

**DELETE THIS PAGE AFTER PRINTING**  
**OR GENERATING PDF**



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



# Nortec SAM-e

## Installation and Operation Manual

Includes installation, operation maintenance and troubleshooting information for your Nortec SAM-e and Nortec Mini SAM-e Short Absorption Manifold.

***Thank you for choosing Condair.***

INSTALLATION DATE (MM/DD/YYYY)

MODEL #

SERIAL #

### **Proprietary Notice**

This document and the information disclosed herein are proprietary data of CONDAIR LTD. Neither this document nor the information contained herein shall be reproduced, used, or disclosed to others without the written authorization of CONDAIR LTD., except to the extent required for installation or maintenance of recipient's equipment. All references to the Condair name should be taken as referring to CONDAIR LTD.

### **Liability Notice**

Condair 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 Condair.

### **Copyright Notice**

Copyright 2020, CONDAIR LTD. All rights reserved.

# Contents

---

## **2 Introduction**

- 2 Location of Humidifier's Manifold in an Air Conditioning System
- 4 Identify your Components
- 5 How to Use this Manual

## **7 Nortec SAM-e In-Duct**

## **15 Installation in Vertical Duct**

## **17 Nortec Mini SAM-e Installation Procedures**

## **21 Plumbing**

- 22 Nortec SAM-e with Pressure Steam
- 24 Nortec Mini SAM-e with Pressurized Steam
- 29 Nortec SAM-e with Atmospheric Steam
- 31 Nortec Mini SAM-e with Atmospheric Steam

## **33 Atmospheric Steam Lines**

- 34 Plumbing
- 34 Atmospheric Nortec SAM-e Steam Lines
- 39 Length of Steam Line Runs
- 39 Material for Steam Lines
- 40 Atmospheric Nortec SAM-e Condensate Drainage
- 41 Steam Lines and Condensate Returns

## **45 Insulated Nortec SAM-e & Nortec Mini SAM-e**

- 46 Insulation
- 49 Nortec SAM-e Insulation Retrofit
- 52 Nortec Mini SAM-e Insulation Retrofit

## **55 Troubleshooting, Maintenance, Spare Parts**

**CAUTION: Servicing**

- Disconnect main power before any servicing.
- 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.
- Condair 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 Condair.

**CAUTION: Plumbing**

- Plumbing to be performed by a licensed plumber.
- Drain water from humidifier 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.
- The Nortec RH2 produces steam at atmospheric pressure no devices which could block steam output should be connected to the steam outlet.
- Steam lines must be installed so that no restriction can produce backpressure in the humidifier.
-

# Introduction

## Receiving and Unpacking Equipment

Check packing slip to ensure ALL material has been delivered. Each humidifier may be shipped in more than one box.

All material shortages are to be reported to CONDAIR within 48 hours from receipt of goods. CONDAIR assumes no responsibility for any material shortages beyond this period.

Inspect boxes for damage and note on shipping waybill accordingly.

After unpacking, inspect equipment for damage. If damage is found, notify the shipper promptly.

All CONDAIR products are shipped on an F.O.B. factory basis. Any and all damage, breakage, or loss claims are to be made to the shipping company.

## Location of Humidifier's Manifold in an Air Conditioning System

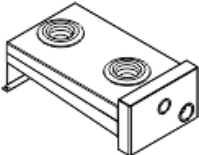
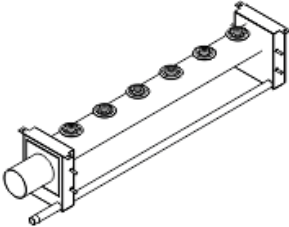
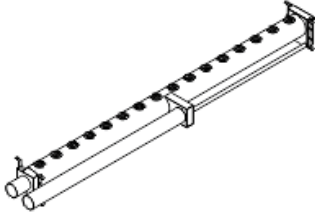



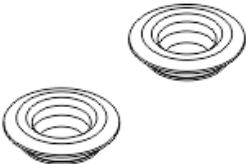
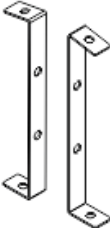
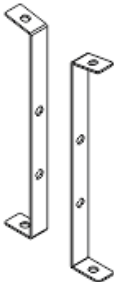
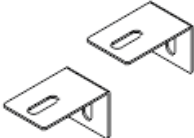
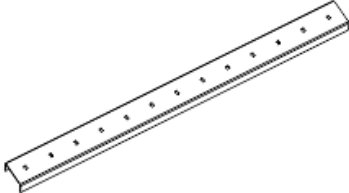
Although Nortec SAM-e distribution systems are designed to provide drip-less humidification, several operating factors related to steam supply may result in excess moisture or water collecting in steam-tube pipe with the potential for water damage. To ensure protection against water damage, best practice includes either a sealed section of duct or, preferably a drip-pan with drain installed underneath each unit. In addition, to facilitate maintenance checks and inspections, an inspection cover, inspection glass or service opening should be installed downstream.

For more information, see *Nortec SAM-e Engineering Manual* [1503529-X].

## Notes

Absorption distance: the distance between the Nortec SAM-e and the first obstruction (coil, elbow, damper, etc.) that steam may encounter. Traces of steam may pass the obstruction, but will not condense, leaving obstructions dry. If any of the duct or air-handling unit (AHU) conditions are changed between design and installation, calculated absorption distance may change. It is advisable to re-calculate absorption distance to ensure that Nortec SAM-e operates as intended. If changes are required, please contact factory for assistance.

# Identify your Components

<div>Header and Inlet</div> <div>    </div> <div> <div>Mini Header and Inlet</div> <div>SAM-e Header and Inlet</div> <div>SAM-e Dual Inlet Header</div> </div>		
<div>Steam Tube</div> <div>   </div> <div> <div>Standard</div> <div>Insulated</div> </div>	<div>Insertion stops</div> <div>  </div> <div>1 per tube</div>	<div>Coupling Seal</div> <div>  </div> <div>Factory installed</div>
<div>Mounting Bracket</div> <div>   </div> <div> <div>2 Small</div> <div>2 Large</div> </div>	<div>Gussets</div> <div>  </div> <div>2 per SAM-e</div>	<div>Top Bracket</div> <div>  </div> <div>1 per SAM-e</div>

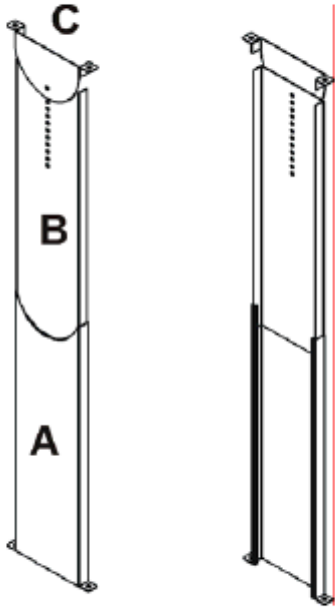
## Identify your Optional Components

### Mounting Frame

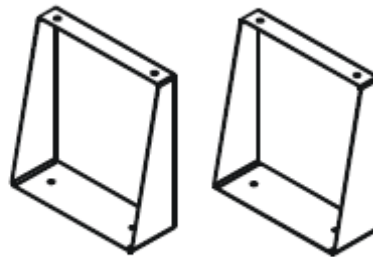
x2 Frame Base (A)

x2 Frame Side (B)

x2 Frame Pivot (C)



### Stand x2



### Fasteners Included:



5/16" Hex Bolt



1/4" Hex Bolt



5/16" Hex Locknut



5/16" Washer



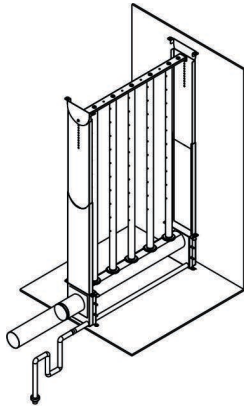
1/4" Washer



Gear Clamp



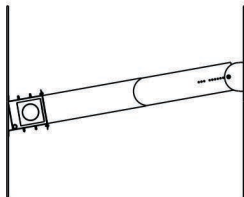
# How to Use this Manual



## **Nortec SAM-e - In Duct**

Section 2

Follow steps 1-8

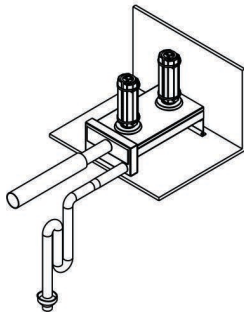


## **Nortec SAM-e - Vertical Duct Installation**

Section 4

Follow steps 1-8

Then refer to Section 3.



## **Nortec mini SAM-e**

Section 5

Follow steps 1-2

This section includes installation in vertical duct



## **Plumbing**

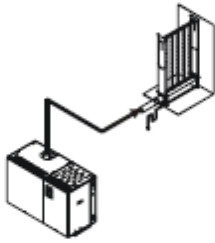
### **Section 6**

6A - Nortec SAM-e Pressure Steam

6B - Nortec mini SAM-e Pressure Steam

6C - Nortec SAM-e Atmospheric Steam

6D - Nortec mini SAM-e Atmospheric Steam



## **Steam Lines**

### **Section 7**



## **Nortec SAM-e Insulation**

### **Section 8**

8A - Nortec SAM-e Retrofit

8B - Nortec mini SAM-e Retrofit



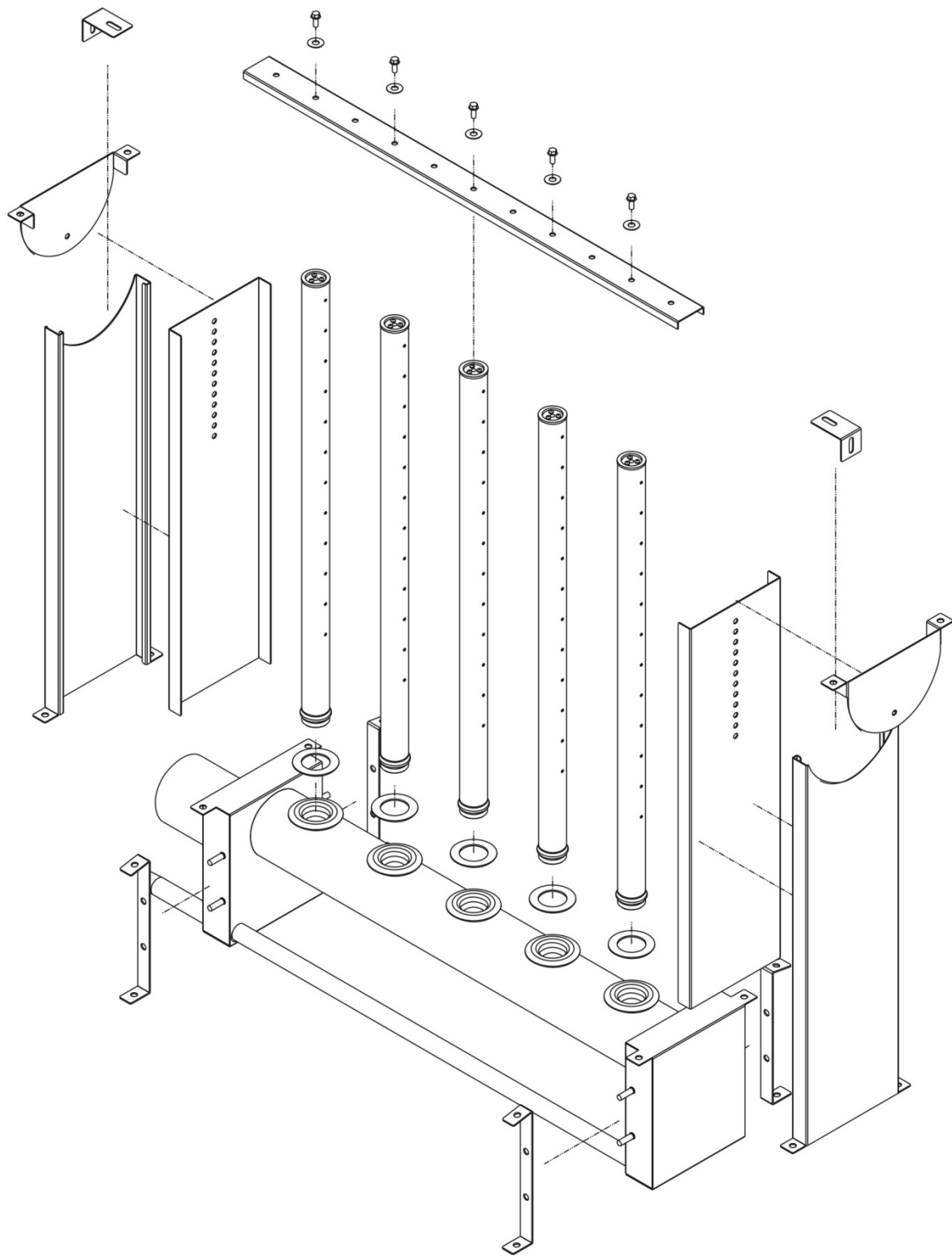
## **Troubleshooting, Spare Parts & Warranty**

### **Section 9**

# Nortec SAM-e In-Duct

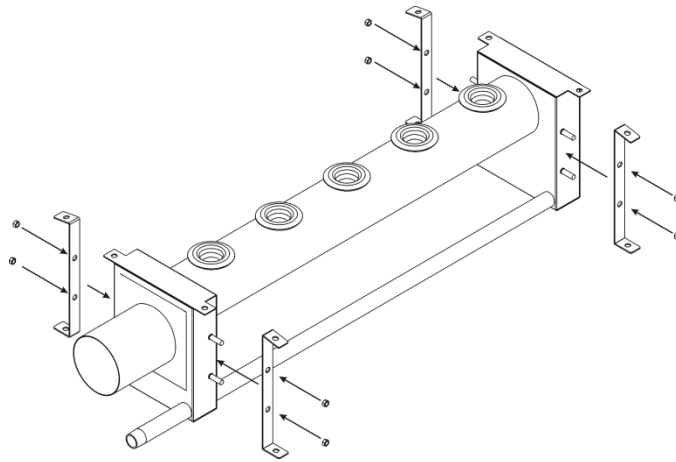
---

**Typical Nortec SAM-e Installation**



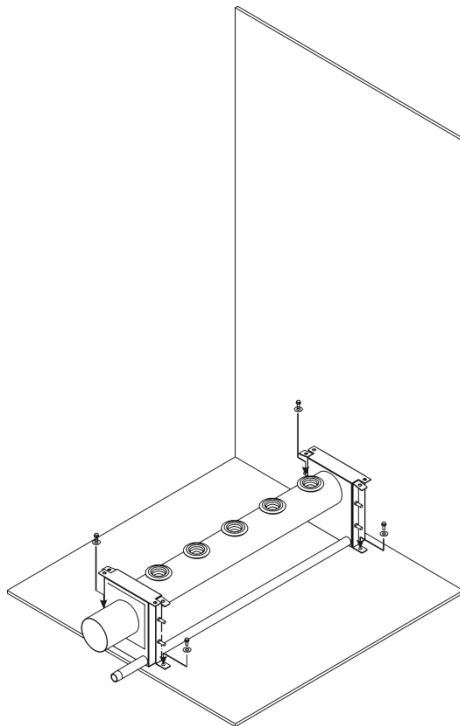
**General Nortec SAM-e Assembly Diagram**

# 1



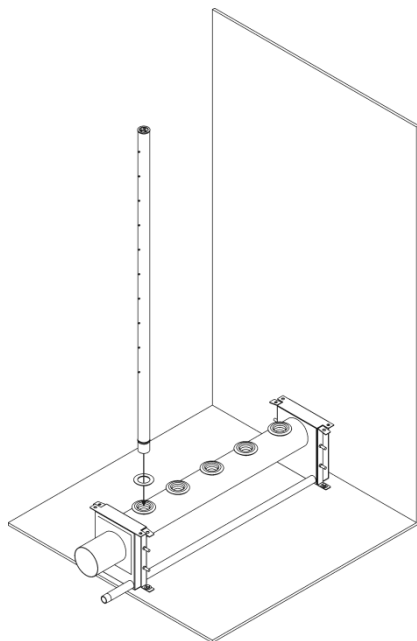
Fasten support brackets to header using 5/16" washers and 5/16" nylon lock-nuts.

