

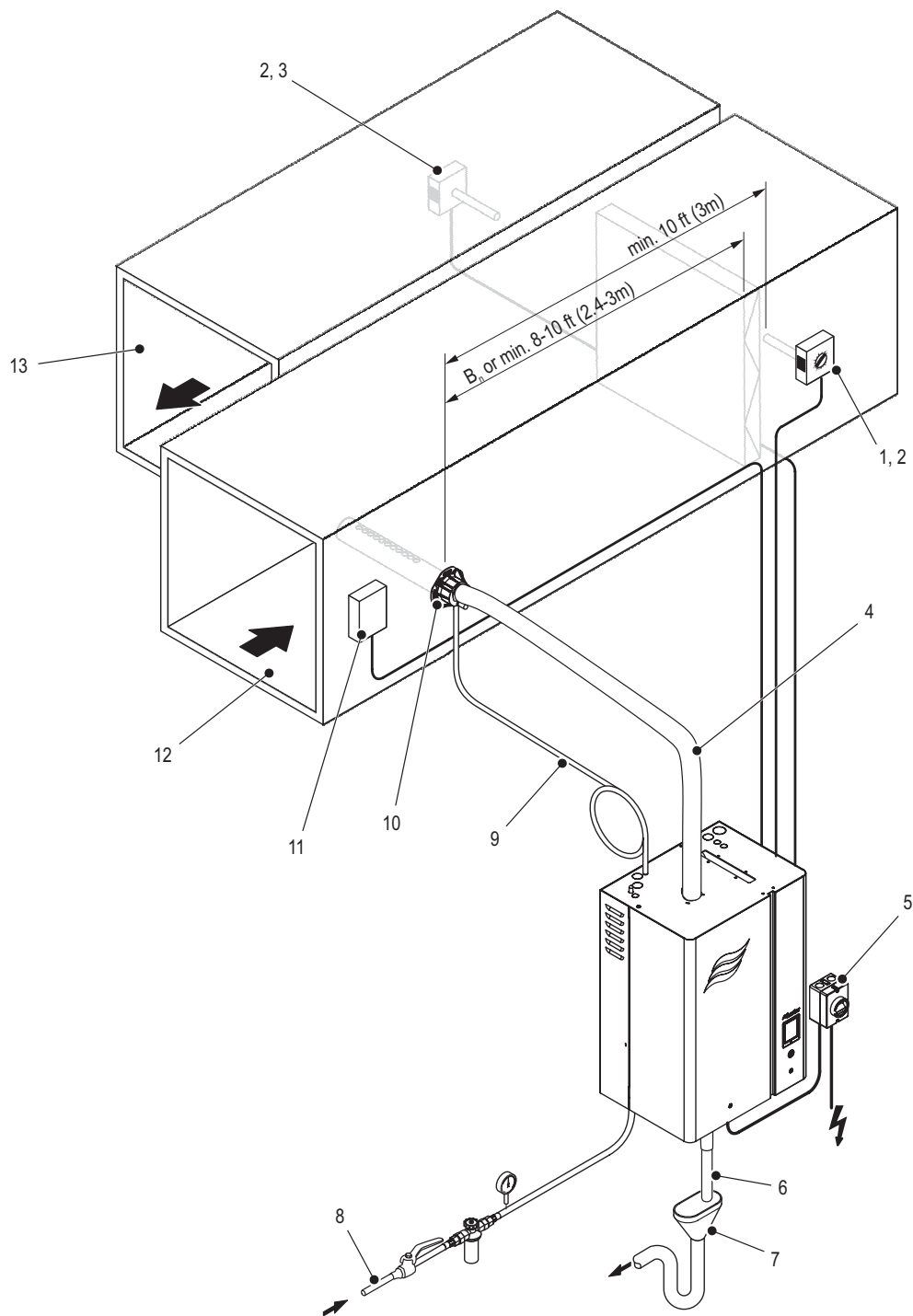
Quick Start Installation Guide

Nortec EL Electrode Steam Humidifier



Overview	2
Mounting	3
Installation Requirements	3
Standard Mounting	4
Steam Distribution	5
Installation Requirements	5
Plumbing	6
Water and Drainage Requirements	6
Electrical	7
Installation Requirements	7
External Power Connections	7
Safety Chain and Control Signal Connections	8

