

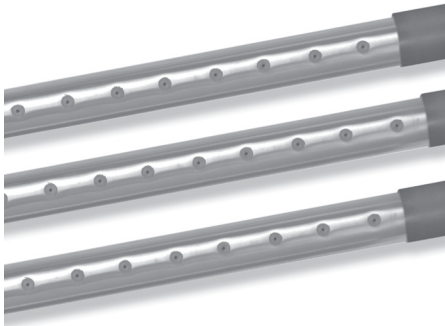


DISPERSION ASSEMBLIES

For nonpressurized steam

- *Guaranteed non-wetting distances*
- *Dispersion tubes and panels for ducts and air handling units*
- *Fan-based dispersion units for open spaces*
- *High-Efficiency Dispersion Tube option*

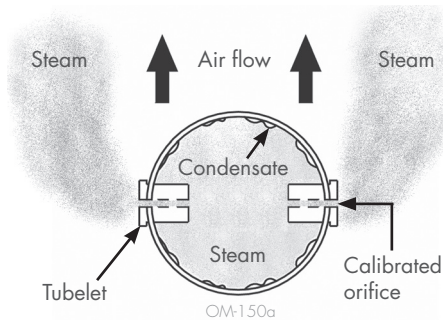
Drip-free steam dispersion



DISPERSION TUBES

DriSteem's dispersion tubes are fitted with one or two rows of closely-spaced thermal-resin tubelets to evenly disperse steam across the airstream.

DISPERSION TUBE CROSS SECTION



DriSteem's unique tubelets extend into the tube so only the driest steam is discharged into the air.

LET DRICALC DO THE CALCULATING!

DriCalc is our free sizing and selection software, available on our [Tools](#) tab at www.dristeem.com.

Or download our *Humidification System Design Guide*, available on our [Literature](#) tab. The guide walks you through the process of manually calculating load and the entering and leaving RH.

GUARANTEED NON-WETTING DISTANCES

Using data collected in our on-site test lab, we have developed guaranteed steam absorption (non-wetting) distances. The performance information provided by DriSteem allows you to confidently choose equipment that will accommodate any application.

DRY STEAM

Adding humidification to an airstream without creating wetness in the duct system is critical for the maintenance of a healthy environment. Wet areas in ducts are a threat to the health of building occupants since they moisten dust on duct floors, creating ideal breeding grounds for disease-producing microbes. In addition, water accumulating in ducts can drip and cause building damage.

STEAM EXITS DRIP-FREE THROUGH TUBELETS

All DriSteem evaporative dispersion tube units discharge steam through thermal-resin tubelets fitted into dispersion tubes. These tubelets extend through the tube wall and into the tube where the steam is driest. In essence, the tubelets provide a temperature-neutral exit tunnel for steam, allowing steam to cross over lower-temperature metal without condensing or dripping. Each tubelet contains a calibrated orifice sized for steam capacity. These tubelets are a DriSteem exclusive and are essential for drip-free steam dispersion.

CONDENSATE DRAINS AWAY

Some condensation is inevitable in steam dispersion, but condensate can be managed through careful design.

For example, Ultra-sorb® Models LV and LH use gravity to remove condensate. Steam enters the supply header and exits through the tubelets, while condensate drains out the return header. Ultra-sorb Model XV, available as a dispersion option for STS humidifiers, has a heat exchanger that vaporizes dispersion-generated condensate.

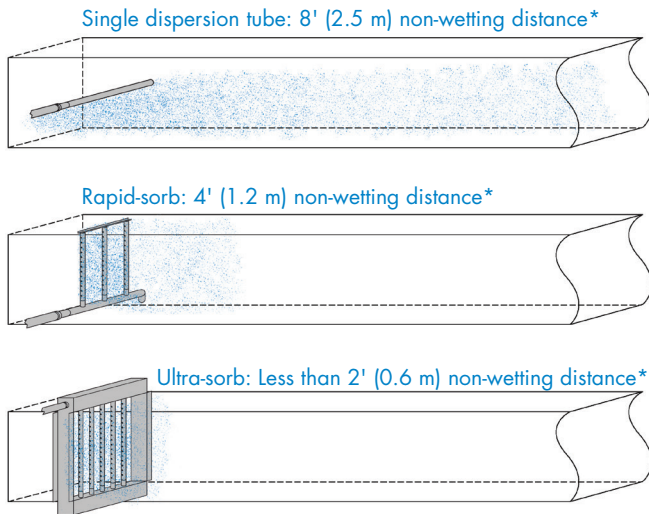
Rapid-sorb dispersion units manage steam velocities to ensure dispersion tube condensate falls back into the supply header and exits the end of the header to be drained away.