# 2



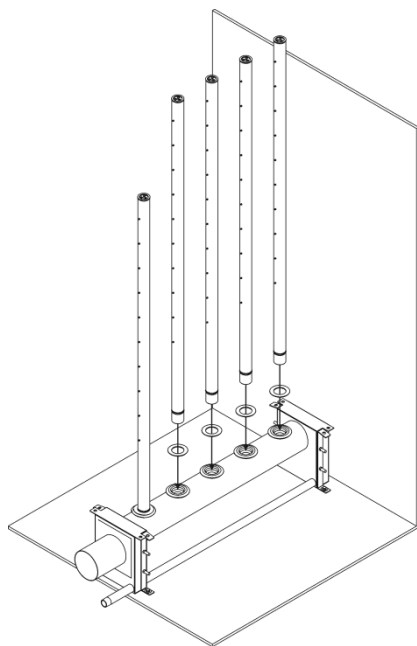
Place header on duct floor and drill 4 x 1/2" (12.7 mm) holes through floor.  
Secure header to floor using fasteners (by others).  
Use caulking to seal holes in ductwork.

# 3



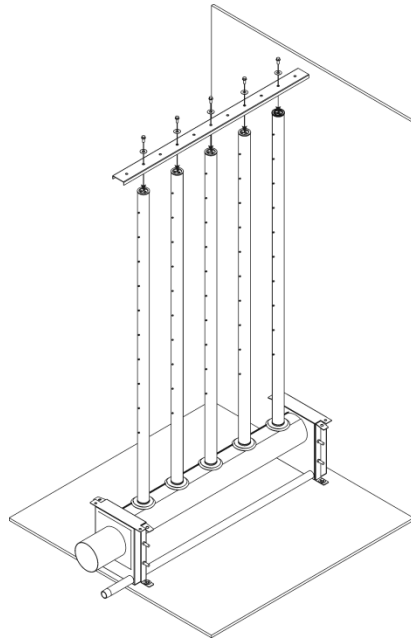
Insert tube into insertion stop washer and then into grommet.  
Wetting grommet with water will make assembly easier.  
Ensure nozzles face the sides of the duct (perpendicular to air flow).

# 4



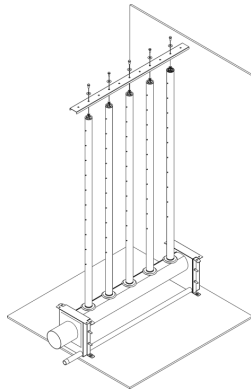
Assemble remaining tubes in same way.

# 5

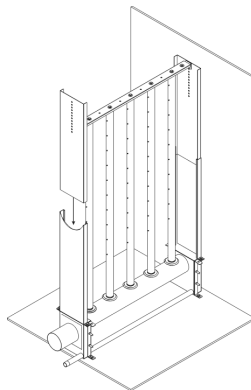


Attach tube support bracket using supplied 1/4" lock-washer and 1/4" hex screws.

# 6

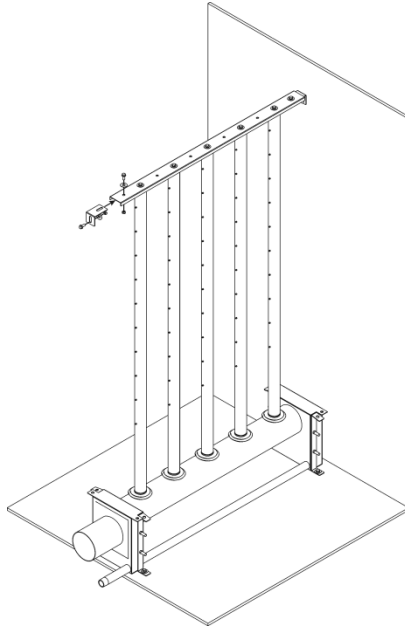


No mounting frame –  
proceed to step 6A.



Mounting frame –  
proceed to step 7

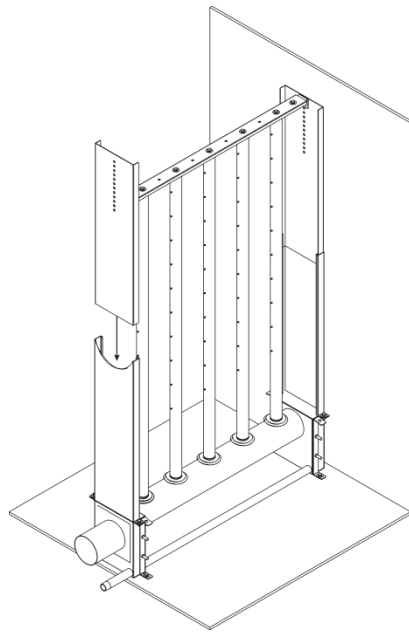
# 6A



If no mounting frame is supplied:  
Attach bracket flanges to tube support bracket using 5/16" screws,  
washers, and nylon lock-nut.  
Bolt flanges to duct wall using field-supplied 1/2"-fasteners.

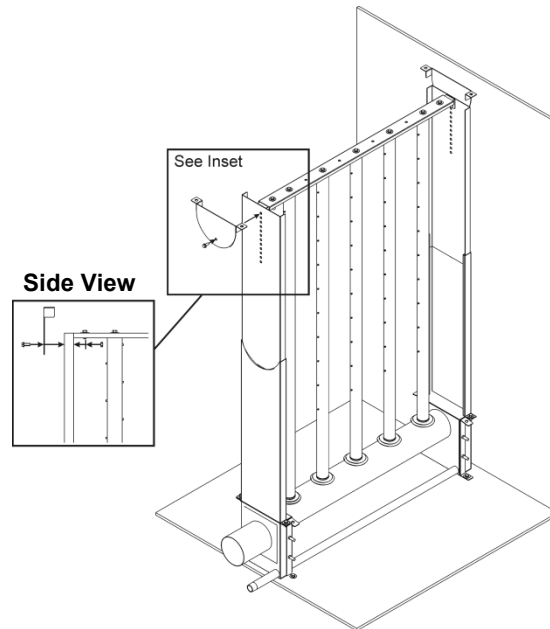


# 7



Slide frame sides into frame base.

# 8

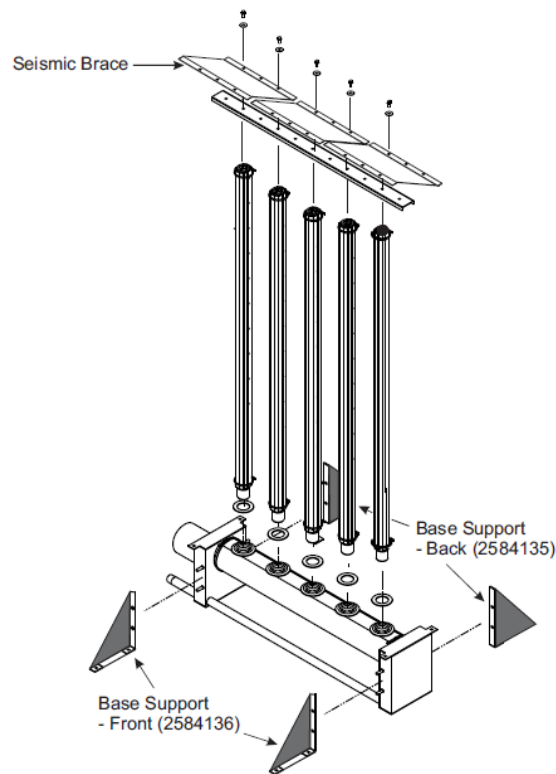


Attach Frame Pivot using 5/16" bolt, washer, and nylon lock-nut.

## Seismic installation for Nortec SAM-e floor mount

With the hardware kit that accompanies the Nortec SAM-e, the seismic brace is screw fastened to the Nortec SAM-e tubes (torque to 8-10 in/lbs) sandwiching the top rail between.

The other end of the seismic brace secures to the ceiling of the air handler with minimum 2 x 5/16" diameter grade 5 screws per span of seismic brace.



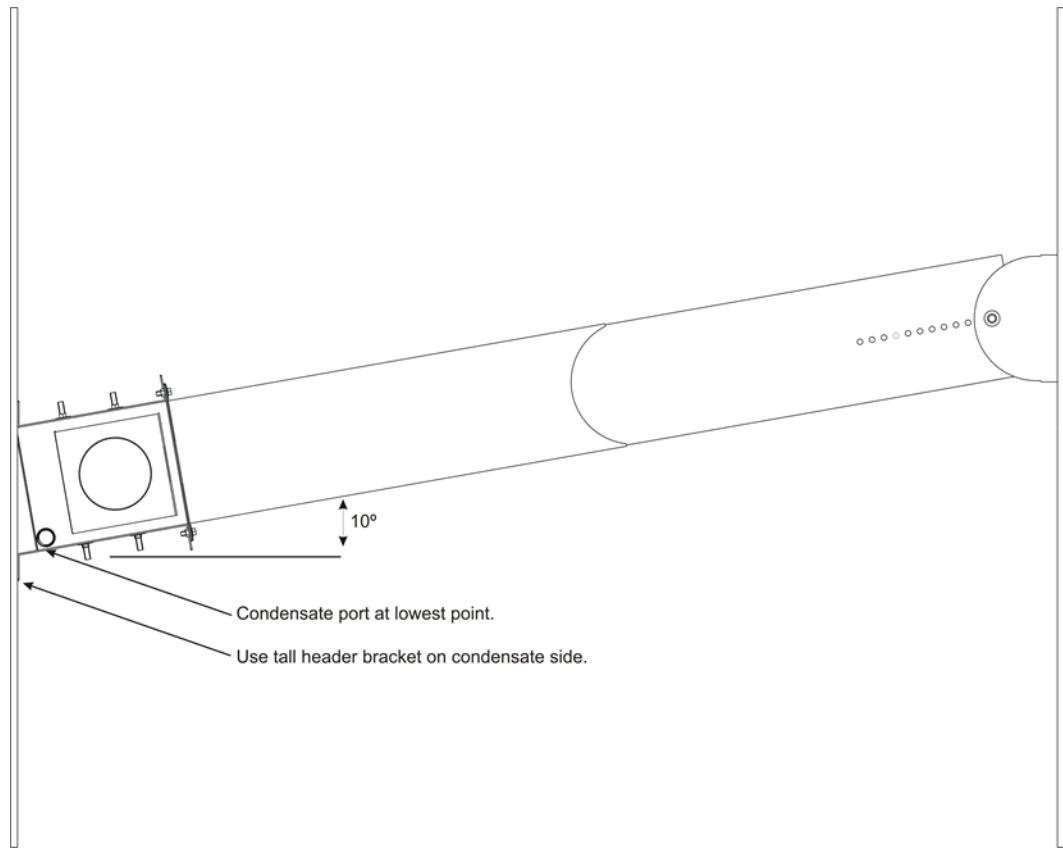
With the hardware kit that accompanies the Nortec SAM-e, fasten the base support to the Nortec SAM-e header with the supplied 5/16" self-locking bolts.

Secure the base support to the floor of the air handler with 2 x 5/16" diameter grade 5 screws per base support.