Overview

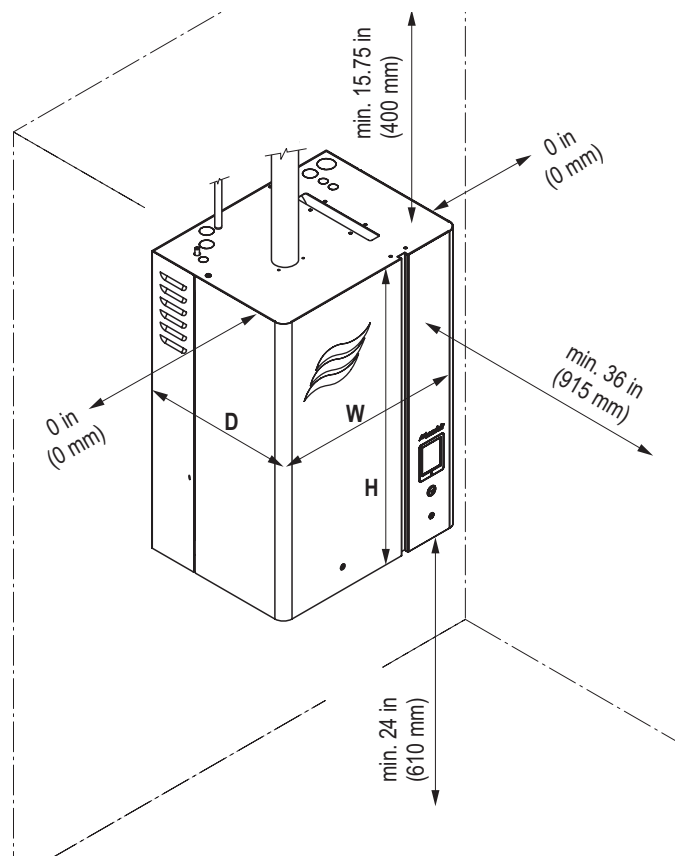


- 1 High limit On/Off humidistat (external safety chain)
- 2 Humidity sensor or modulating humidistat (used for control of the space in the return duct, high limit in the supply duct)
- 3 On/Off humidistat (used for humidity control)
- 4 Steam line
- 5 Electrical disconnect, high voltage supply
- 6 Drain line
- 7 Air gap funnel (with optional trap)
- 8 Water supply
- 9 Condensate line
- 10 Steam distributor
- 11 Air proving switch (external safety chain)
- 12 Supply air duct
- 13 Return air duct