REDUCE CONDENSATE, WASTED ENERGY WITH HIGH-EFFICIENCY TUBES

DriSteem's High-Efficiency Tubes reduce dispersion-generated condensate and wasted energy by up to 85%. See Page 8.

CHOOSE DISPERSION BASED ON AVAILABLE NON-WETTING DISTANCE

Non-wetting distance is the dimension downstream from the dispersion assembly after which wetness will not occur. DriSteem dispersion products provide a range of non-wetting distances. For example, under the same conditions, the duct dispersion products shown below achieve the non-wetting distances shown. Some applications can have much shorter non-wetting distances.



* Duct air speed up to 1,500 fpm (7.6 m/s), entering air 10% RH, leaving air 90% RH at 55 °F (13 °C).

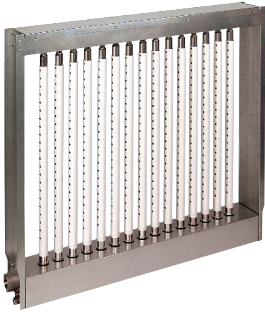
Table 3-1
Nonpressurized steam dispersion products

Dispersion products	Nonpressurized steam generators						
	Vaporstream®	Vapormist®	CRUV®	XT Series	XTR	GTS® (Gas-to-steam)	STS® (Steam-to-steam)
Ultra-sorb Model XV*							X
Ultra-sorb Models LV and LH*	X	X	X	X		X	X
Rapid-sorb®	X	X	X	X		X	X
Single dispersion tube	X	X	X	X		X	X
XTR dispersion tube					X		
Space Distribution Unit (SDU)	X	X					
XT steam blower				X			
XTR steam blower					X		
XTR fan pack					X		
Area-type dispersion fan	X					X	X

* Ultra-sorb steam dispersion panels can also be piped to disperse pressurized boiler steam.

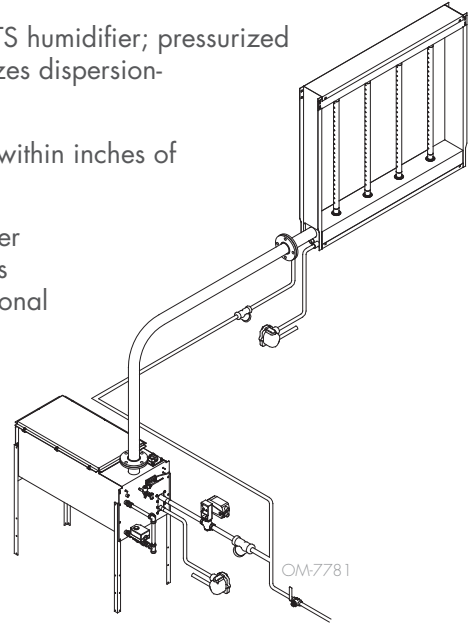
Duct and AHU dispersion products

ULTRA-SORB MODEL XV STEAM DISPERSION PANEL



Highest performance

- Disperses humidification steam generated by an STS humidifier; pressurized boiler steam in the integral heat exchanger vaporizes dispersion-generated condensate
- Guaranteed, short non-wetting distances — install within inches of downstream devices
- Integral condensate management — heat exchanger vaporizes dispersion-generated condensate, returns pressurized condensate to the boiler without additional pumps, valves, vents, or controls
- Most efficient dispersion
 - Zero water waste — condensate returned to the boiler is still hot, saving energy, water, and boiler chemicals
 - Lowest heat gain — High-Efficiency Tubes and insulated header reduce airstream heat gain by up to 85%
- Capacity up to 450 lbs/hr (204 kg/h) per panel; 5 psi (35 kPa) minimum heat exchanger steam pressure
- See the *Ultra-sorb Product Catalog* at www.dristeem.com