# Installation in Vertical Duct

---

## Vertical Duct Installation for Nortec SAM-e

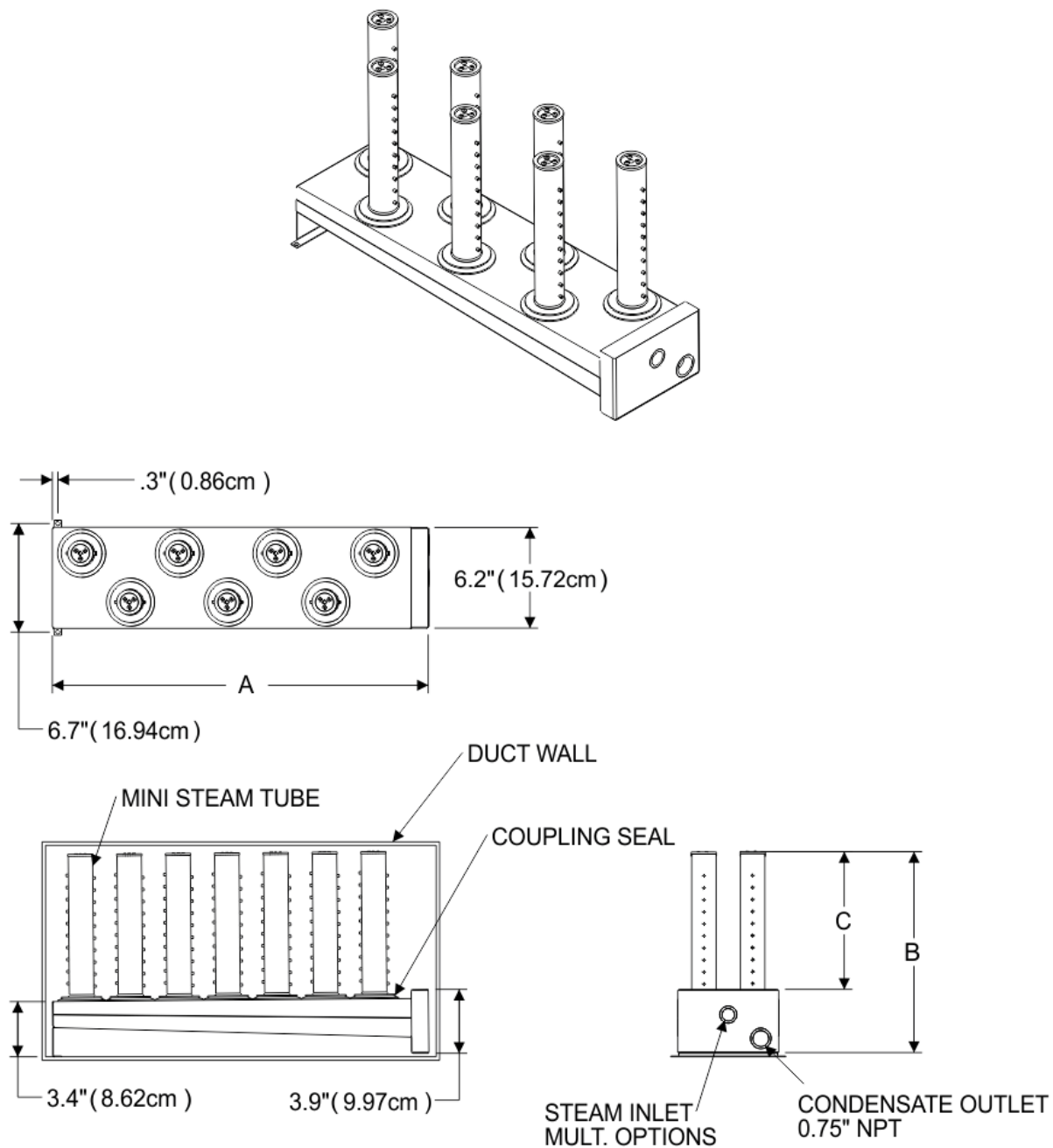


# 1

Complete assembly following Steps 1 through 8 on pages 9 through 13.  
Install complete assembly into duct at 10° angle. Fasten to duct walls using field-supplied fasteners.

# Nortec Mini SAM-e Installation Procedures

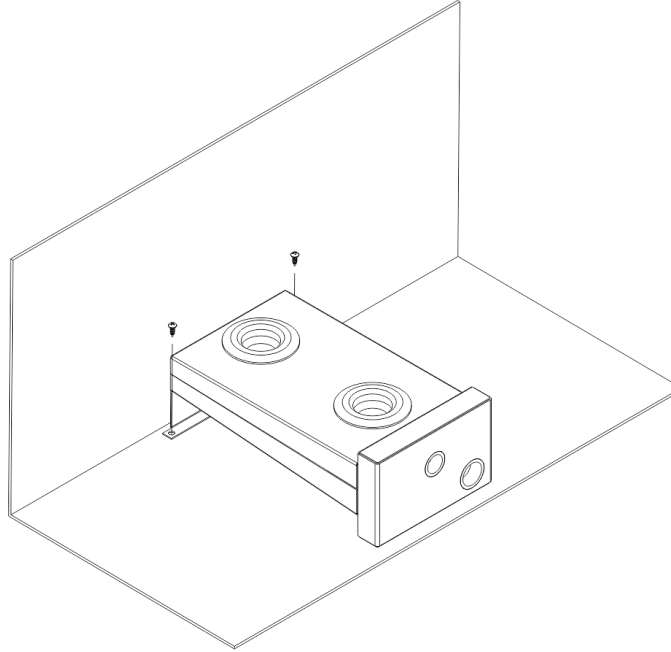
---



## Nortec Mini SAM-e Assembly General Installation

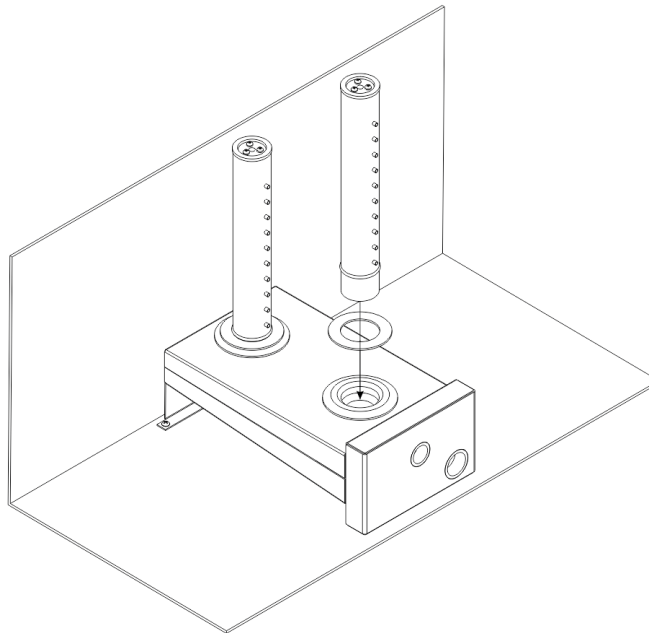
## Typical Nortec Mini SAM-e Installation

1



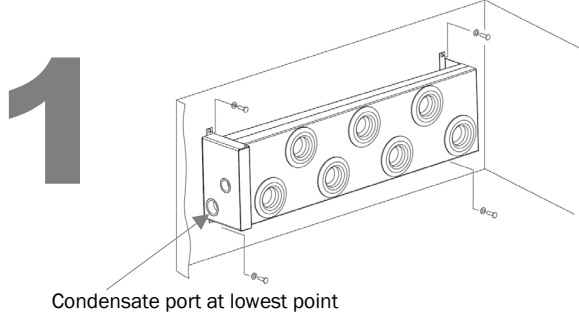
Place header into duct. Use supplied template to cut holes for steam and condensate parts. Attach header to duct using field-supplied fasteners.

2

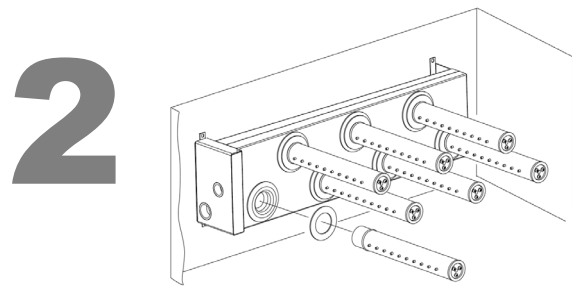


Insert steam tubes with Insertion stop washers, ensuring nozzles are perpendicular to airflow. Using water to wet the rubber grommets will facilitate installation. Seal all ductwork.

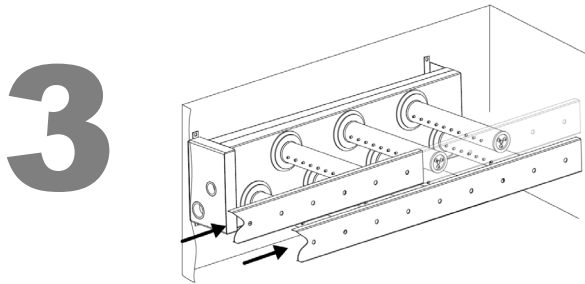
## Vertical Duct Installation for Nortec Mini SAM-e



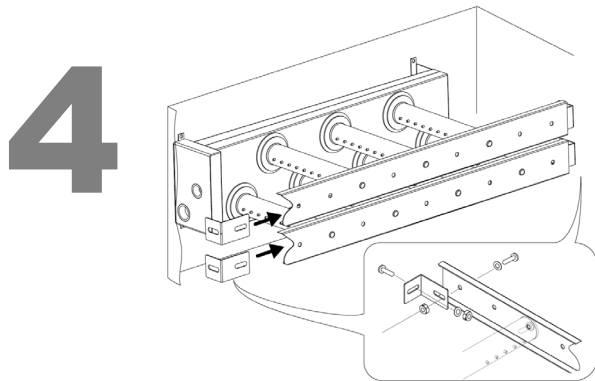
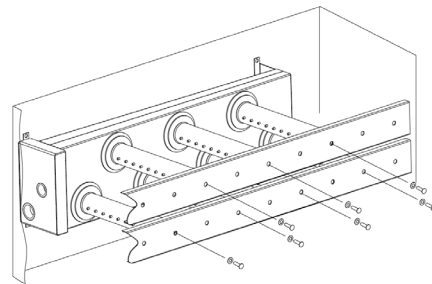
Place header into duct. Use supplied template to cut holes for steam and condensate parts. Attach header to duct using field-supplied fasteners.



Insert steam tubes with Insertion stop washers, ensuring nozzles are perpendicular to airflow. Using water to wet the rubber grommets will facilitate installation. Seal all ductwork.



Attach tube support bracket using supplied 1/4" lock-washer and 1/4" hex screws.



Attach bracket flanges to tube support bracket using 5/16" screws, washers, and nylon lock-nut. Bolt flanges to duct wall using field-supplied 1/2"-fasteners.