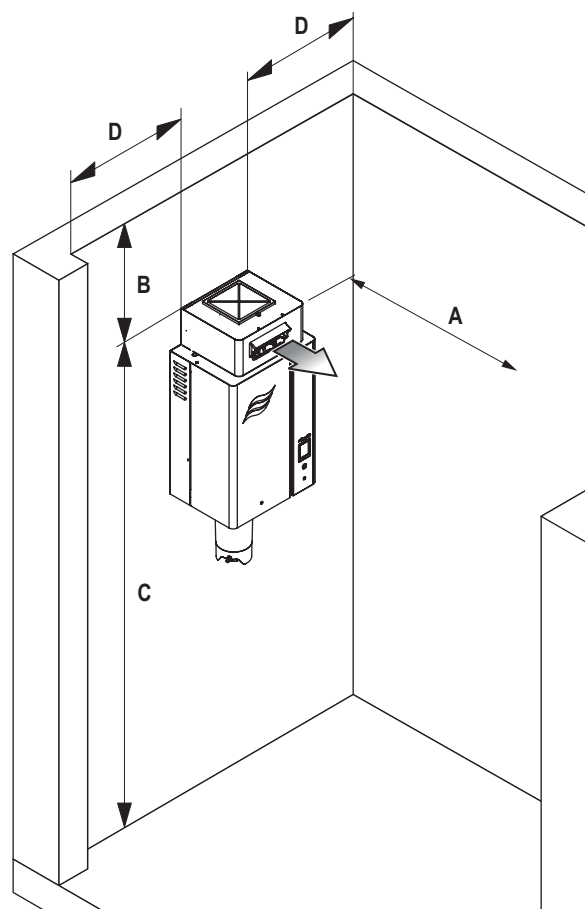
Mounting

Installation Requirements

1. The location of the humidifier depends largely on the steam distribution system. The required minimum clearances are shown on the right. The table below shows the required minimum clearances for a Nortec EL Space humidifier.
2. When choosing the location of the humidifier, install it as close as possible to the steam distributor to minimize heat loss through the steam line.
3. When possible, install the humidifier below the steam distributor. Make sure that the selected location permits proper routing of steam and condensate lines.
4. Allow adequate clearances around the humidifier for ease of maintenance. Although the Nortec EL humidifier requires no side clearance, Nortec recommends minimum clearances of 6 in (150 mm) on the sides. A clearance of 24 in (610 mm) between the humidifier and the ground is required. Observe all local and national installation codes. Nortec is not responsible for any installation code violations.
5. Do not mount the humidifier on hot surfaces, or surfaces that can freeze, or near vibrating components, or on the floor. In addition, the mounting surface must be able to withstand temperatures of 140-158°F (60-70°C) that can be generated during operation of the humidifier.
6. The humidifier should be mounted on a wall or other suitable surface that offers a sufficiently high load-bearing capacity.
7. The Nortec EL humidifier should be installed in a drip-proof location within buildings, where the ambient temperature is 41-104°F (5-40°C) and the relative humidity is 5-95% (non-condensing).



Minimum Clearances – Nortec EL Space Humidifier							
Capacity	5 lb/h (2.3 kg/h)	10 lb/h (4.5 kg/h)	20 lb/h (9 kg/h)	30 lb/h (13.6 kg/h)	50 lb/h (22.7 kg/h)	75 lb/h (34.0 kg/h)	100 lb/h (45.4 kg/h)
Low Speed							
Dimension "A" (minimum)	9 in (0.23 m)	18 in (0.46 m)	75 in (1.91 m)	86 in (2.19 m)	174 in (4.42 m)	189 in (4.81 m)	248 in (6.3 m)
Dimension "B" (minimum)	12 in (0.31 m)					48 in (1.22 m)	84 in (2.14 m)
High Speed							
Dimension "A" (minimum)	6 in (0.16 m)		60 in (1.53 m)	71 in (1.81 m)	132 in (3.36 in)	153 in (3.89 m)	218 in (5.54 m)
Dimension "B" (minimum)	12 in (0.31 m)						
Dimension "C" (minimum)	86.5 in (2.2 m)						
Dimension "D" (suggested)	12 in (0.31 m)					30 in (0.77 m)	



Mounting continued...

Standard Mounting

1. Locate 2×4 wooden studs or equivalent support in the mounting surface, and mark the attachment points "A" and "B" at the desired position with the help of a level.
2. Install 1/4×2 in lag bolts (supplied by others) at attachment points "A". Use longer screws if going through drywall or other structural material into the mounting surface. Allow the heads of the screws to extend 0.25 in (5 mm) from the mounting surface so that the humidifier can be installed on the bolts.
3. Remove the door panels from the humidifier.
4. Carefully raise and install the humidifier onto the installed lag bolts.
5. Align the humidifier with the help of a level, then tighten the lag bolts.
6. Install additional lag bolts (supplied by others) into the mounting surface at attachment points "B", and fasten securely.
7. Reinstall the door panels, and fasten them securely.