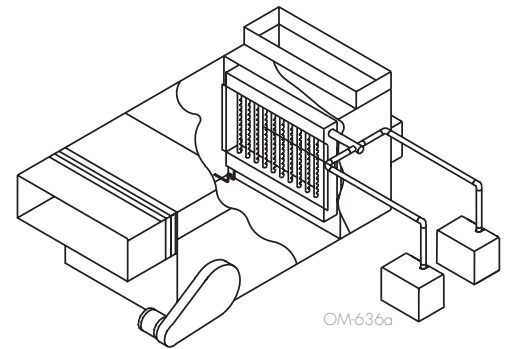
Note: Ultra-sorb Model XV can also be piped to disperse pressurized boiler steam with capacities up to 1978 lbs/hr (898 kg/h).

ULTRA-SORB MODEL LV AND LH STEAM DISPERSION PANELS



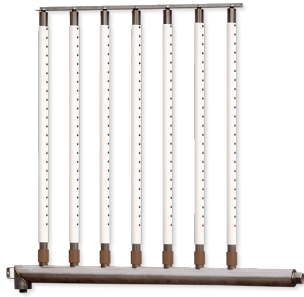
Most versatile

- Guaranteed, short non-wetting distances — install within inches of downstream devices
- Reduce wasted energy by up to 85% and increase capacity with optional High-Efficiency Tubes (see Page 8)
- Lowest installation cost — factory assembled for easy installation
- Capacity: Horizontal airflow up to 1850 lbs/hr (840 kg/h) per panel
Vertical airflow up to 600 lbs/hr (270 kg/h) per panel
- See the *Ultra-sorb Product Catalog* at www.dristeem.com



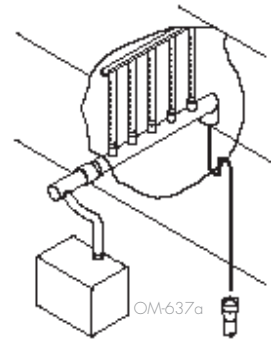
Note: Ultra-sorb Models LV and LH can also be piped to disperse pressurized boiler steam with capacities up to 4000 lbs/hr (1815 kg/h).

RAPID-SORB DISPERSION TUBE SYSTEM



Multiple tubes, short non-wetting distance

- Short non-wetting distance, compared to single dispersion tube
- For horizontal or vertical airflow with header inside or outside of duct
- Available with High-Efficiency Dispersion Tubes (see Page 8)
- Capacity up to 2100 lbs/hr (953 kg/h) per system

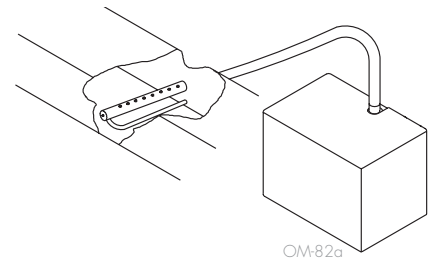


SINGLE DISPERSION TUBE



Installation flexibility

- Low-capacity dispersion for horizontal or vertical airflows
- Available as a High-Efficiency Dispersion Tube (see Page 8)
- Available with or without condensate drain
- Capacity up to 97 lbs/hr (38 kg/h) per tube (three tubes maximum)

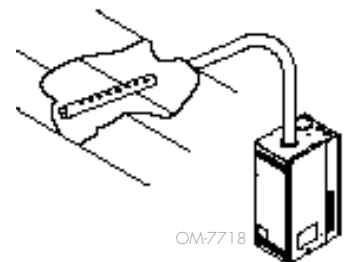


XTR DISPERSION TUBE



Installation flexibility

- Low-capacity dispersion for XTR electrode humidifier
- Capacity up to 12 lbs/hr (5.4 kg/h)
- See the *XTR Product Brochure* at www.dristeem.com