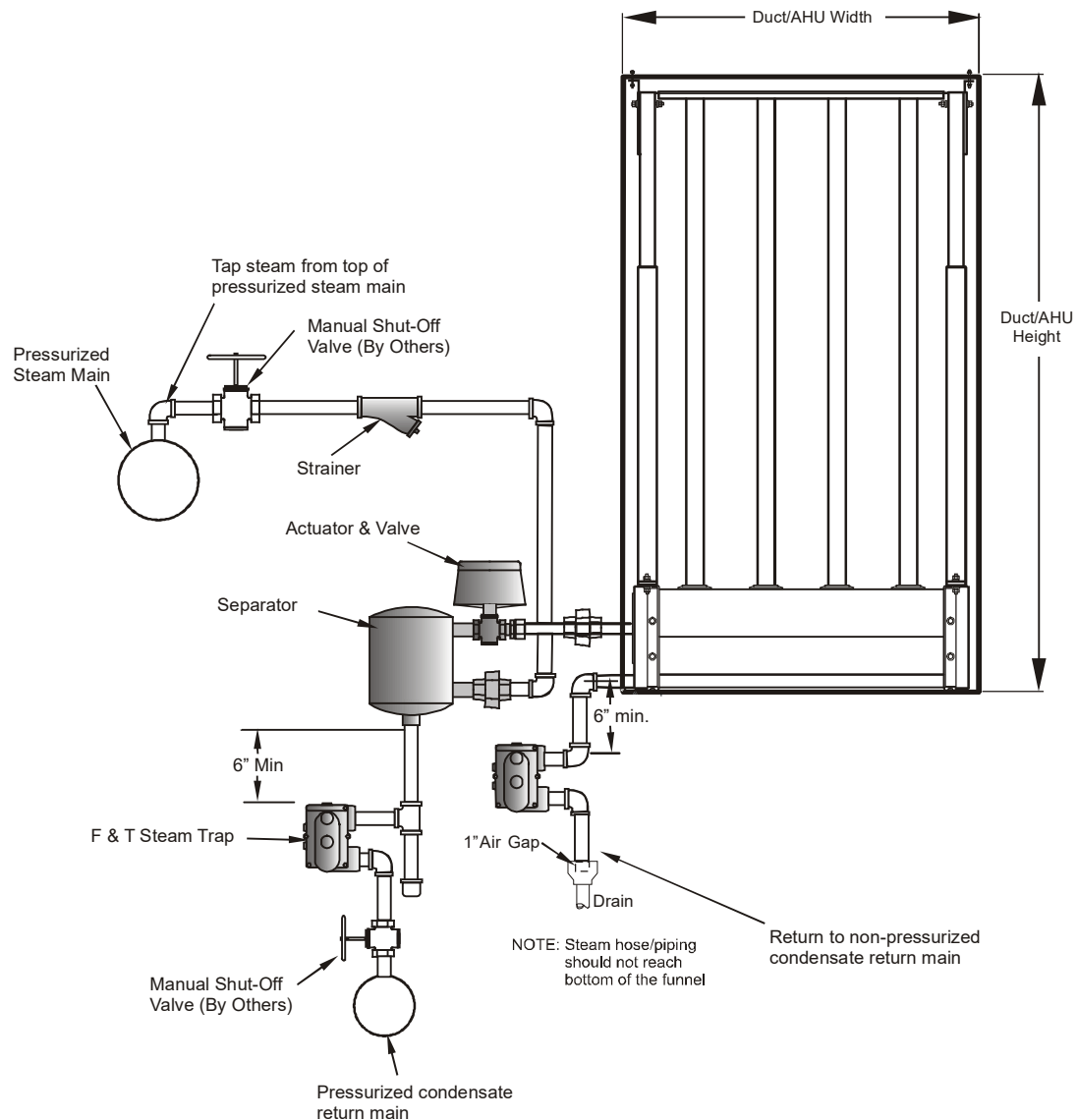


# Plumbing

---

# Nortec SAM-e with Pressure Steam

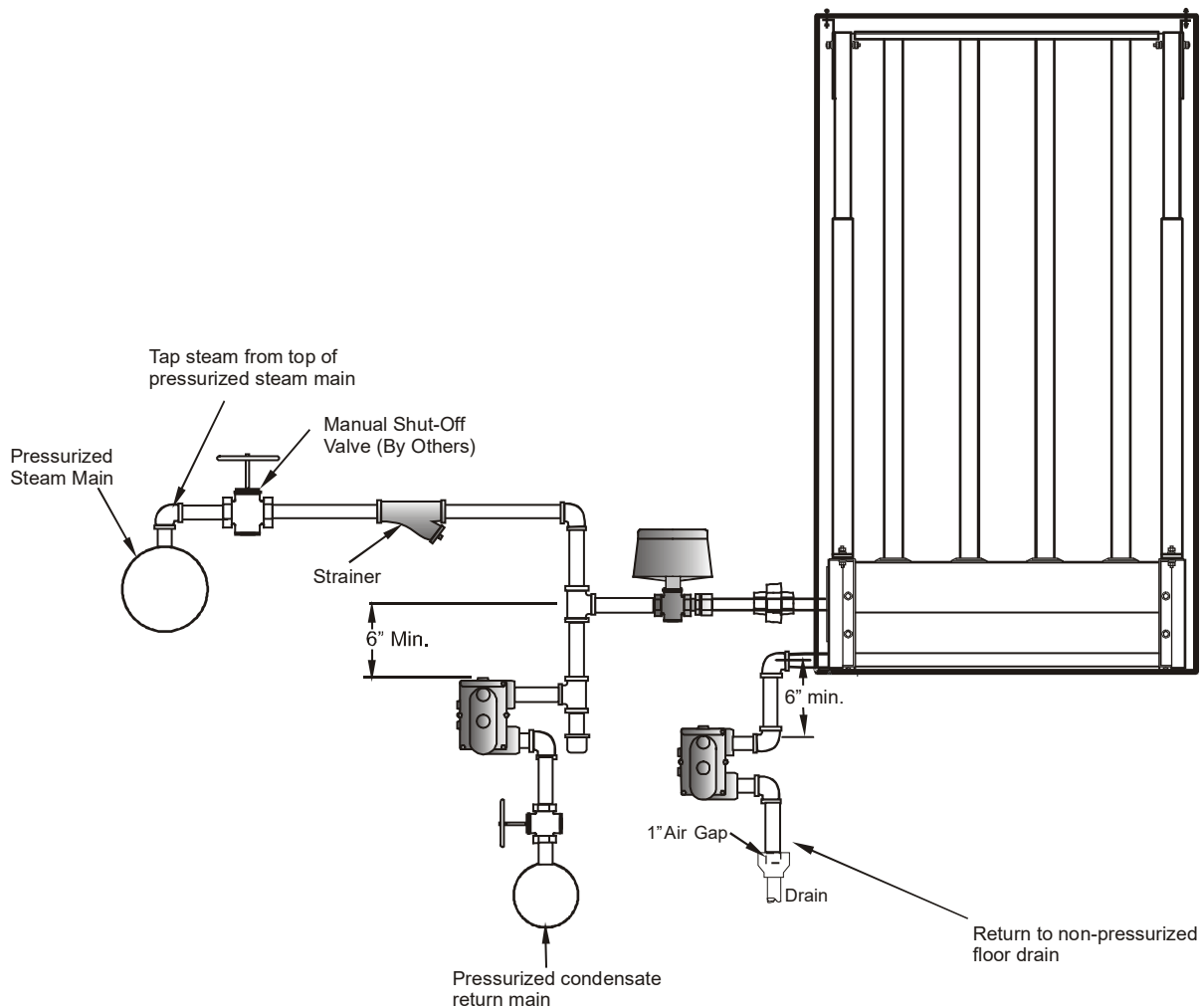
## Pressurized Plumbing with External Separator



- Steam components in grey provided by Condair.
- Tap steam from top of pressurize steam main to avoid excess condensate.
- Condensate from separator to be returned to pressurized condensate main.
- Condensate from Nortec SAM-e to be returned to atmospheric floor drain.

When pressurized steam enters Nortec SAM-e, pressure drops down to almost atmospheric pressure. Therefore, it must be drained atmospherically, and the use of a condensate pump (rated for 212°F) must be used to raise condensate to a higher elevation.

## Pressurized Plumbing without External Separator

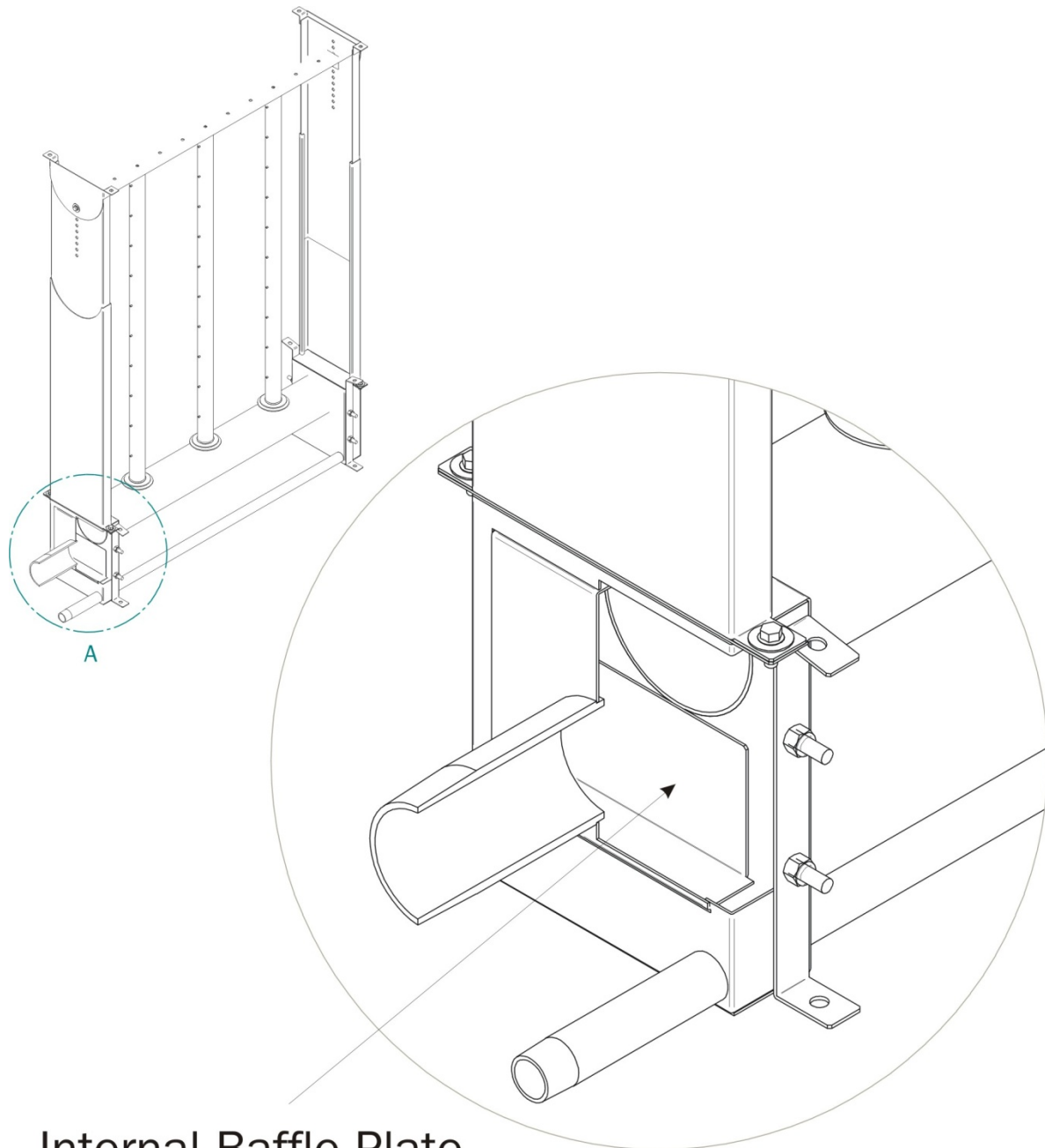


**Note:** The Nortec SAM-e header functions as a steam separator, therefore an external steam separator is not required.

- Steam components in grey provided by Condair.
- Tap steam from top of pressurize steam main to avoid excess condensate.
- Condensate from Nortec SAM-e to be returned to atmospheric floor drain.

When pressurized steam enters Nortec SAM-e, pressure drops down to almost atmospheric pressure. Therefore, it must be drained atmospherically, and the use of a condensate pump (rated for 212°F) must be used to raise condensate to a higher elevation.

## Internal Baffle Plate

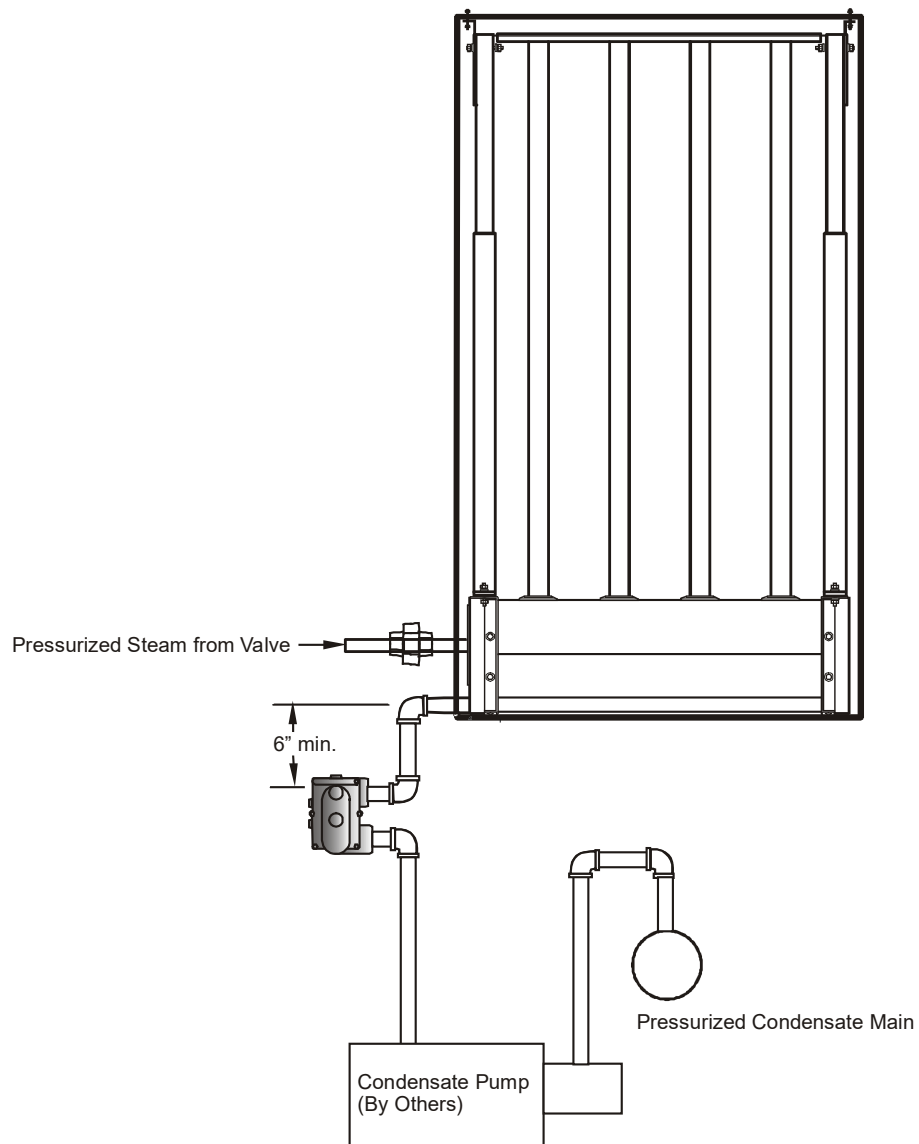


## Internal Baffle Plate

DETAIL A

All pressurized SAM-e inlet kits come with a standard internal baffle plate. The baffle plate redirects the flow of steam causing condensate to 'fall out', eliminating the need to install an external steam separator.

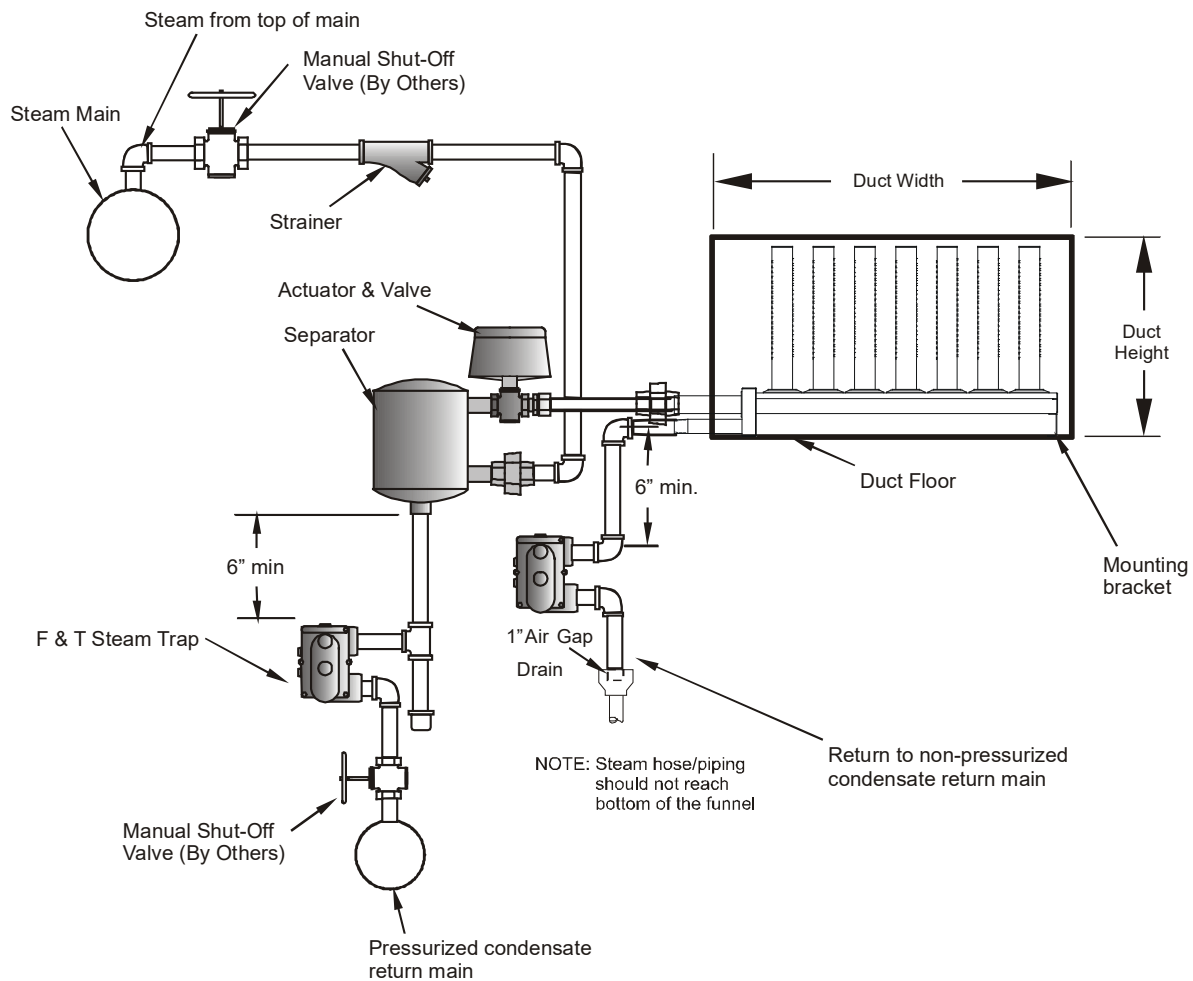
## Condensate Pump Plumbing



When pressurized steam enters Nortec SAM-e, pressure drops down to almost atmospheric pressure. Therefore, it must be drained atmospherically, and the use of a condensate pump (rated for 212°F) must be used to raise condensate to a higher elevation, or return to a pressurized condensate main.