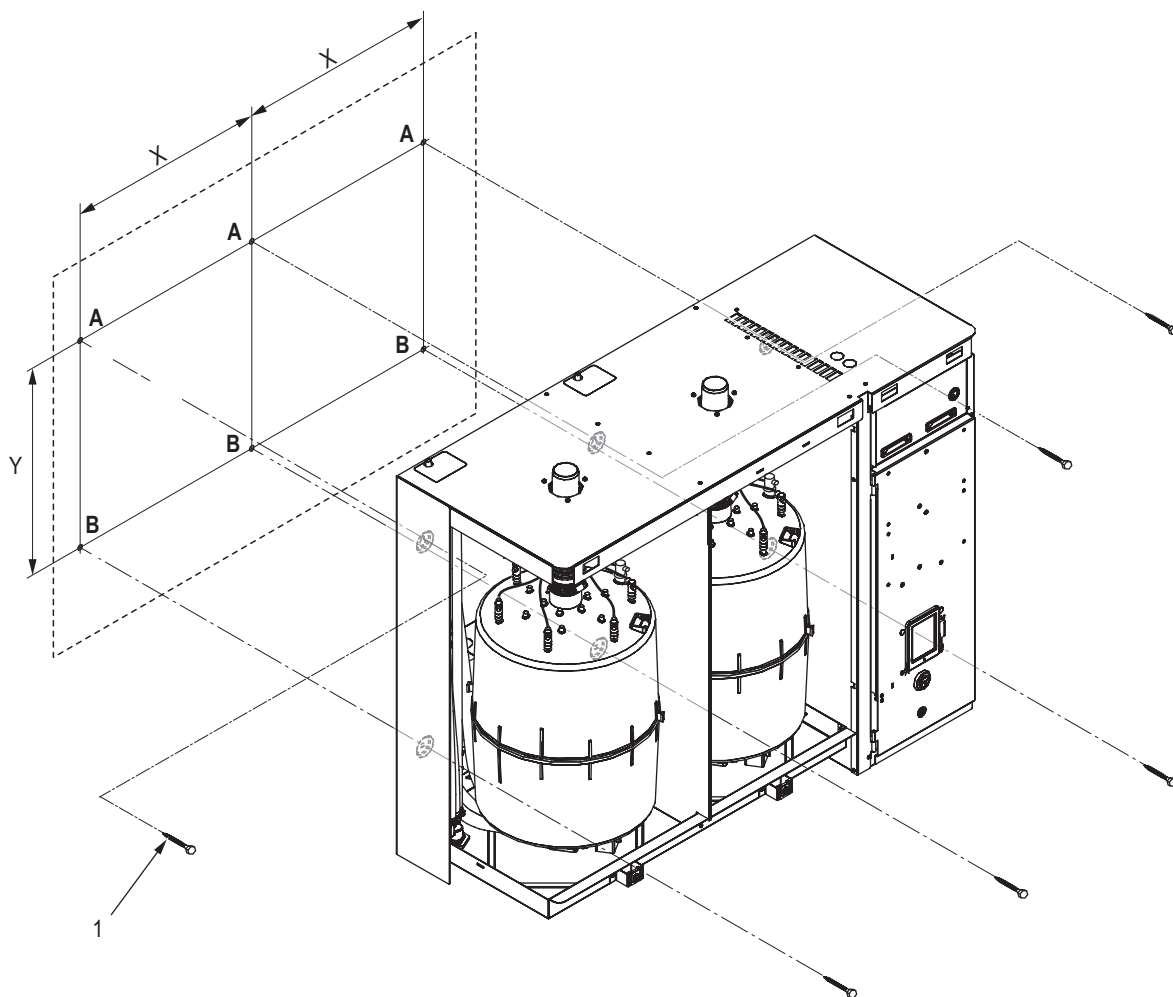


WARNING!

Heavy object – risk of injury! The small humidifier weighs 45 lb (20 kg), and the large humidifier weighs 120 lb (54 kg). Use an appropriate lifting device, or request assistance to raise the humidifier into position.

Dimension	Housing Size		
	Small	Medium	Large
X	12.0 in (305 mm)	16.0 in (406 mm)	16.0 in (406 mm)
Y	17.6 in (446 mm)	20.7 in (526 mm)	16.8 in (426 mm)

Refer to "Mounting the Humidifier" in the Installation Manual (Nortec document number 2582302) for other mounting arrangements, including OSHPD (seismic) mounting arrangement.



Large Nortec EL humidifier shown.

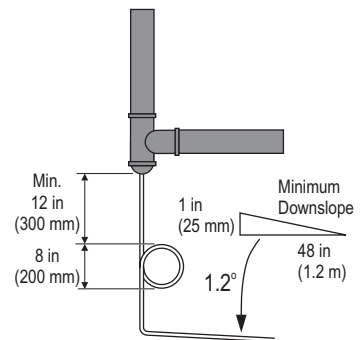
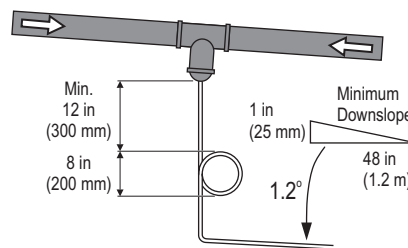
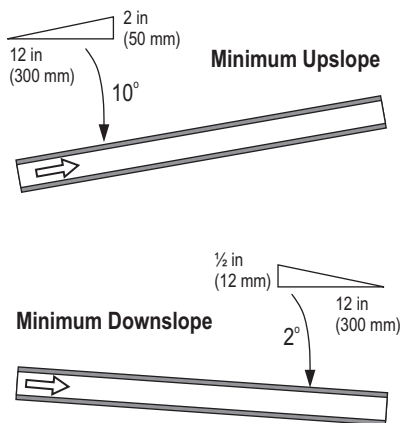
- 1 Lag bolt

