent humidifier operation should power be interrupted to the blower pack.

The blower pack is equipped with a dual speed fan switch. The switch can be used to increase or decrease the fan speed effectively changing absorption distance and noise. Once desired speed is selected, no further change is required.



**Figure 14: Speed Switch Location on RM-BP**



## Maintenance/Service

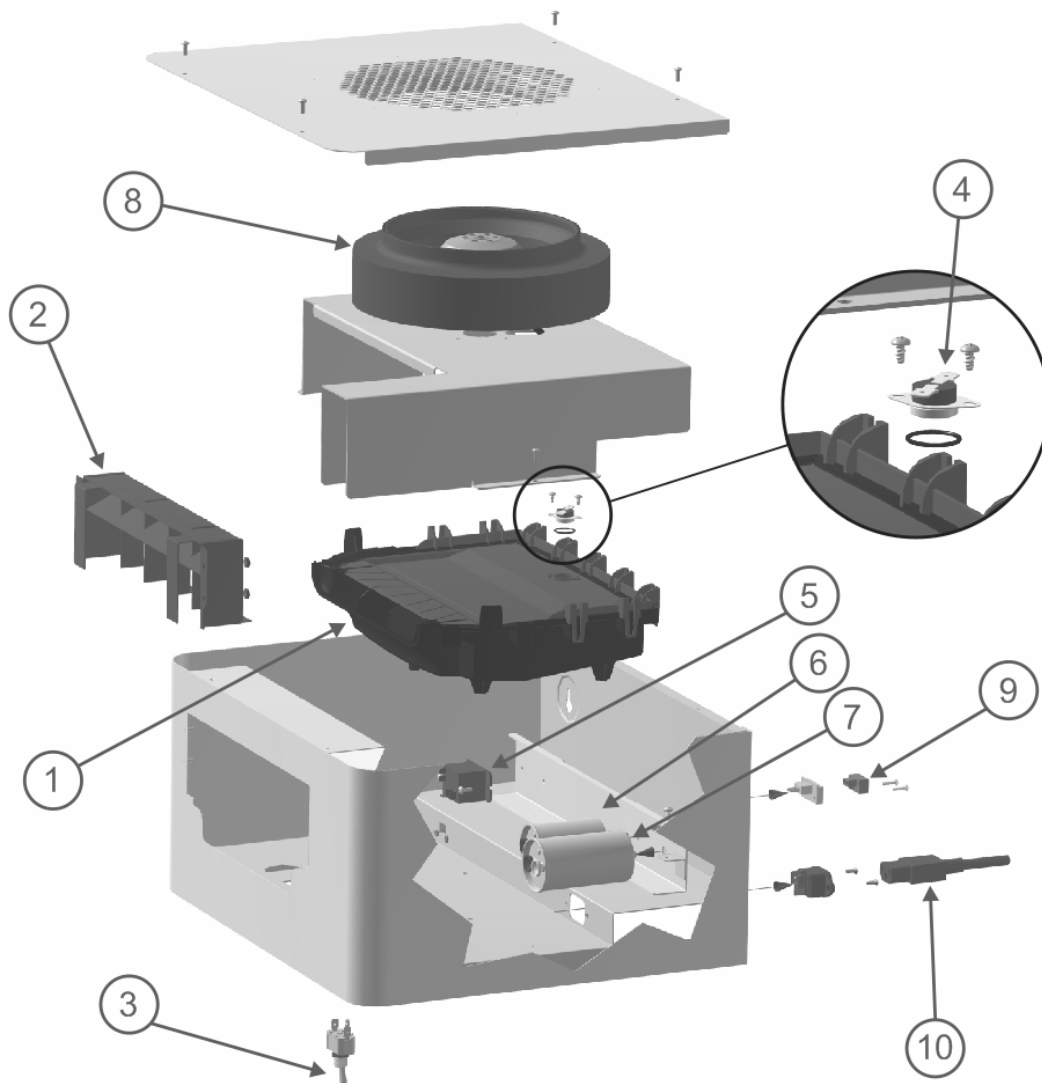
The RM-BP and NH-EL Humidifier have been designed to require very little maintenance. Regular maintenance consists of checking the humidifier to insure it is in good condition, cleaning out the intake grill of dust and inspecting wiring on inside of blower pack.

Performance of the Fan may become reduced temporarily if significant dust build-up occurs on both RM-BP and NH-EL Space models. It is recommended to take a vacuum or similar to remove all dust build up on the top of the humidifier as accumulation occurs throughout the span of a year.