# Nortec Mini SAM-e with Pressurized Steam

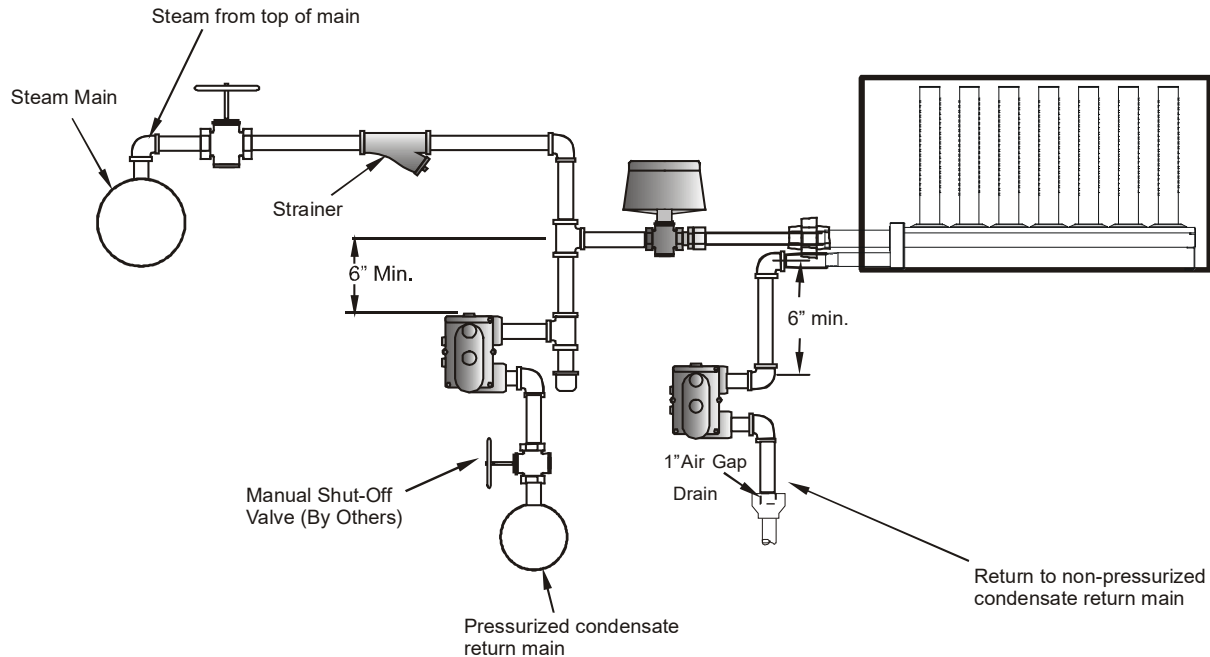
## Nortec Mini SAM-e Pressurized with External Separator



- Steam components in grey provided by Condair.
- Tap steam from top of pressurize steam main to avoid excess condensate.
- Condensate from separator to be returned to pressurized condensate main.
- Condensate from Nortec SAM-e to be returned to atmospheric floor drain.

When pressurized steam enters Nortec SAM-e, pressure drops down to almost atmospheric pressure. Therefore, it must be drained atmospherically, and the use of a condensate pump (rated for 212°F) must be used to raise condensate to a higher elevation.

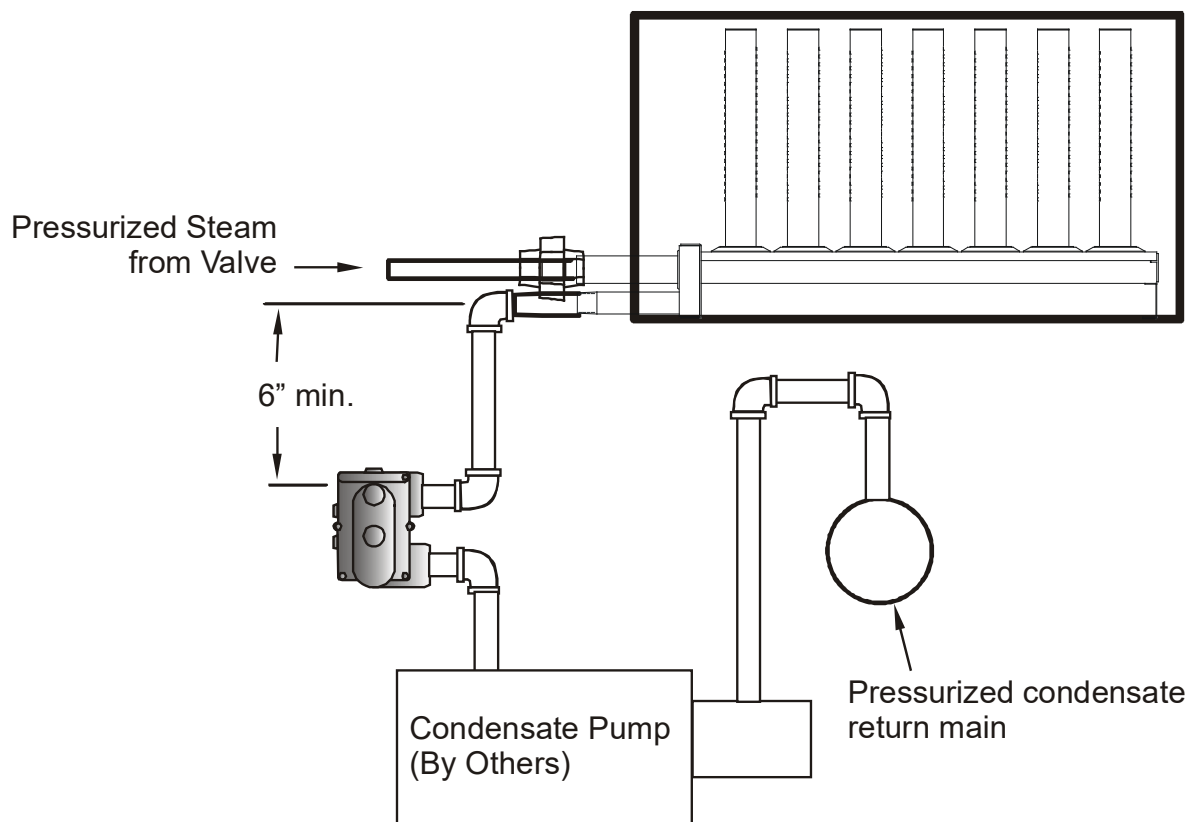
## Nortec Mini SAM-e Pressurized without External Separator



- Max steam pressure of 15 psig when no separator is used.
- Steam components in grey provided by Condair.
- Tap steam from top of pressurize steam main to avoid excess condensate.
- Condensate from separator to be returned to pressurized condensate main.
- Condensate from Nortec SAM-e to be returned to atmospheric floor drain.

When pressurized steam enters Nortec SAM-e, pressure drops down to almost atmospheric pressure. Therefore, it must be drained atmospherically, and the use of a condensate pump (rated for 212°F) must be used to raise condensate to a higher elevation.

## Nortec Mini SAM-e Condensate Pump Plumbing

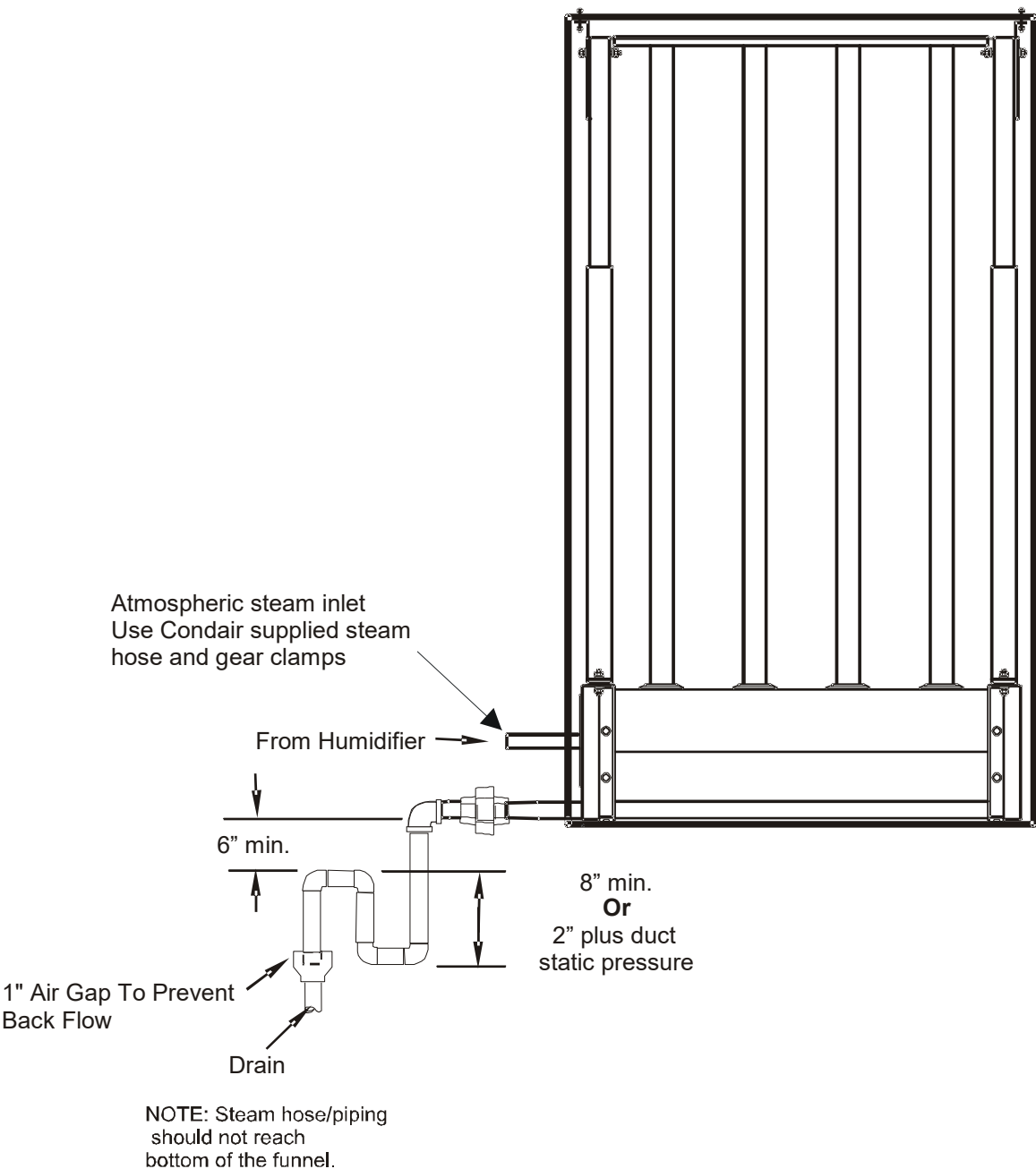


When pressurized steam enters Nortec Mini SAM-e, pressure drops down to almost atmospheric pressure. Therefore, it must be drained atmospherically, and the use of a condensate pump (rated for 212°F) must be used to elevate condensate to a higher point.