Steam Distribution

Installation Requirements

1. Use steam line made of copper or stainless steel tube exclusively, or use a Nortec steam hose for short distances. Steam line made of any other material may adversely affect the operation of the humidifier, and will void the warranty. Refer to the table below for steam line sizing.
2. To prevent excessive backpressure in the steam cylinder, the steam line must not have any restrictions.
3. The steam line must run straight up from the humidifier minimum 12 in (300 mm) before any bends.
4. The steam line must have a constant slope – minimum upslope of 10°, or minimum downslope of 2°.
5. Do not merge steam lines, except at the steam distributor. Use a Nortec adaptor designed for the purpose.
6. Insulate the steam line with minimum 1 in (25 mm) pipe insulation.
7. Support the steam line so there is no load on the humidifier.
8. Install condensate lines at all low points and horizontal-to-vertical transitions in the steam line. The condensate line should always connect to a full size “Tee” connector, and have a minimum constant downslope of 1.2°. The trap should be located minimum 12 in (300 mm) below the connector, and have a minimum height of 8 in (200 mm).
9. Use 3/8 in (9.5 mm) Nortec condensate hose, or 1/4 in (6.5 mm) Med-L copper tube or 3/8 in (9.5 mm) stainless steel tube for condensate traps.
10. Install condensate traps every 15 ft (4.5 m) in the steam line.
11. Upon completion of installation, purge the steam and condensate lines to remove any contaminants or construction material.
12. Prime the condensate traps with water.

Refer to “Steam Line Connections” in the Installation Manual for other details.



Model	Steam Line Sizing			
	Maximum Equiv. Length	MED-L Copper Tube	Stainless Steel Tube	Steam Losses
EL005	7 ft (2 m)	3/4 in (20 mm)	7/8 in × 0.049 wall (22 mm × 1.25 mm wall)	0.06 lb/h/ft (0.09 kg/h/m)
EL010	12 ft (3.5 m)			
EL020	17 ft (5 m)			
EL030	22 ft (6.5 m)	1-1/2 in (40 mm)	1-3/4 in × 0.065 wall (45 mm × 1.65 mm wall)	0.11 lb/h/ft (0.18 kg/h/m)
EL050	43 ft (13 m)			
EL075 EL100	47 ft (14 m)			
EL150* EL200*	50 ft (15 m)	1-1/2 in (40 mm)	1-3/4 in × 0.065 wall (45 mm × 1.65 mm wall)	
Nortec Steam Hose				
EL005- EL030	10 ft (3 m)	P/N 1328810 – 7/8 in (22 mm)		0.1 lb/h/ft (0.15 kg/h/m)
EL050- EL200	10 ft (3 m)	P/N 1328820 – 1-3/4 in (45 mm)		0.15 lb/h/ft (0.22 kg/h/m)



WARNING!

Risk of serious injury or damage to equipment!
Restrictions in the steam line can cause excess build-up of backpressure which can result in serious burn injuries or damage to equipment. Backpressure should not exceed 5.5 in H₂O (1.36 kPa).

* Use a single steam line for each steam cylinder. Do not combine lines except at a distributor, and only if using the steam cylinders in parallel.
Refer to the Installation Manual for over-sized steam lines for longer steam runs.