Quiet, fan-based dispersion options for open spaces

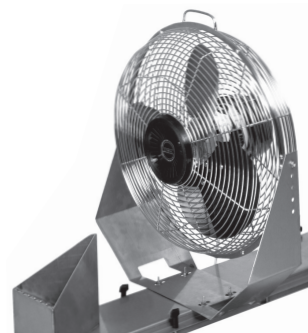
SPACE DISTRIBUTION UNITS (SDUs)

- Designed for finished spaces
- Mount on top of Vapormist humidifiers, or remotely disperse steam from Vapormist or Vaporstream humidifiers
- Two SDU models:
 - SDU-I (internal absorption), steam absorbs within the enclosure with no visible vapor
 - The SDU-E (external absorption) for larger capacities; visible steam outside of enclosure as it absorbs into the air
- Capacity: SDU-E 102 lbs/hr (46.3 kg/h)
SDU-I 30 lbs/hr (13.6 kg/h)



AREA-TYPE DISPERSION FAN

- Designed for open spaces such as warehouses and manufacturing spaces that do not have a duct system
- Quietly disperses steam without introducing water droplets into the air
- Mounts directly on top of GTS, STS, and Vaporstream humidifiers
- Steam capacities up to 300 lbs/hr (136 kg/h)



Quiet, fan-based dispersion options for open spaces

XT STEAM BLOWERS

- Mount on top of or remotely disperse steam from XT Series humidifiers
- SDU-006E (shown at right): capacities up to 20 lbs/hr (9.1 kg/h)
- SDU-017E: capacities up to 50 lbs/hr (22.7 kg/h)
- See the *XT Series Product Catalog* at www.dristeem.com



XTR STEAM BLOWER

- Mount on top of or remotely disperse steam from XTR humidifier
- Capacity up to 8.1 lbs/hr (3.6 kg/h)
- See the *XTR Product Brochure* at www.dristeem.com



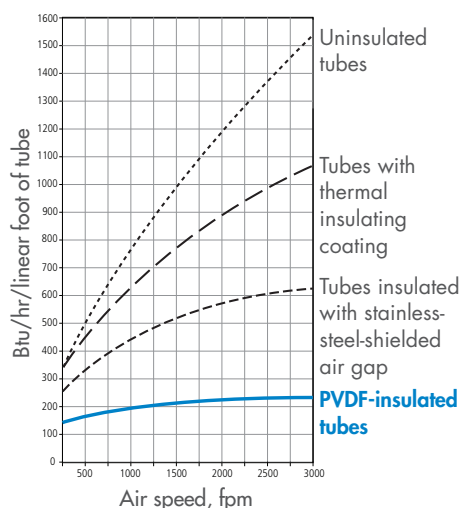
XTR FAN PACK

- Mounts flush in finished stud walls to disperse steam into open spaces
- Capacities up to 8.1 lbs/hr (3.6 kg/h)
- See the *XTR Product Brochure* at www.dristeem.com



High-Efficiency Dispersion Tubes

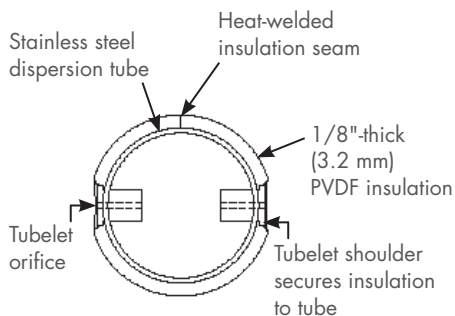
Dispersion tube heat loss vs. airspeed



Note:

See our white paper, *Reducing energy use, airstream heat gain, and condensate production*, (metric version also available) for duct conditions, basis of heat loss calculations, and insulation properties.

HIGH-EFFICIENCY TUBE CROSS SECTION



The PVDF insulation on High-Efficiency Tubes allows up to an 85% reduction in wasted energy by significantly reducing airstream heat gain and condensate production. The energy savings can yield payback in less than one year.

DriSteem developed PVDF insulation for humidification applications when no available material could provide significant insulating results, withstand the environmental challenges of steam humidification, and meet strict plenum requirements.