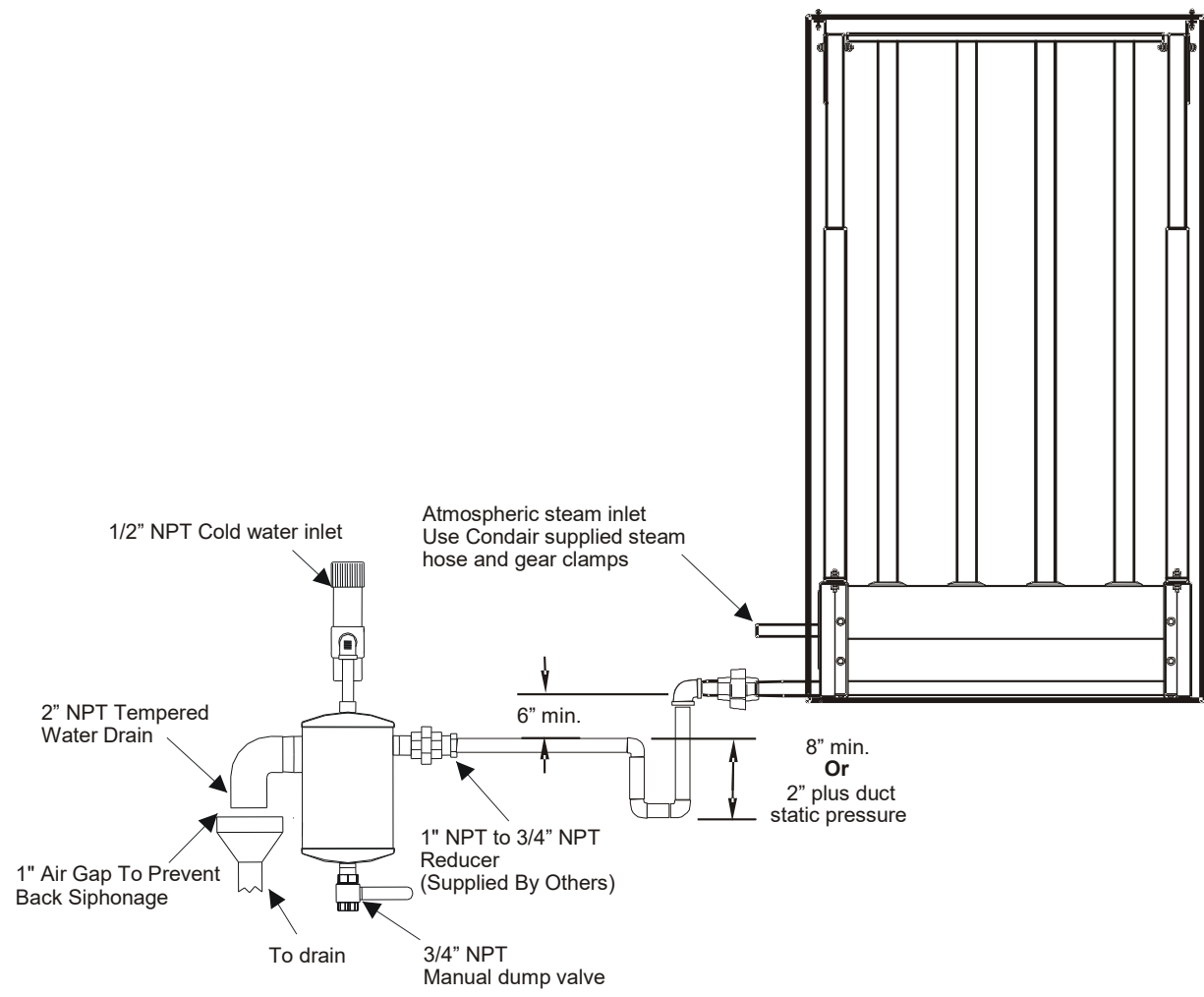


# Nortec SAM-e with Atmospheric Steam

## Atmospheric Plumbing

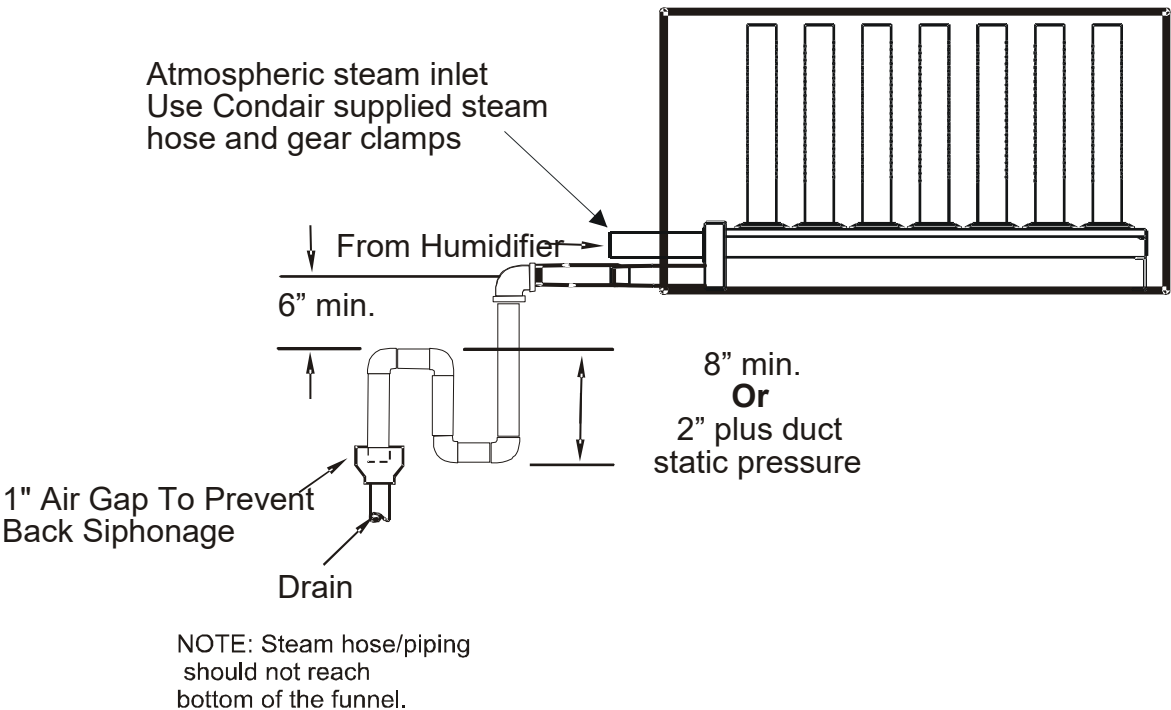


# Plumbing with Drain Water Cooler



# Nortec Mini SAM-e with Atmospheric Steam

## Nortec Mini SAM-e with Atmospheric Steam





# Atmospheric Steam Lines

---

# Plumbing

## Pressurized Nortec SAM-e

For pressurized steam line installation instructions, refer to *LiveSteam Steam Injection Humidifier Installation Manual*.

## Atmospheric Nortec SAM-e Steam Lines

### Guidelines

- 1** Condair steam hose should only be used on short steam runs of less than 10 feet.
- 2** Ensure that no condensate produced in steam line will remain trapped. Steam naturally flows upward and condensate naturally flows downward.
- 3** See material recommended for use in below chart. To eliminate metal corrosion, Condair does not recommend the use of steel piping.
- 4** Consult below charts for steam and condensate sizing guidelines when using steam distributors.
- 5** Be sure to include fitting equivalent lengths in total steam run lengths (see below).

In general, match steam-line size to outlet size of distributor.

When using a Nortec SETC with less than 15 psig steam supply pressure, a reducer (part number 2526110 – 3" to 1.5" reducer or 2526111 – 4" to 3" reducer) is required to prevent over-sizing of steam lines.

All steam lines should be insulated with at least 1"-thick steam insulation.

## Nortec Electrode Steam-Line

**Table 1: Electrode Steam-Line**

<b>Nortec Humidifier</b>	<b>Steam output [ lb ]</b>	<b>MED-L copper tube nominal steam line size</b>	<b>Stainless steel tube diameter (wall thickness 0.065")</b>	<b>Steam loss per foot in condensation [ lb/ft ]</b>	<b>Steam line maximum equivalent length</b>
RH Duct 120V	5	3/4"	7/8"	0.06	8 ft
RH Duct 240V	10	3/4"	7/8"	0.06	15 ft
EL 005	5	3/4"	7/8"	0.06	7 ft
EL 010	10	3/4"	7/8"	0.06	12 ft
EL 020	20	3/4"	7/8"	0.06	17 ft
EL 030	30	3/4"	7/8"	0.06	22 ft
EL 050	50	1-1/2"	1-3/4"	0.11	43 ft
EL 075	75	1-1/2"	1-3/4"	0.11	47 ft
EL 100	100	1-1/2"	1-3/4"	0.11	47 ft
EL 150 (2 outlets)	150	2 x 1-1/2"	1-3/4"	0.11	47 ft
EL 200 (2 outlets)	200	2 x 1-1/2"	1-3/4"	0.11	50 ft

- Based on 3" duct static pressure.
- Maximum duct static pressure for electrode steam units is 6" w.c.
- A fill cup extension kit can be used on EL to overcome higher duct static pressure, or for longer steam line runs. (Consult factory).

## Nortec Gas Steam-Line

**Table 2: Gas Steam-Line**

<b>Nortec Humidifier</b>	<b>Steam output [ lb ]</b>	<b>MED-L copper tube nominal steam line size</b>	<b>Stainless steel tube diameter (wall thickness 0.065")</b>	<b>Steam loss per foot in condensation [ lb/ft ]</b>	<b>Steam line maximum equivalent length</b>
GS 100	100	1-1/2"	1-3/4"	0.11	90 ft
GS 200	200	3"	3"	0.16	90 ft
GS 300	300	3"	3"	0.16	180 ft
GS 400	400	4"	4"	0.22	180 ft
GS 500	500	4"	4"	0.22	220 ft
GS 600	600	4"	4"	0.22	260 ft

- Based on 3" duct static pressure.
- Maximum duct static pressure for GS is 12" w.c.



## Nortec SE Steam Line

**Table 3: SE Steam-Line**

<b>Nortec Unit</b>	<b>No. of Steam Outlets</b>	<b>Steam output [ lb ]</b>	<b>MED-L copper tube nominal steam line size</b>	<b>Stainless steel tube diameter (wall thickness 0.065")</b>	<b>Steam loss per foot in condensation [ lb/ft ]</b>	<b>Steam line maximum equivalent length</b>
SE 050	1	50	1-1/2"	1-3/4"	0.11	37 ft
SE 100	1	100	1-1/2"	1-3/4"	0.11	90 ft
SE 175	1	175	3"	3"	0.16	90 ft
SE 250	1	250	3"	3"	0.16	180 ft
SE 375	1	375	4"	4"	0.22	180 ft
SE 575	1	575	4"	4"	0.22	220 ft
SE 750	2	750	2 x 4"	2 x 4"	0.44	260 ft
SE 1050	2	1050	2 x 4"	2 x 4"	0.44	260 ft

- Based on 3" duct static pressure.
- Maximum duct static pressure for SE is 12" w.c.

## Nortec RS Steam-Line

**Table 4: SE Steam-Line**

<b>Nortec Humidifier</b>	<b>Steam output [ lb ]</b>	<b>MED-L copper tube nominal steam line size</b>	<b>Stainless steel tube diameter (wall thickness 0.065")</b>	<b>Steam loss per foot in condensation [ lb/ft ]</b>	<b>Steam line maximum equivalent length</b>
RS 010	10	1-1/2"	1-3/4"	0.11	12 ft
RS 015	15	1-1/2"	1-3/4"	0.11	15 ft
RS 020	20	1-1/2"	1-3/4"	0.11	18 ft
RS 030	30	1-1/2"	1-3/4"	0.11	27 ft
RS 045	45	1-1/2"	1-3/4"	0.11	43 ft
RS 065	65	1-1/2"	1-3/4"	0.11	47 ft
RS 090	90	1-1/2"	1-3/4"	0.11	48 ft
RS 135	135	2 x 1-1/2"	2 x 1-3/4"	0.11	47 ft
RS 180	180	2 x 1-1/2"	2 x 1-3/4"	0.11	48 ft

- Based on 3" duct static pressure.
- Maximum duct static pressure for resistive element units is 6"w.c.

## Effective Length of Typical Steam-Line Fittings

**Table 5: Effective length of Typical Steam-Line Fittings**

Nominal tube size	Standard 90°-elbow	Standard 45°-elbow	Side-outlet tee	Gate valve*	Globe valve*
3/4"	2 ft	1 ft	4 ft	0.4 ft	18 ft
7/8"	2 ft	1 ft	4 ft	0.4 ft	18 ft
1-1/2"	3.5 ft	1.75 ft	7 ft	0.8 ft	34 ft
1- 3/4"	3.5 ft	1.75 ft	7 ft	0.8 ft	34 ft
3"	5 ft	2.5 ft	11 ft	1.1 ft	54 ft
4"	8 ft	4 ft	15 ft	1.6 ft	80 ft

\*Valve in full open position.

## Material for Steam Lines

**Table 6: Effective length of Typical Steam-Line Fittings**

Material	Type	Note
Copper	MED-L Tube	Recommended.
Stainless steel	Tube wall thickness 0.065"	Recommended. Required for RO/DI water.
Flex-hose	High-temperature rubber hose	Condair high-temperature flex-hose recommended only. Condair flex-hose to be checked every 5 years. Other brands of steam hose may: <ul style="list-style-type: none"> <li>- Carry odors</li> <li>- Kink or deform</li> <li>- Create back-pressure and affect humidifier performance</li> </ul>
Black pipe Schedule 40	Schedule 40	<u>Not recommended</u> Oil seeps out. Rusting. Health hazard. Larger pressure drop.
Plastic	-----	<u>Not recommended</u>

## **Atmospheric Nortec SAM-e Condensate Drainage**

- 1** Nortec SAM-e condensate outlet connection is male 3/4"-NPT.
- 2** Condensate from Nortec SAM-e must be plumbed to a P-trap. Trap must have center-to-center height of at least 8", or 2" more than duct static pressure, whichever is greater. Refer to typical installation drawings.
- 3** Condensate from P-trap should drain into a funnel with air-gap prior to entering building drain.
- 4** Condensate exits at 212°F (100°C). Local codes may require use of a drain water cooler (part number 1710020 - electronic drain water cooler or 1710010 – self-actuated drain water cooler). Refer to installation manual that accompanies drain water cooler for plumbing details.
- 5** When collecting condensate, ensure that each device has an air-gap prior to entering the condensate collection system. Failing to incorporate an air-gap may cause backpressure on Nortec SAM-e and result in poor performance.
- 6** Some humidifiers allow distributor condensate to be returned to the unit. Refer to humidifier manual for details.
- 7** For systems using condensate pumps, a P-trap and air-gap are still required at Nortec SAM-e outlet. Never connect Nortec SAM-e directly to a pressurized drain line.

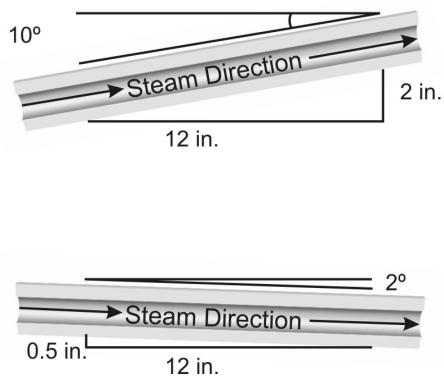
## Steam Lines and Condensate Returns



### MAIN RULES FOR ATMOSPHERIC STEAM LINES:

- Steam lines must be sloped
- Condensate must be trapped (Use full-size 'T' for traps)
- Steam lines must not have any restrictions that could cause back-pressure
- Insulate with minimum 1" pipe insulation
- Follow recommended materials, size and length (see tables)

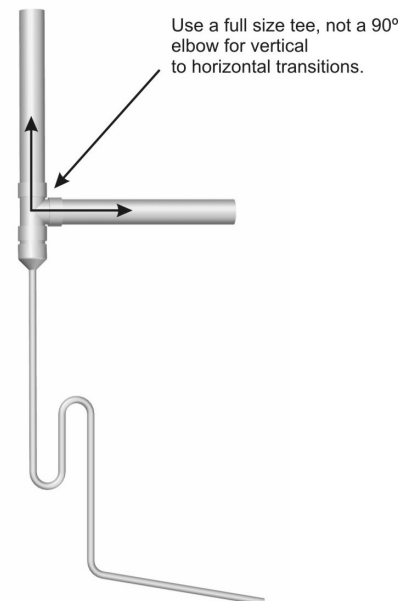
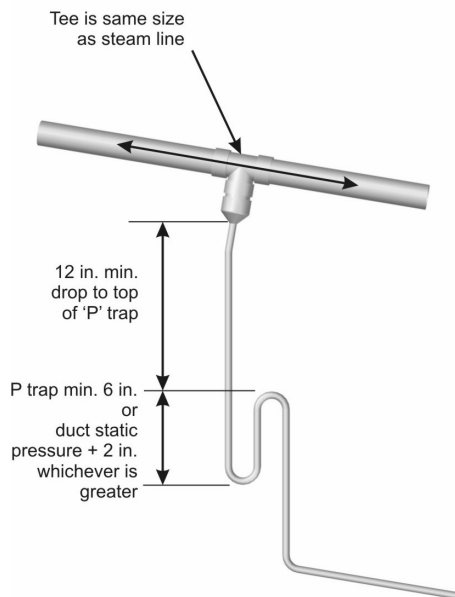
Use appropriate slope