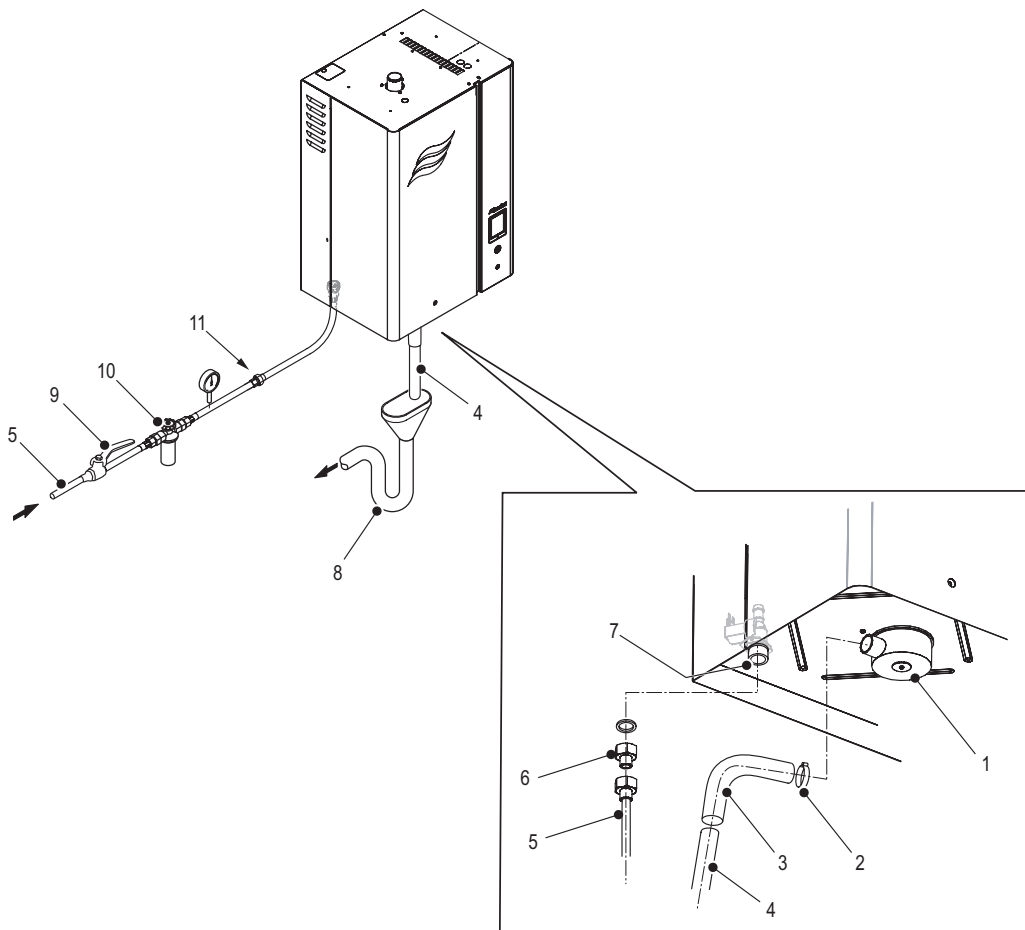
Water and Drainage Requirements

1. All water supply and drain connections must be installed to local plumbing codes.
 2. The water supply line should be minimum 1/2 in (12.7 mm) in diameter, with a shutoff valve and a union fitting.
 3. The water supply to the humidifier must be cold potable drinking water (and not RO or DI water). The conductivity of the water should be 150-1200 micro-seimens/cm (hardness 0-12 gpg, when Silica is between 0-4 ppm, 0-3 gpg when Silica is between 4-14 ppm; Silica content above 14 ppm is not recommended). pH should be between 7 and 7.5.
 4. The water supply should be filtered to 5 µm (optional, but recommended), surge-free and pressure regulated to 30-80 psig (207-550 kPa). Water temperature should be 34-104°F (1-40°C).
 5. The air gap funnel should be located away from the control cabinet to keep any rising steam from damaging the electrical components in the cabinet. The drain piping should have a minimum internal diameter of 7/8 in (22 mm).
 6. The flexible bent hose exiting the humidifier should be connected to a drain line with a minimum internal diameter of 7/8 in (22 mm) and secured with clamps.
 7. The drain line should be as short as possible, and have a constant minimum downslope of 1 in/48 in (1.2°) to the funnel without touching its sides or bottom. Use stainless steel or plastic pipe suitable for temperatures up to 212°F (100°C).
 8. Drain lines from large humidifiers with dual steam cylinders must empty into separate air gap funnels before connecting to the drain.
 9. Upon completion of installation, flush the water supply and drain lines to clear out any debris in the lines. Check the strainer in the fill valve to ensure it is clear of all debris.
- Refer to "Water Connections" in the Installation Manual for other details.



CAUTION!

Risk of damage to the plastic threads of the fill valve. Hand-tighten the NPT adaptor to the fill valve.



- | | | | |
|---|---|----|---|
| 1 | Drain canal, 1-3/16 in (30 mm) O.D. | 7 | Inlet, fill valve (3/4 in BSPP plastic threads) |
| 2 | Hose clamp (supplied) | 8 | Air gap funnel (and optional trap) |
| 3 | Flexible bent hose (supplied) | 9 | Shutoff valve |
| 4 | Drain line, minimum 7/8 in (22 mm) I.D. | 10 | Filter, 5 µm (optional, but recommended) |
| 5 | Water supply line, minimum 1/2 in (12.7 mm) | 11 | Union fitting |
| 6 | Adaptor, 3/4 BSPP to 1/2 in NPT (supplied) | | |

Installation Requirements

1. All wiring must only be done by a licensed electrician in accordance with the wiring diagram (refer to the Installation Manual), and local and national codes.
2. An external dedicated fused disconnect switch must be installed close to the unit to allow for power interruption during servicing and/or maintenance. The fusing must not exceed the maximum circuit protection shown on the specification label. The optional internal fusing is not a substitute for an external disconnect switch.
3. The humidifier should only be connected to primary power (main power) after all installation work has been completed.
4. All cables must enter the control cabinet in the humidifier through appropriate cable glands or grommets, and must be properly secured to prevent fraying, or become a tripping hazard.