High-Efficiency Tubes are featured on all Ultra-sorb Model XV dispersion panels. They are also an available option for Ultra-sorb Models LV and LH, Rapid-sorb, and Single dispersion tube.



ADVANCED INSULATION MEETS STRINGENT REQUIREMENTS

PVDF is an advanced material commonly used in chemical, semiconductor, medical, defense, and aerospace industries and has the following characteristics:

- **Approved for use in plenums:** Flame spread/smoke developed values are 0/0, exceeding UL 723 (ASTM E84) requirement of 25/50
- **Rated for high-temperature operation:** Rated for 300 °F (149 °C) continuous operation
- **Closed-cell structure:** Will not absorb water or support microbial growth
- **Will not shift or slip on tubes:** Advanced manufacturing process ensures insulation remains securely attached to tubes
- **Odor free:** Virtually no measurable outgassing
- **Resistant to UV light**
- **Rugged and durable:** No particle erosion per ASTM C1071 erosion resistance test; does not contain fiberglass

SEE OUR WHITE PAPER

For complete details on the breakthrough performance of High-Efficiency Tubes, see our white paper *Reducing energy use, airstream heat gain, and condensate production*, available on our **Literature** page at www.dristeem.com.

High-Efficiency Tube retrofit option

ENGINEERED FOR EXISTING DISPERSION SYSTEMS

DriSteem's High-Efficiency Tubes are available as a retrofit option for existing Ultra-sorb Models LV and LH and Rapid-sorb steam dispersion assemblies.

Energy efficiencies and water savings not previously available are now possible as upgrades to currently installed steam dispersion panels.

EXCELLENT PAYBACK POSSIBILITIES

Retrofit High-Efficiency Tubes have short payback — usually less than two years.

ORDERING AND RETROFITTING ARE EASY

Instructions are provided in the *High-Efficiency Tube Option Retrofit Brochure*, available on our **Literature** page at www.dristeem.com.

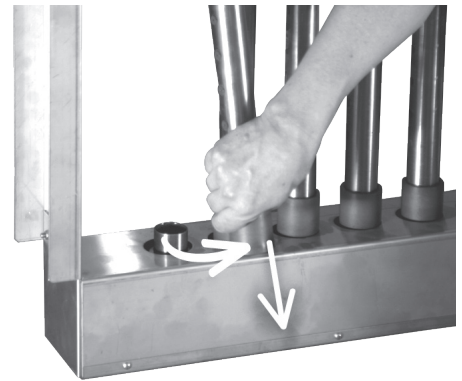
CALL NOW

For an application-specific payback analysis, using DriSteem's High-Efficiency Tube Payback Estimator tool, contact DriSteem at 800-328-4447 or your local DriSteem Representative.

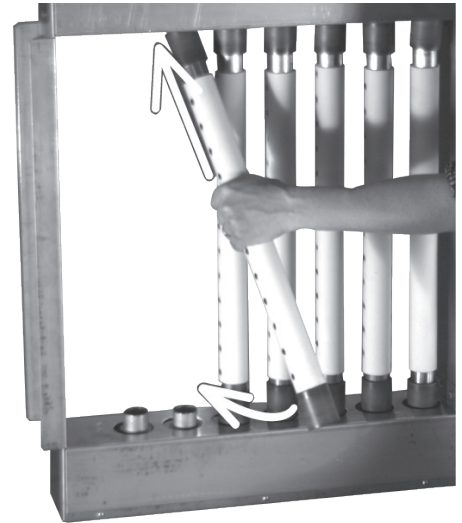
The energy saved by a DriSteem dispersion panel with High-Efficiency Tubes will more than make up for the cost of replacing any uninsulated steam dispersion assembly.

Retrofitting is easy!