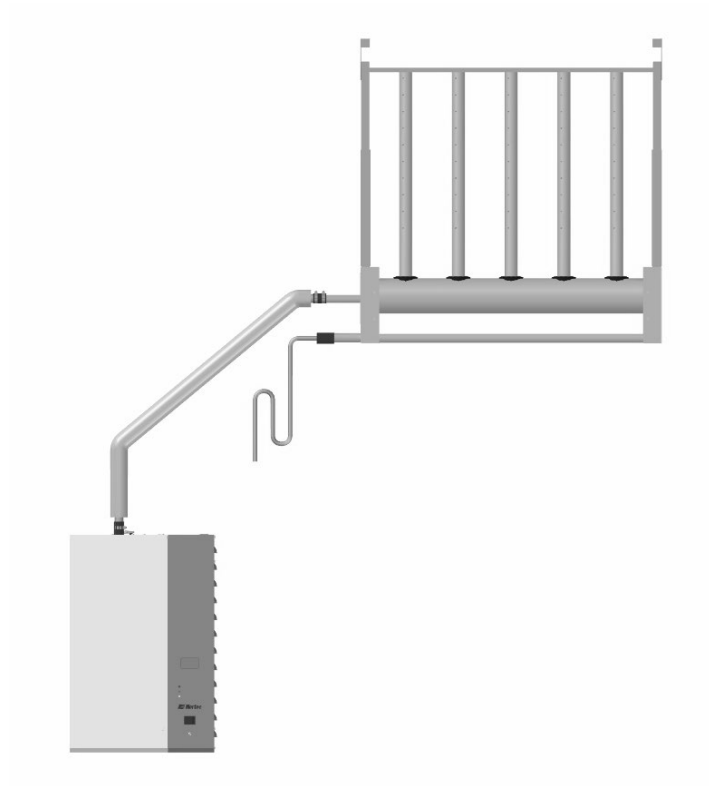
**Figure 1: Slope**



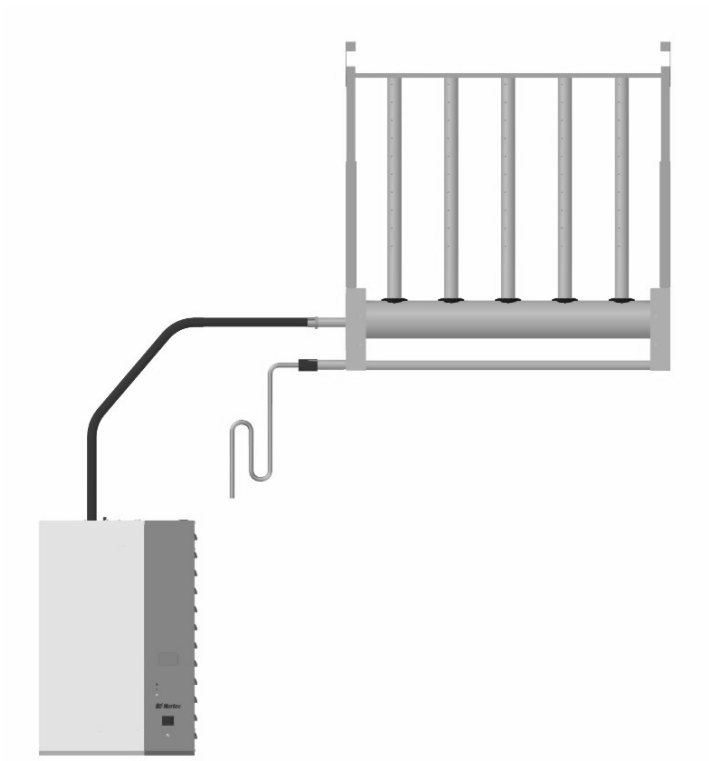
**Figure 2: Insulate pipe**



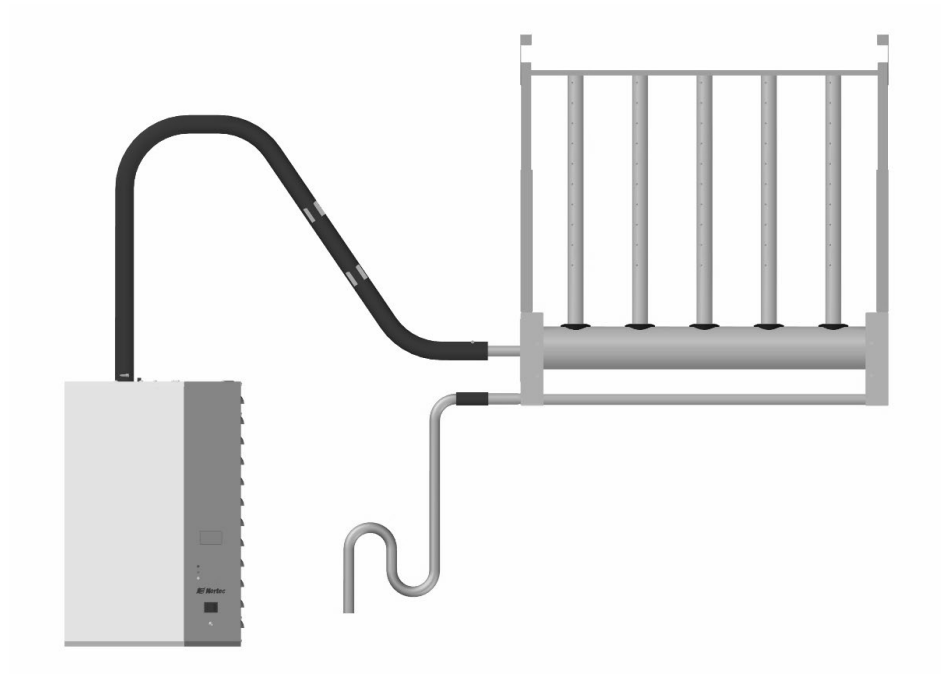
**Figure 3: Condensate Traps**



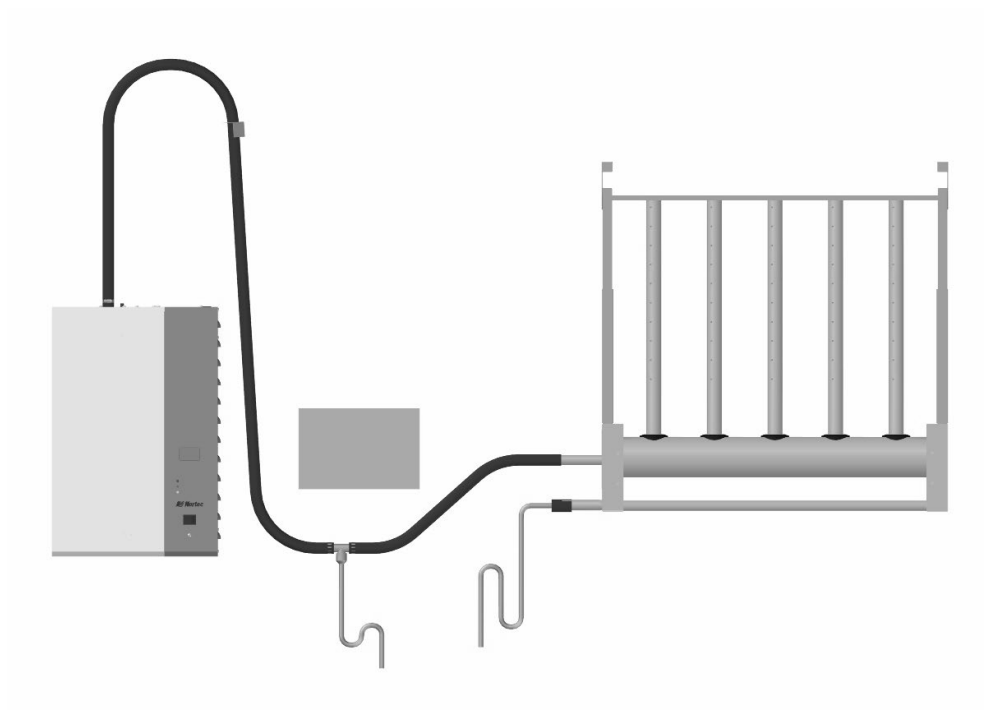
**Figure 4: Distributor Above Humidifier (Copper Steam Line)**



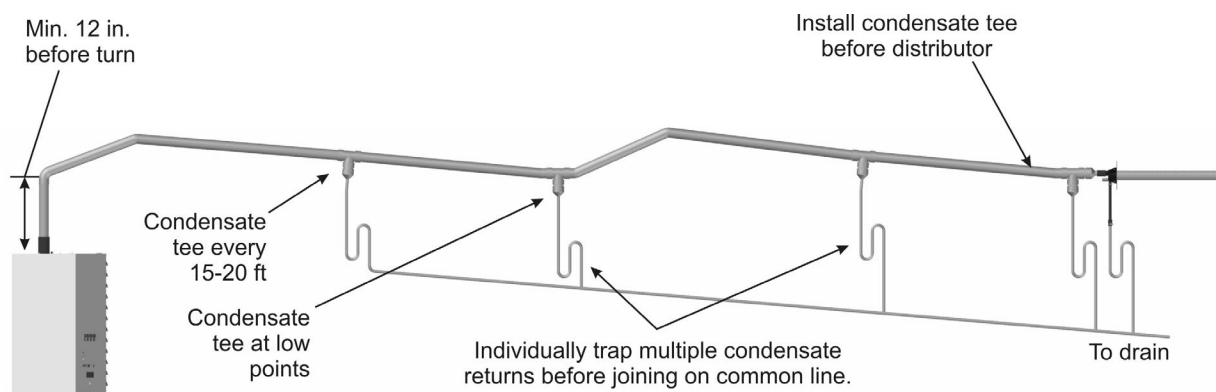
**Figure 5: Distributor Above Humidifier (Hose)**



**Figure 6: Steam Distributor Below Humidifier (Hose)**



**Figure 7: Steam Distributor Below Humidifier and Obstruction (Hose)**



**Figure 8: Long Steam Run**



# Atmospheric Steam Lines

---

# Insulation

## Factory-Installed Insulation

- 1 Unpack tubes and headers. Inspect tubes to ensure that stainless insulation covers have not shifted during shipping. Tube covers should not be obstructing nozzles, and should be aligned with nozzles. Header covers should be aligned with grommets, and not obstructing tube holes. Cut around drilled holes to create access port in side of duct. This port should be large enough to accommodate Nortec Mini SAM-e.
- 2 After tubes and headers have been inspected, install tubes and header according to this chapter. Insert all steam tubes into header such that flanges are flush with rubber gaskets. Rotate steam tubes, as needed, to ensure all nozzles are perpendicular to airflow. Do not lift manifold by steam tubes.

## Field Retrofit of Insulation

- 1 Unpack insulation covers. Inspect insulating covers for shipping damage; covers should be straight. After tubes and headers have been inspected, install tubes and headers according to this chapter. Insert steam tubes into header, until flanges are flush with rubber gaskets. Rotate steam tubes, as needed, to ensure all nozzles are perpendicular to airflow. Do not lift manifold by steam tubes.
- 2 Install tube insulation; each tube shall receive two (2) stainless steel covers and two (2) metal straps for every four (4) feet of tube length. Fit insulating shields around distributor tubes, ensuring edges of shields are aligned with nozzles. Secure tubes in place with metal clamps at top and bottom. Take care to not over-tighten. See Figure 1.

**NOTE:** Multiple covers may be required to completely insulate Nortec SAM-e tube. Please refer to Table: “*Number of Insulating Covers Required to Cover a Nortec SAM-e Tube*”.



## Quantity of Insulating Covers Required to Cover Nortec SAM-e Tube

**Table 7: Quantity of Insulating Covers Required to Cover Nortec SAM-e Tubes**

Nortec SAM-e Tube Length [in]	Insulation Length							
	6 in	12 in	18 in	24 in	30 in	36 in	42 in	48 in
6	2							
18		2						
24			2					
30				2				
36					2			
42						2		
48							2	
54								2
60				2	2			
66					4			
72					2	2		
78						4		
84						2	2	
90							4	
96							2	2
102								4
108					2	4		
114						6		
120						4	2	
126						2	4	
132							6	
138							4	2

## Quantity of Insulating Covers Required to Cover Nortec Mini SAM-e Tubes

**Table 8: Quantity of Insulating Covers Required to Cover Nortec Mini SAM-e Tubes**

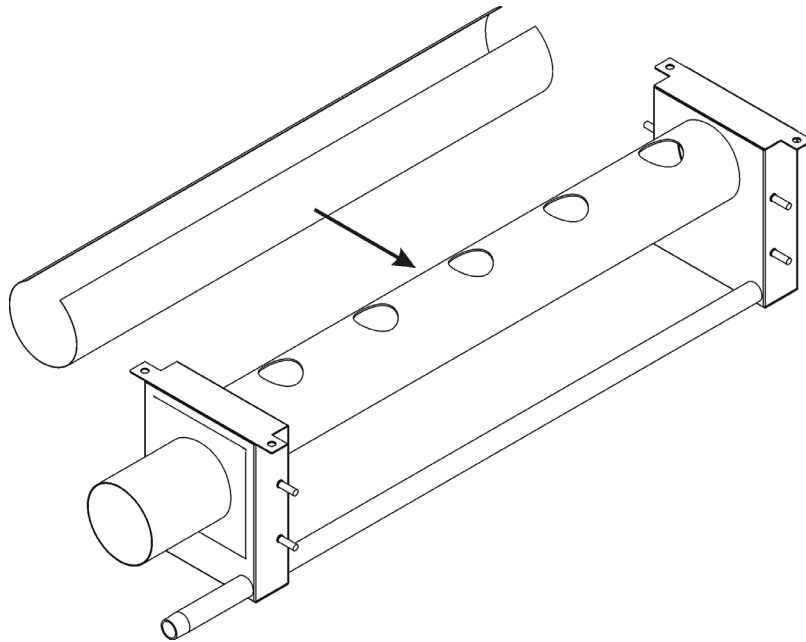
Nortec Mini SAM-e Tube Length [in]	Insulation Length							
	5 in	7 in	9 in	11 in	13 in	15 in	17 in	19 in
5	2							
7		2						
9			2					
11				2				
13					2			
15						2		
17							2	
19								2
21								

## Header Installation

- 1** Install header insulation for Nortec SAM-e; expand header insulation to fit over header and slide on. Ensure that edges tuck underneath synthetic grommets on top of header. Secure insulation in place using metal straps. See Step 2.
- 2** Install header insulation for Nortec SAM-e Dual Inlet; expand insulation to fit over header and slide on. Additionally, expand smaller metal cover for inlet leg and slide on. If inlet leg insulation conflicts with inlet adapter, trim insulation to fit. Secure both covers in place with metal strapping. See Step 3.
- 3** Install header insulation for Nortec Mini SAM-e; expand header insulation to fit over header and slide on. Take care when installing to avoid permanently bending insulation. Inspect for a tight fit after installation. See Step 4.