DANGER!

Risk of electric shock! The Nortec humidifier is mains powered, and should only be wired by a licensed electrician.



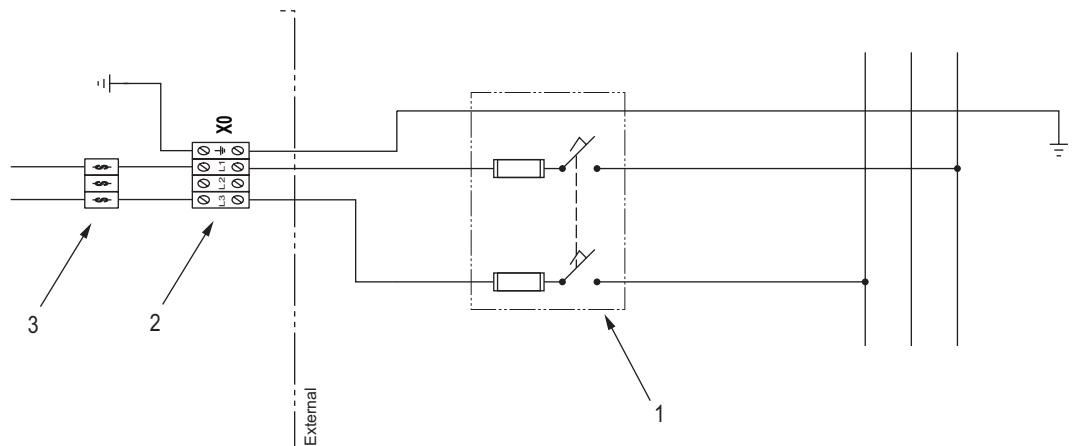
CAUTION!

Risk of damage to electronic components in the control cabinet due to ESD (electrostatic discharge). Refer to ANSI/ESD-S20.20 for appropriate measures to prevent damage to electronic components.

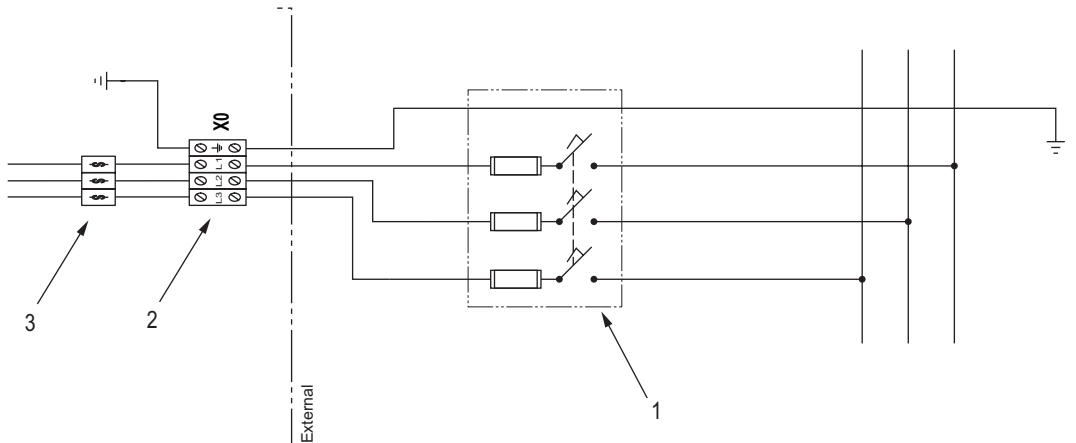
Refer to "Electrical Connections" in the Installation Manual for other details.