## Troubleshooting

Symptom	Cause	Corrective Action(s)
Blower not operating <b>Note:</b> Blower pack does not turn on unless steam is being produced by the humidifier.	1 No power to blower pack	1a Check power connection. 1b Check NH-EL fusing and Transformer
Steam coming out but blower pack not running	1 On/Off Thermostat not closing	2a Ensure Steam supplied to Blower Pack 2b Verify Wire continuity to temperature switch.
	2 Very High Ambient temperature	
NH-EL Humidifier not running with Blower Pack Warning: security loop Open	1 Security loop wiring missing between Blower Pack and NHEL low voltage terminal strip 2 No power to blower pack	1 Wire blower pack security loop to blower pack 2 Check power connection 3 Check security loop connection
Blower pack fan running, no steam output	1 Humidifier has just stopped humidifying, temperature sensor still hot 2 Very high ambient temperature	1 None, This is normal operation, the fan will stop once the temperature sensor cools

## Spare Parts

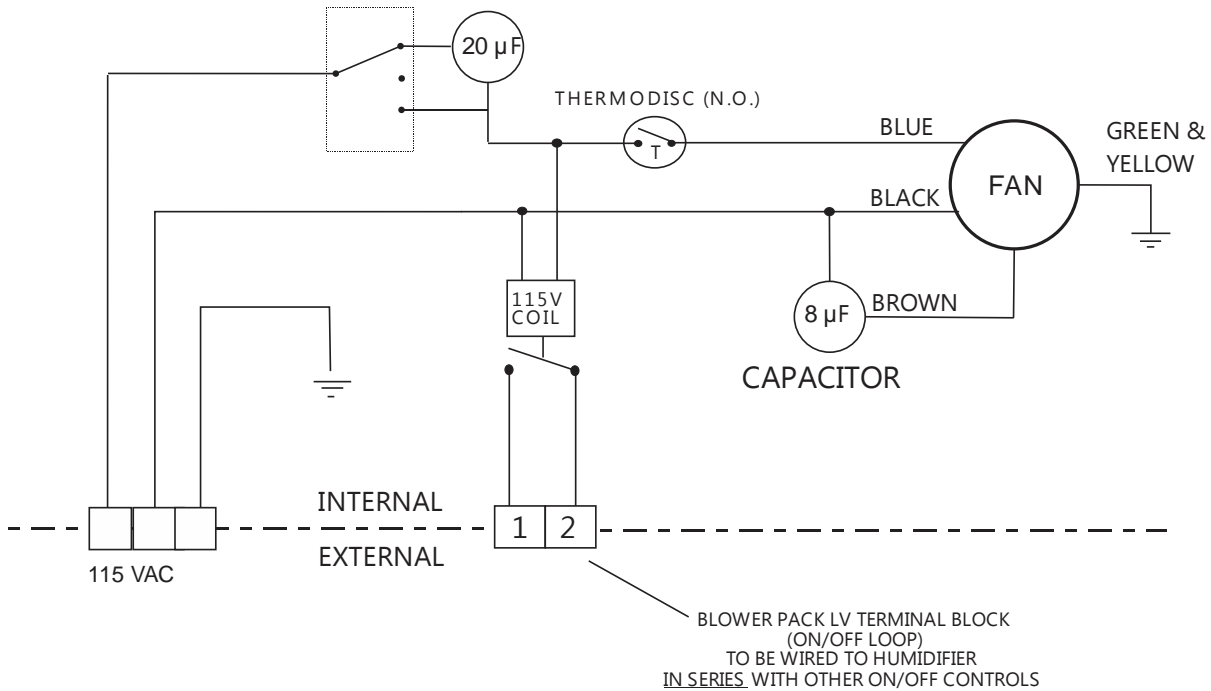


**Figure 15: Blower Pack Spare Parts**

**Table 6: Description of Parts**

Item	Part#	Description	Qty
1	2573805	Distributor Assembly	1
2	2573806	Diffuser Assembly	1
3	2573807	Switch Assembly	1
4	2573808	Thermostat Assembly	1
5	2573809	Relay Assembly	1
6	2573810	Capacitor 8uF (fastening nut included)	1
7	2573811	Capacitor, 20uF (fastening nut included)	1
8	2573812	Fan Assembly	1
9	2573813	Spare fastener kit (included low voltage connector)	1
10	2573814	Power Cable (connector and cable together)	1

## REMOTE MOUNTED BLOWER PACK



WIRING DIAGRAM - Blower Pack  
INTERNAL WIRING/EXTERNAL CONNECTIONS  
Wiring Diagram 2573599 Rev.A June.18, 2013



# Warranty

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Nortec Humidity Inc. and/or Nortec Humidity Ltd. (hereinafter collectively referred to as THE COMPANY), warrant for a period of two years after installation or 30 months from manufacturer's ship date, whichever date is earlier, that THE COMPANY's manufactured and assembled products, not otherwise expressly warranted are free from defects in material and workmanship. No warranty is made against corrosion, deterioration, or suitability of substituted materials used as a result of compliance with government regulations.

THE COMPANY's obligations and liabilities under this warranty are limited to furnishing replacement parts to the customer, F.O.B. THE COMPANY's factory, providing the defective part(s) is returned freight prepaid by the customer. Parts used for repairs are warranted for the balance of the term of the warranty on the original humidifier or 90 days, whichever is longer.

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

THE COMPANY's limited warranty on accessories, not of the companies manufacture, such as controls, humidistats, pumps, etc. is limited to the warranty of the original equipment manufacturer from date of original shipment of humidifier.

THE COMPANY makes no warranty and assumes no liability unless the equipment is installed in strict accordance with a copy of the catalog and installation manual in effect at the date of purchase and by a contractor approved by THE COMPANY to install such equipment.

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

THE COMPANY makes no warranty and assumes no liability whatsoever for damage resulting from freezing of the humidifier, supply lines, drain lines, or steam distribution systems.

THE COMPANY retains the right to change the design, specification and performance criteria of its products without notice or obligation.

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