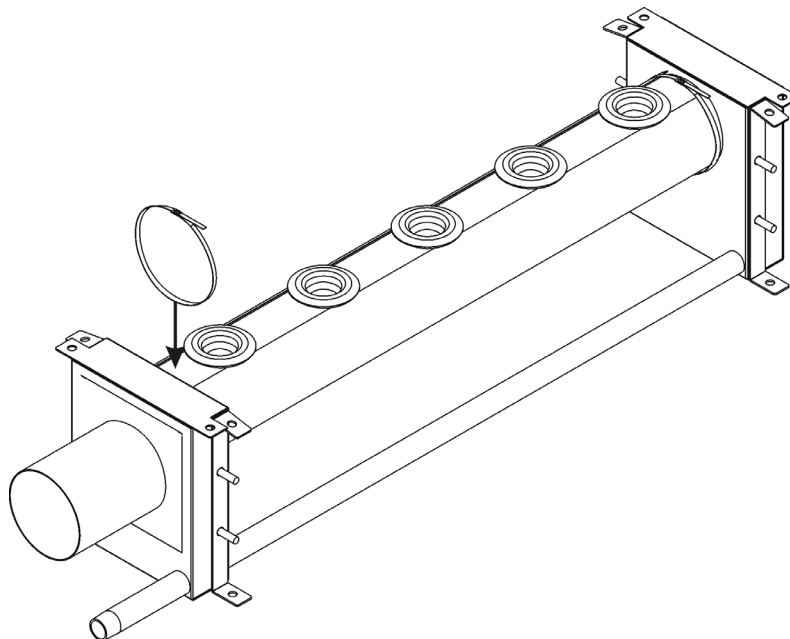
## Nortec SAM-e Insulation Retrofit

1



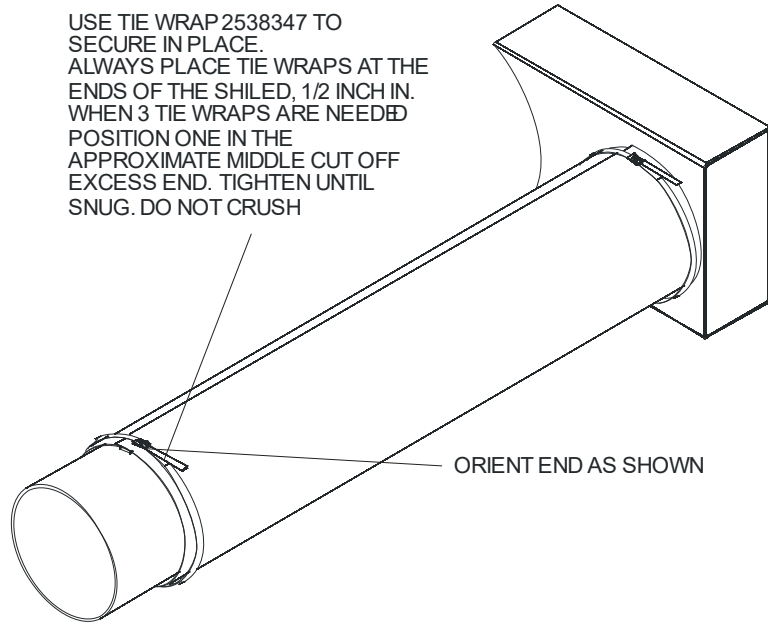
Install header wrap around header.

2

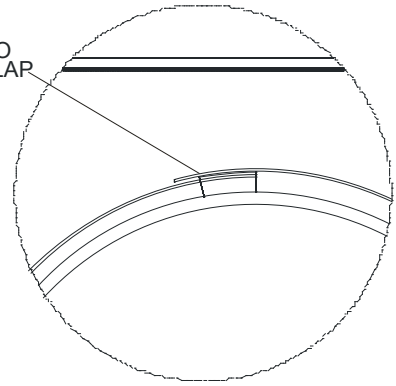


Tuck header wrap underneath rubber grommets and secure with stainless wraps at each end.

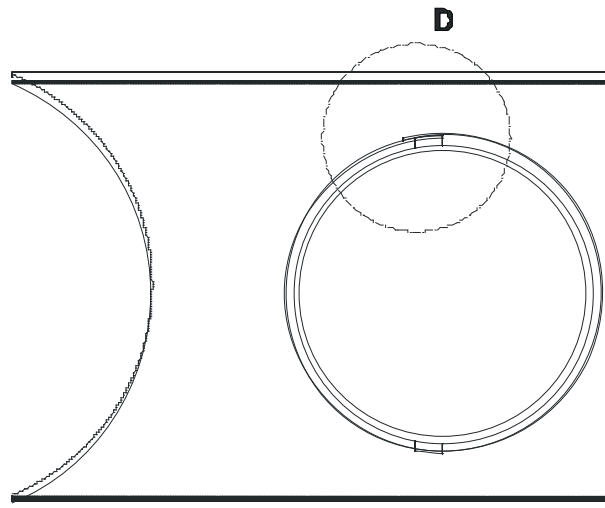
USE TIE WRAP 2538347 TO  
SECURE IN PLACE.  
ALWAYS PLACE TIE WRAPS AT THE  
ENDS OF THE SHIELD, 1/2 INCH IN.  
WHEN 3 TIE WRAPS ARE NEEDED  
POSITION ONE IN THE  
APPROXIMATE MIDDLE CUT OFF  
EXCESS END. TIGHTEN UNTIL  
SNUG. DO NOT CRUSH



ROLL SHIELD TO  
CREATE OVERLAP



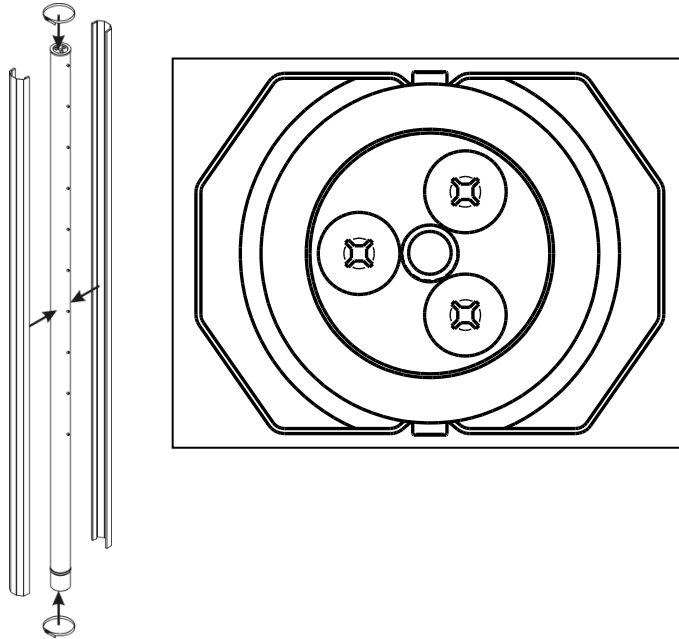
DETAIL D



FOR DUAL INLETS; INSULATE HEADER AS SHOWN ON PREVIOUS PAGE.  
INSULATE SECOND INLET AS SHOWN

### Field Retrofit of Installation Dual Inlet Headers

# 3



Apply shields to tubes and secure with stainless straps.

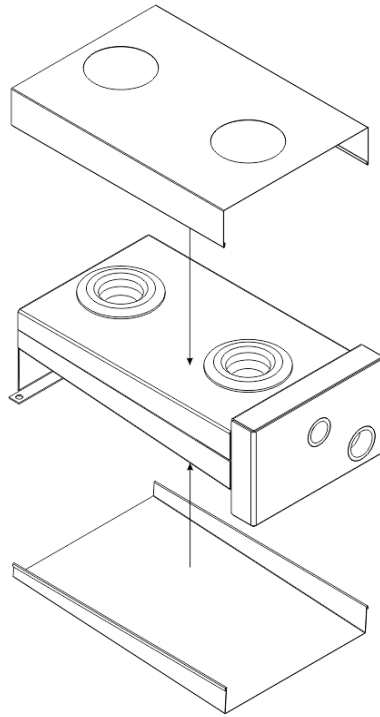
# 4



Completed Tube.

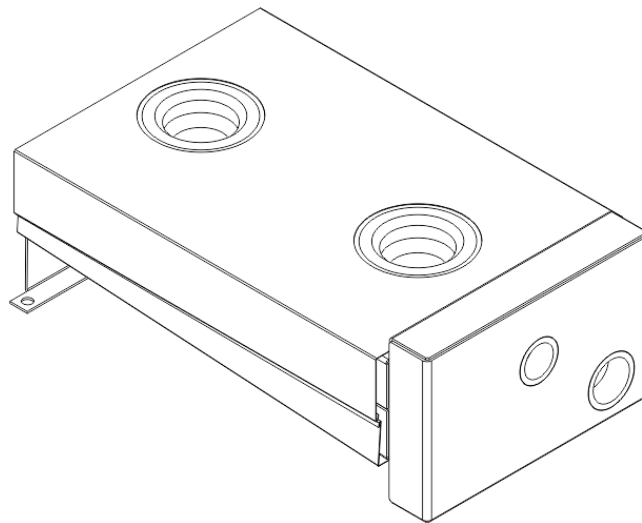
## Nortec Mini SAM-e Insulation Retrofit

1



Connect Top and Bottom heat shields together (snap fit) .

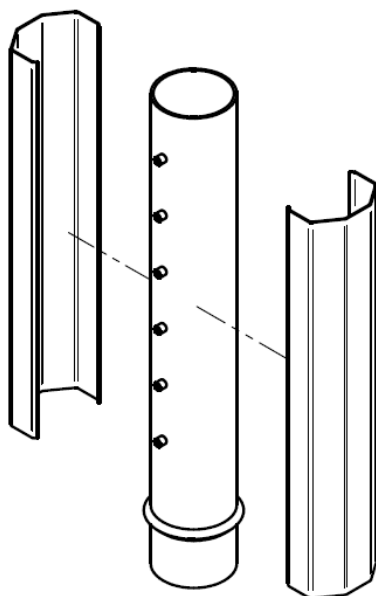
2



Completed header.

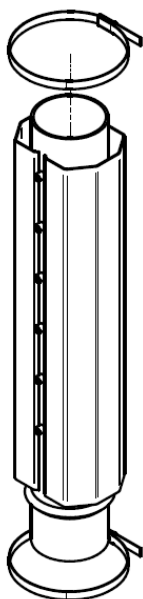


# 3



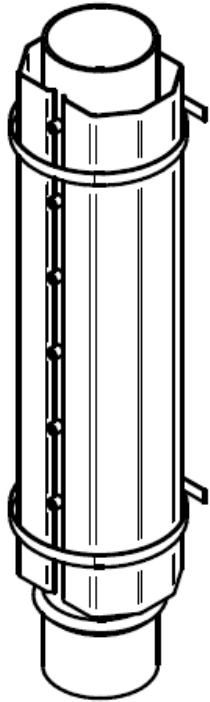
Fit shields to tubes.

# 4



Secure with stainless straps.

# 5



Completed tube.

# Troubleshooting, Maintenance, Spare Parts

---

## Troubleshooting

Steam tubes discharge water:

- 1 Steam supply pipe is not insulated.
- 2 Steam supply pipe not properly drained or sloped.
- 3 Manifold or adapter condensate drain is clogged or malfunctioning.
- 4 Excessive back-pressure in condensate drain pipe (due to pressure in secondary condensate drain); must be piped to non-pressurized condensate return.
- 5 Primary and secondary condensate drains are both joined together.
- 6 Condensate line has been routed too high (causing static back pressure).

## Maintenance

Inspect Nortec SAM-e at start-up.

- 1 For humidifier maintenance schedule, refer to Installation, Operation, and Maintenance Manual for your humidifier.

## Spare Parts

Kit Part #	Kit description	Quantity in Kit
<b>1503812</b>	SAM-e coupling seal for steam tubes (1 per tube)	1
<b>2546662</b>	Insertion stop (1 per tube) (Galvanized)	10
<b>2578156</b>	Insertion stop (1 per tube) (Stainless Steel)	10
<b>2546665</b>	5/16" Locknuts, bolts, washers (Galvanized)	10
<b>2546668</b>	5/16" Locknuts, bolts, washers (Stainless Steel)	10
<b>2546667</b>	1/4" bolts, washers (1 per tube) (Galvanized)	10
<b>2578157</b>	1/4" bolts, washers (1 per tube) (Stainless Steel)	10
<b>2538346</b>	SAM-e insulated tube strapping	1
<b>2538347</b>	SAM-e insulated header strapping	1
<b>2538344</b>	SAM-e insulated dual-inlet header strap (for second inlet)	1

# Warranty

---

Condair Inc. and/or Condair Ltd. (hereinafter collectively referred to as THE COMPANY), warrant for a period of ten years after installation, that THE COMPANY's manufactured and assembled products, not otherwise expressly warranted (with the exception of the tube coupling seals, two years only), 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 makes no warranty and assumes no liability whatsoever for equipment that has failed due to ambient conditions when installed in locations having climates below 14 °F (-10 °C) during January or above 104 °F (40 °C) during July.

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

**U.S.A.**  
2700 90<sup>th</sup> St.  
Sturtevant, WI 53177

835 Commerce Park Dr.  
Ogdensburg, NY 13669-2209

**CANADA**  
2740 Fenton Road  
Ottawa, Ontario K1T 3T7

TEL: 1.866.667.8321  
EMAIL: [na.info@condair.com](mailto:na.info@condair.com)  
WEBSITE: [www.condair.com](http://www.condair.com)