Remove the existing tubes



Install the High-Efficiency Tubes



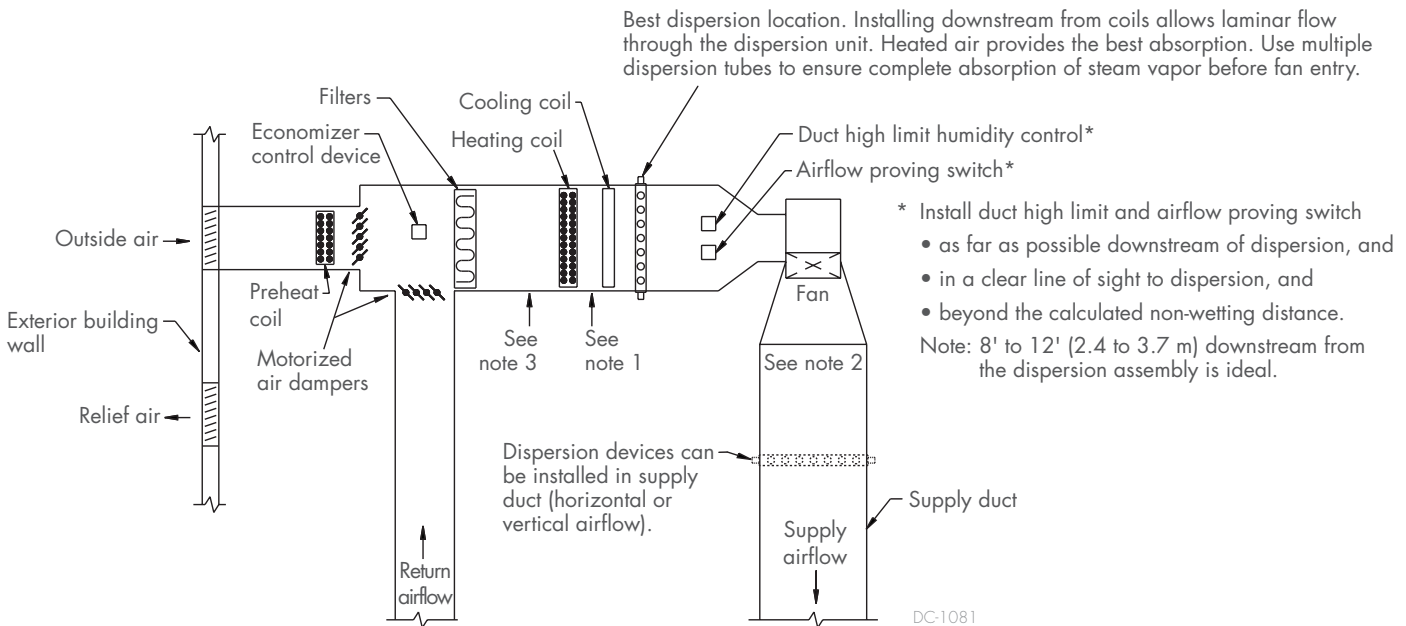
Choosing the installation location

Check available non-wetting distance, and review the recommendations in the figure below. The steam discharge location in a duct or an air handling unit (AHU) must be where the water vapor is absorbed into the airstream before it can cause condensation or dripping.

PLACEMENT IN AN AHU

- In general, the dispersion assembly is best placed where the air can absorb the moisture being added without causing condensation at or after the assembly. This normally will be after the heating/cooling coil.
- Discharging steam against or perpendicular to the airstream gives slightly better mixing and absorption than discharging steam with the airstream.
- Place the dispersion assembly such that absorption will occur:
 - Before the intake of a high-efficiency filter, because the filter can remove the visible moisture and become waterlogged
 - Before coming in contact with any metal surface
 - Before fire or smoke detection devices

DISPERSION LOCATIONS IN AN AHU



Notes:

1. When installing dispersion in this location, an operating cooling coil might eliminate some moisture for humidification.
2. When installing dispersion on the positive side of a fan, install as far as possible downstream from the fan, where airflow through the dispersion device is most even.
3. The cooler air at this location requires an increased absorption distance. For dispersion in this location and humidifying while cooling, use cooling coil leaving conditions when calculating non-wetting distance.
4. VAV systems: Airflow safety devices typically shut off steam production at air velocities below 250 fpm (1.3 m/s).

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CAPACITIES AND LENGTHS OF STEAM HOSE AND TUBING

To maximize humidifier performance, follow the recommendations in Table 11-1 and all installation recommendations in the steam generator IOM (available on our **Literature** page at www.drirsteem.com).