External Power Connections

Single-phase



Three-phase



- 1 External fused disconnect switch
- 2 Terminal block, power supply (X0)
- 3 Internal primary fuse, optional

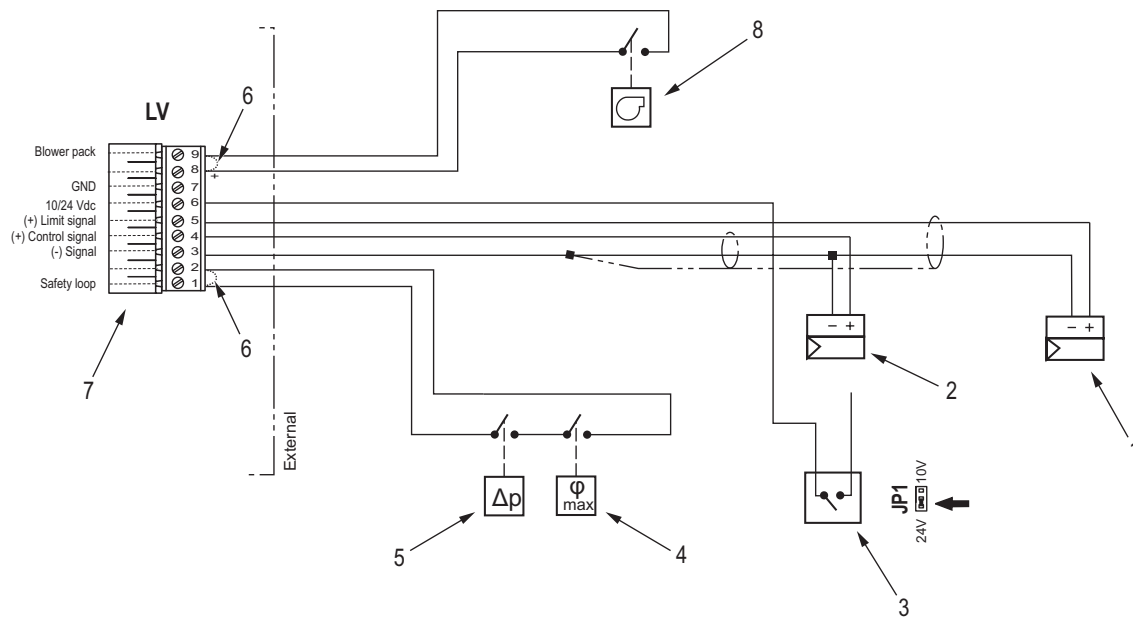
Safety Chain and Control Signal Connections

1. If a blower pack is installed, then connect it to terminal points "8" and "9" on the low voltage terminal strip. Make sure that no other wires are connected to these terminal points. If using multiple blower packs, make sure that they are connected in series. Install a jumper between terminal points "8" and "9" if a blower pack is not used.
2. Connect external monitoring devices (for example, high limit humidistat, air proving switch, etc.) in series to terminal points "1" and "2" on the low voltage terminal strip. Install a jumper between terminal points "1" and "2" if external monitoring devices are not used (not recommended).
3. Connect an external humidity sensor input or direct demand modulating input to terminal points "3" and "4" on the low voltage terminal strip. Do not connect multiple modulating signals to the same modulating input on the humidifier. If necessary, a second modulating signal can be connected to terminal point "5" and "3", using terminal point "3" as common. **Note:** If the cable shielding is already connected to a potential or a grounded conductor, do not connect it to terminal point "3".
4. If a 24 V On/Off humidistat is used, connect the input to the terminal points "4" and "6" on the low voltage terminal strip. When connecting a 24 V On/Off humidistat, set the jumper JP1 on the driver board to 24 V (so that terminal point "6" will output 24 VDC).
5. If an external On/Off input is used to control the humidifier, connect it to connector X11 on the driver board.



CAUTION!

Risk of damage to internal component. DO NOT apply voltage to low voltage terminal strip terminal points "1" and "2" through the contacts of the external On/Off devices.



- 1 Modulating demand or humidity sensor signal (additional)
- 2 Modulating demand or humidity sensor signal
- 3 24 V On/Off humidistat (jumper JP1 must be set to 24 V)
- 4 High limit humidistat
- 5 Air proving switch
- 6 Jumper
- 7 Low voltage terminal strip
- 8 Blower pack

All information contained in this Quick Start Guide is for general information purposes only. For complete Nortec installation/operation recommendations for your Nortec equipment, please refer to the installation manual for your specific system, accessories, and components.

All electrical connections must be installed in accordance with local and national electrical code requirements by a licensed electrician.

All water supply and drain line connections must be installed in accordance with local plumbing codes by a licensed plumber.

Nortec 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.



USA 835 Commerce Park Drive, Ogdensburg, NY 1366-2209

Canada 2740 Fenton Road, Ottawa, Ontario K1T 3T7

1.866.NORTEC1

nortec@humidity.com