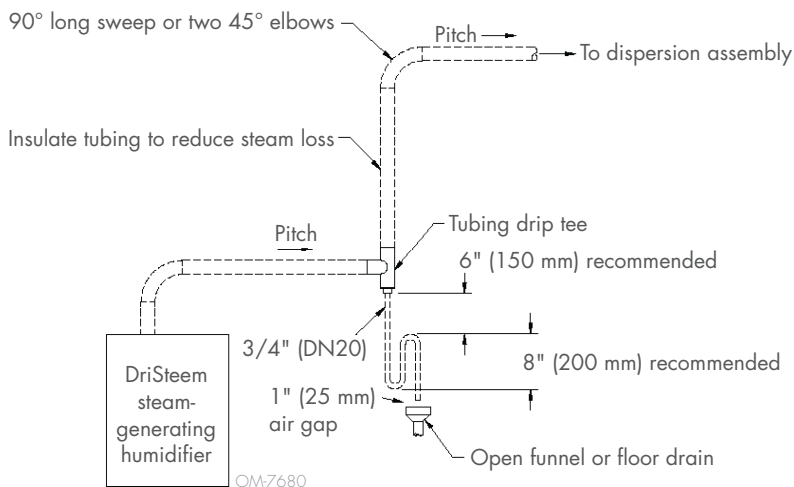
Table 11-1:
Maximum steam carrying capacity and length of interconnecting steam hose and tubing

Steam hose ¹						Copper or stainless steel tubing					
Hose I.D.		Maximum capacity		Maximum length ²		Tubing size		Maximum capacity ³		Maximum developed length ⁴	
inches	DN	lbs/hr	kg/h	ft	m	inches	DN	lbs/hr	kg/h	ft	m
1 ½	40	150	68	10	3	1 ½	40	150	68	20	6
2	50	250	113	10	3	2	50	220	100	30	9
<div>1. When using steam hose, use DriSteem steam hose for best results. Field-supplied hose may have shorter life and may cause foaming in the evaporating chamber resulting in condensate discharge at the dispersion assembly. Do not use steam hose for outdoor applications.</div> <div>2. Maximum recommended length for steam hose is 10' (3 m). Longer distances can cause kinking or low spots.</div>						3 ⁵	80 ⁵	450	204	80	24
						4 ⁵	100 ⁵	750	340	100	30
						5 ⁵	125 ⁵	1400	635	100	30
						6 ⁵	150 ⁵	2300	1043	100	30
						<div>3. Insulate tubing to minimize loss of capacity and efficiency.</div> <div>4. Developed length of tubing equals measured length plus 50% of measured length, to account for fittings. Longer tubing lengths are possible at capacities lower than listed maximums. Consult DriSteem.</div> <div>5. Requires flange connection.</div>					
<div>Notes:</div> <div><div>• Capacities and lengths in this table are based on total maximum pressure drop in hose or tubing of 5" wc (1250 Pa).</div><div>• Not all steam hoses and tubing diameters in this table are applicable to all steam generators and dispersion devices.</div><div>• This table does not apply to electrode humidifiers. See the <i>XT Series Humidifier Product Catalog</i> (available on our Literature page at www.drirsteem.com) for detailed electrode humidifier steam piping guidelines.</div></div>											

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DRIP TEE

When a vertical riser is required in the steam tubing, such as when piping around an obstruction, a drip tee is required in order to eliminate a condensate collection point that will restrict steam flow. See below.



DriSteem Corporation

A subsidiary of Research Products Corporation
DriSteem U.S. operations are ISO 9001:2015
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EXPECT QUALITY FROM THE INDUSTRY LEADER

For more than 45 years, DriSteem has been leading the industry with
creative and reliable humidification solutions. Our focus on quality is
evident in the construction of our steam dispersion assemblies. DriSteem
leads the industry with a Two-year Limited Warranty and optional
extended warranty.

For more information
www.dristeem.com
sales@dristeem.com

For the most recent product information visit our website:
www.dristeem.com

Your DriSteem Representative is: