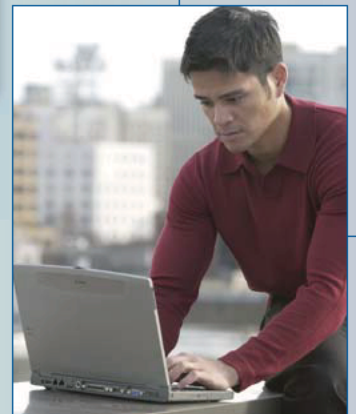
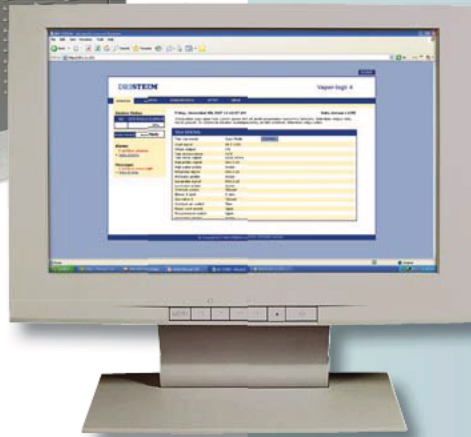


**DRISTEEM**<sup>®</sup>  
The humidification experts

**GTS**<sup>®</sup>  
Gas-to-Steam  
Humidification System  
**PRODUCT CATALOG**



***New!***

Vapor-logic<sup>®</sup>4 controller with:

- Web-enabled remote access
- Modbus<sup>®</sup>, BACnet<sup>®</sup>, and LonTalk<sup>®</sup> interoperability

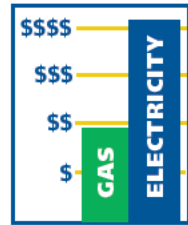
***Plus:***

New models GTS-500 and GTS-700

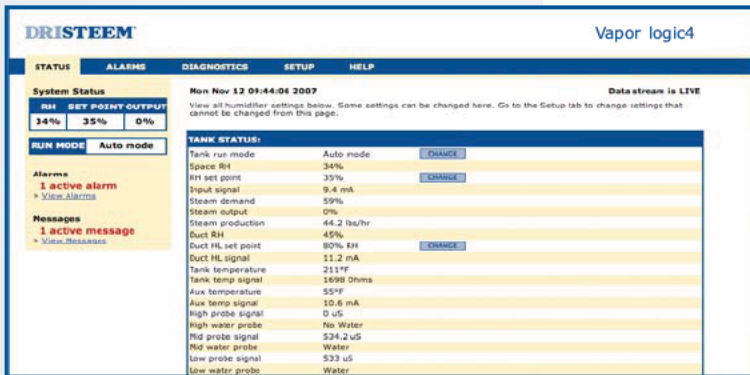
## Save with gas humidification

### Gas has lowest energy operating costs

The industry's first and best-selling gas-to-steam (GTS<sup>®</sup>) humidifier continues to be your best choice for reducing energy costs — both consumption and demand charges.



To calculate how much you can save by switching from an electric humidifier to a gas humidifier, use our Energy Savings Calculator at [www.dristeem.com/energycalc.jsp](http://www.dristeem.com/energycalc.jsp)



### Convenient Web-enabled remote access with Vapor-logic4

DRI-STEEM's fourth-generation controller Vapor-logic<sup>4</sup> allows, as standard, humidifier control from a keypad or from a Web interface. This provides the capability to securely set up, view, or adjust humidifier system functions from virtually anywhere — and at any time.

### Connect with Modbus<sup>®</sup>, BACnet<sup>®</sup>, or LonTalk<sup>®</sup>

GTS humidifiers with Vapor-logic<sup>4</sup> are fully interoperable with Modbus, BACnet, and LonTalk systems. Vapor-logic<sup>4</sup> can communicate with building automation systems using Modbus, its native language, or by using optional BACnet or LonTalk.



### More benefits of the best-selling gas-to-steam humidifier . . .

- **8 unit capacities from 75–600 lbs/hr**, including new GTS-500 and GTS-700 models
- **Easy software updates** through the USB port on the Vapor-logic4 board
- **View operational data** from the keypad or from the Web interface
- **Accurate, responsive, adjustable RH control** due to full burner modulation and PID control
- **Capacity range up to 9,600 lbs/hr (4,352 kg/h)** (16 units under one controller)
- **Automatically cools discharged hot water** to 140 °F (60 °C) to meet governing code safety requirements
- **Enclosures for virtually any environment.** Indoor and outdoor; factory-installed
- **Space conscious and streamlined.** All humidifier components are contained within enclosures — no separate control cabinets or wiring subpanels
- **Full service access.** Lift-off panels remove for easy access to all connection points

## More GTS features and benefits

### Proven performance

- Control to  $\pm 3\%$  RH
- Steam output rangeability up to 40:1
- Low nitrogen oxide (NO<sub>x</sub>) emissions of less than 20 ppm
- On-board diagnostics verify system operation
- Up to 84% burner efficiency rating
- Variable speed blowers and modulating gas valves provide consistent humidity output
- Designed and tested to meet ARI-640 humidification standard

### Application flexibility

- Capacity range to 600 lbs/hr (272 kg/h) for each unit; link up to 16 units for capacity to 9,600 lbs/hr (4,352 kg/h)
- Supports all water types: tap, softened, reverse osmosis, or deionized; easy to field convert if water type changes
- Supports natural and LP gas
- Outdoor enclosure available for outdoor operation in any climate
- CSA/AGA/CGA approved for sealed combustion
- Requires only two-sided access, allowing installation in tight spaces
- Horizontal or vertical venting
- Uses affordable Category 1 venting materials for all options, including sealed combustion

### Minimal maintenance

- Cleanout plate and removable panels provide easy access for inspection and servicing
- Use of softened water significantly reduces maintenance requirements
- End-of-season autodrain minimizes microbial growth
- Controller-operated drain and flush removes precipitated minerals from evaporating chamber
- Easy water level control access

### Built-in safety

- CSA/AGA/CGA certified design
- Self-contained infrared gas burners provide safety and reliability
- Gas valves close if the flue becomes blocked, shutting down humidifier operation
- Low-water sensing mechanism with redundant backup shuts down burners in a low water condition
- Can be vented with other Category 1 appliances
- Can interlock with combustion air dampers
- Freeze protection



### Next generation control with Vapor-logic4

The heart of any humidification system is its controller. See the next page for the features and benefits of this controller.

### DRI-STEEM dispersion: Proven and guaranteed

When it comes to absorption performance, competitors don't come close to DRI-STEEM's proven and guaranteed dispersion systems. Define your dispersion requirements and DRI-STEEM will meet or exceed them. Guaranteed. See Pages 16-23 for more dispersion information.

### Save even more energy with our high-efficiency tube option

An option for new and existing Ultra-sorb<sup>®</sup> and Rapid-sorb<sup>®</sup> dispersion assemblies, high-efficiency tubes provide significant energy savings: Wasted energy is reduced by up to 85%.



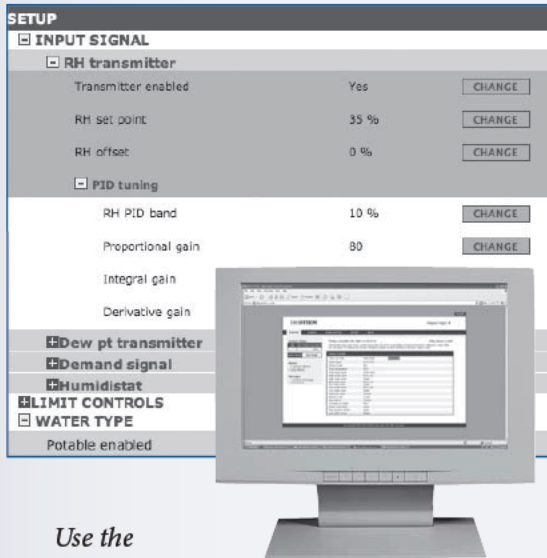
Airstream heat gain and condensate are also significantly lowered. See Pages 16-17 for more information.

### Brave the cold with our heated/ventilated outdoor enclosure

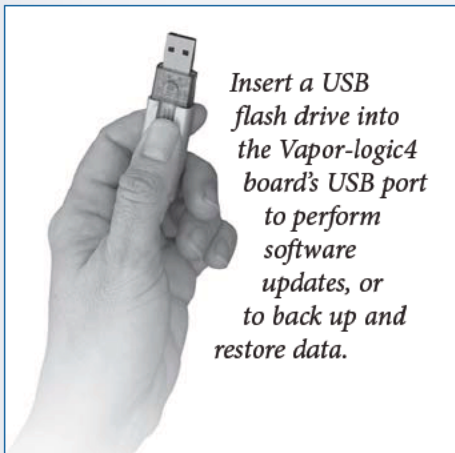
Third-party testers verified that cold temperatures are a breeze for our outdoor enclosures, proven to provide reliable operation under extreme conditions. See Pages 12-13 for more information



## Vapor-logic4 controller



Use the Vapor-logic4 keypad or the standard Web interface, shown here, to control your GTS humidification system.



### Accurate, responsive control

Vapor-logic, DRI-STEEM's humidification system controller, has been setting the standard for exceptional functionality and accurate RH control since 1992. The fourth generation controller, Vapor-logic4, retains the qualities that established the Vapor-logic reputation, plus offers several new capabilities, including:

**Web interface**, a standard feature, enables remote, simultaneous, secure access from anywhere, at any time.

**Modbus, BACnet, and LonTalk** allow interoperability with multiple building automation systems (BAS).

**Up-time optimizer** keeps humidifiers operating through system faults, as long as safety conditions are met, minimizing production down-time.

**USB port** on Vapor-logic4 allows easy software updates, and data backup and restore capability.

**PID control** provides accurate, responsive, and adjustable relative humidity control.

**Real-time clock** allows time-stamped alarm and message tracking, and accurate drain and flush scheduling.

**Tank temperature sensor**, mounted on the evaporating chamber, allows over-temperature protection, freeze protection, and tank preheating, allowing rapid response to a call for humidity.

**Auxiliary temperature sensor/transmitter** allows temperature compensation control to prevent window condensation, or air temperature monitoring, such as in a duct.

**Programmable outputs** allow remote signaling or device activation, and are easily configured during the setup process.

**Multiple-humidifier control** allows staged control of up to 16 humidifiers with one controller.

**Enhanced diagnostics** include:

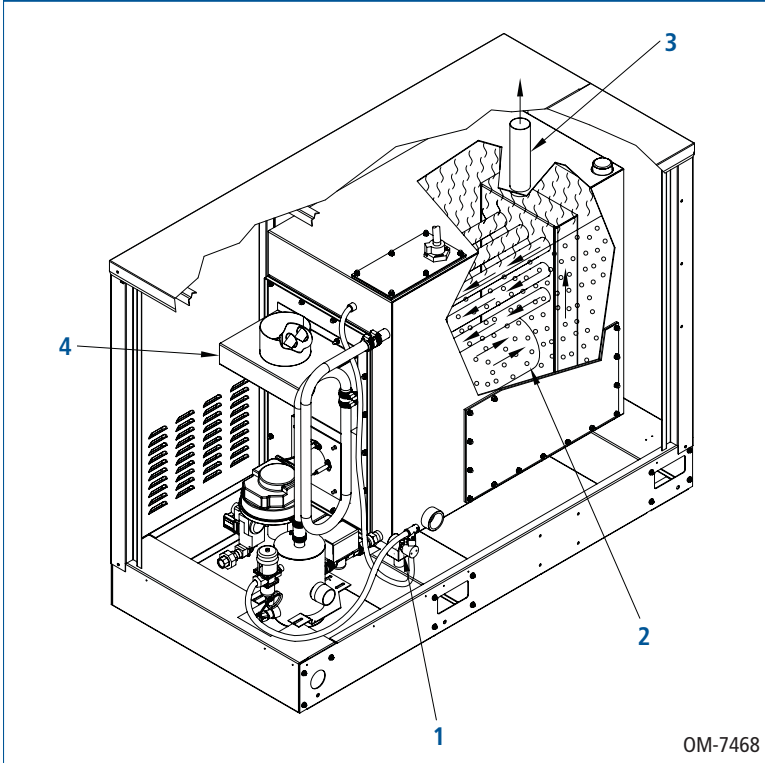
- **Test outputs** function, using the keypad or Web interface to verify component operation
- **Test humidifier** function, by simulating demand to validate performance
- **Data collection** of RH, air temperature, water use, energy use, alarms, and service messages for viewing from the keypad or Web interface

**Factory commissioning** of humidifier and control board guarantees a reliable, fast installation, minimizing field installation requirements. All units are operated and tested — heating water in each tank — before shipping.

**Preconfigured but easily changed.** Just go into the Setup menu to change a factory setting if, for example, a transmitter changes.

## GTS principle of operation

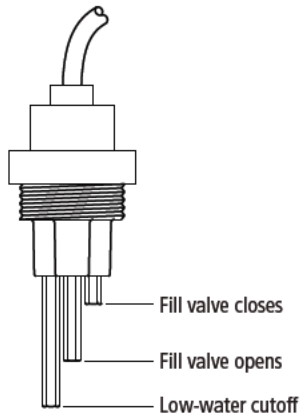
Figure 5-1:  
GTS principle of operation



1. When the GTS humidifier is first activated, the fill valve opens and the evaporating chamber fills with water to the operating level.
2. On a call for humidity, the infrared burner(s) ignite(s) sequentially. After all burners are firing into the heat exchanger, the blowers ramp up to bring burners to maximum output until the water in the evaporating chamber boils. The burners then begin to modulate based on demand. The fill valve opens and closes as needed to maintain the operating water level.
3. Steam created in the evaporating chamber flows through vapor hose or piping to the dispersion assembly, where it is discharged into the airstream.
4. The products of combustion are vented out the flue.

## GTS components

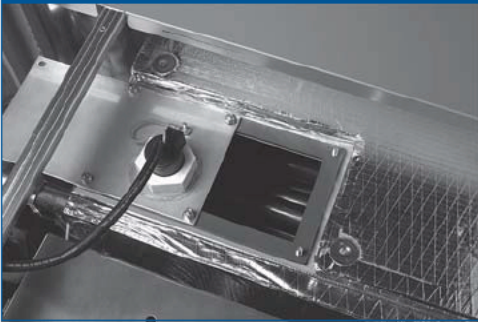
**Figure 6-1:**  
Water level control for standard water systems



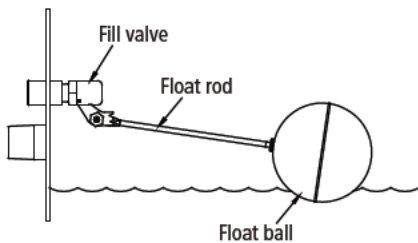
Systems using tap or softened water control water levels electronically using a three-rod probe. The controller responds with the above actions when the water level reaches each rod.

VLC-OM-030

**Figure 6-2:**  
Probe access (with cover open)

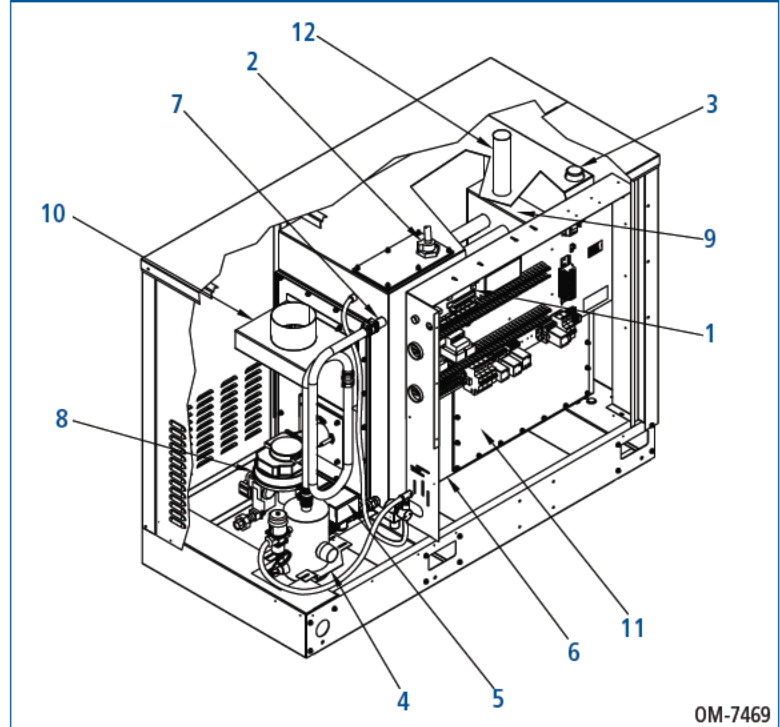


**Figure 6-3:**  
Water level control for DI/RO water systems



VLC-OM-026

**Figure 6-4:**  
GTS components



OM-7469

**1. Vapor-logic4 controller**  
(keypad and Web interface not shown)

Vapor-logic4 controls all humidifier functions as a stand-alone controller or integrated into a Modbus, BACnet, or LonTalk system. See Page 4 for more information.

**2. Water level control**

Tap or softened water systems control water levels electronically using a three-rod probe (Figures 6-1 and 6-2). DI/RO water systems control water levels using a float valve (Figure 6-3) and a low-water cutoff switch.

**3. Redundant water sensor**

The redundant water sensor provides a safety to the main water level sensor to prevent operation if water is not covering the heat exchanger tubes.

**4. Water tempering device**

This factory-installed water-tempering device automatically cools discharged hot water to 140 °F (60 °C) to meet governing code requirements for safe discharge water temperature. Cooling discharged hot water also prevents damage to PVC drain piping (see Figure 7-1).

## GTS components

### 5. Drain

Drain duration and frequency can be adjusted through the keypad or Web interface. To avoid possible stagnant water and microbial growth, the humidifier automatically drains if there is no call for humidity after a user-defined time period (72-hour default).

### 6. Auxiliary drain

This 1½" (DN40) outlet provides an additional location for draining the tank.

### 7. Water skimmer/overflow port

In standard water systems, the water skimmer reduces minerals in the evaporating chamber. Skimming occurs each time the humidifier fills. The skim time duration is user-adjustable. DI/RO water systems do not require skimming. The skimmer port also functions as an overflow port.

### 8. Infrared burners

Infrared burners provide fast and efficient heating. The burners have no standing pilot, thus saving energy and improving safety (see Figure 7-1).

### 9. Heat exchanger

Stainless steel heat exchanger transfers energy from the burners to the water in the evaporating chamber to generate steam.

### 10. Flue connection

Products of combustion are vented out the flue (see Figure 7-1).

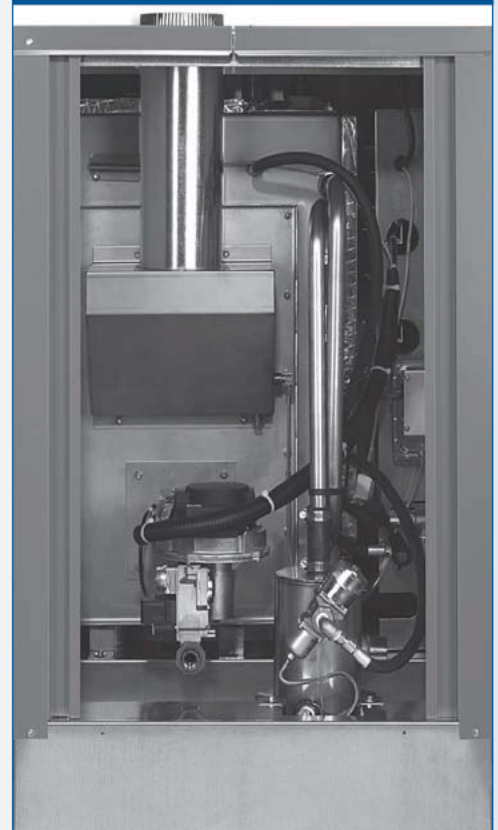
### 11. Cleanout plate

The cleanout plate allows access for easy removal of settled minerals (see Figure 7-2).

### 12. Steam outlet

Steam rises and exits through the steam outlet and travels to the dispersion unit through either vapor hose or piping.

**Figure 7-1:**  
View of burner, integral water tempering device, and flue connection



**Figure 7-2:**  
View of keypad, subpanel and cleanout plate



# GTS specifications, capacities, and weights

**Table 8-1:**  
GTS specifications, capacities, and weights

Model	Number of burners	Maximum steam capacity		Input		Water usage at maximum capacity**		Tank volume		GTS				GTS with outdoor enclosure				Full load amps*
										Operating weight		Shipping weight		Operating weight		Shipping weight		
		lbs/hr	kg/h	MBh	kW	gals/hr	litres/hr	gals	litres	lbs	kg	lbs	kg	lbs	kg	lbs	kg	120 V 60 Hz
GTS-100	1	75	34	100	29	9	34.1	49	185.5	700	320	375	170	800	365	500	230	1.8
GTS-200	1	150	68	200	59	18	68.1	49	185.5	700	320	375	170	800	365	500	230	1.8
GTS-300	2	225	102	300	88	27	102.2	53	200.6	850	385	450	205	1000	455	600	270	3.0
GTS-400	2	300	136	400	117	36	136.3	53	200.6	850	385	450	205	1000	455	600	270	3.0
GTS-500	3	375	170	500	147	45	170.3	76	287.7	1100	500	600	270	1450	660	950	430	4.5
GTS-600	3	450	204	600	176	54	204.4	76	287.7	1100	500	600	270	1450	660	950	430	4.5
GTS-700	4	525	238	700	205	63	238.5	89	336.9	1400	635	700	320	1750	795	1050	475	6.0
GTS-800	4	600	272	800	234	72	272.5	89	336.9	1400	635	700	320	1750	795	1050	475	6.0

**Note:**

\* Add 15 full load amps for outdoor enclosure heater load on all GTS models, add 1 full load amp for an outdoor enclosure without heaters.

\*\* Add 10% to account for skim and automatic drain/flush features if utilized (standard water units only).

**Table 8-2:**  
High altitude derate

Altitude		Input derate %
feet	meters	
0–2000	0–610	0
2001–2500	610–765	2*
2501–3000	765–915	4*
3001–3500	915–1065	6*
3501–4000	1065–1220	8*
4001–4500	1220–1370	10
4501–5000	1370–1525	12
5001–5500	1525–1675	14
5501–6000	1675–1830	16
6001–6500	1830–1980	18
6501–7000	1980–2135	20
7001–7500	2135–2285	22
7501–8000	2285–2440	24

### Capacity notes

- At sea level, approximately 152 BTUs are required to raise one pound of water from 60 °F to 212 °F. (At sea level, approximately 352 kJ are required to raise one kilogram of water from 16 °C to 100 °C.)
- An additional 970 BTUs are required to change the state of one pound of 212 °F water to vapor. (An additional 2257 kJ are required to change the state of one kilogram of 100 °C water to vapor.)
- Another factor to consider is condensation steam loss from piping. Use the following general steam loss guidelines:
  - Vapor hose: 0.15 lbs/hr/ft (0.22 kg/h/m)
  - Insulated pipe: 0.05 lbs/hr/ft (0.07 kg/h/m)
  - Hard pipe and dispersion tubes: 0.50 lbs/hr/ft (0.7 kg/h/m)
  - High-efficiency dispersion tubes: 0.20 lbs/hr/ft (0.298 kg/h/m)

For more detailed information about condensation steam loss, see the DRI-STEEM Design Guide or our software program, Dri-calc.

### LP gas

All models operate at rated MBh/kW input.

### High altitude

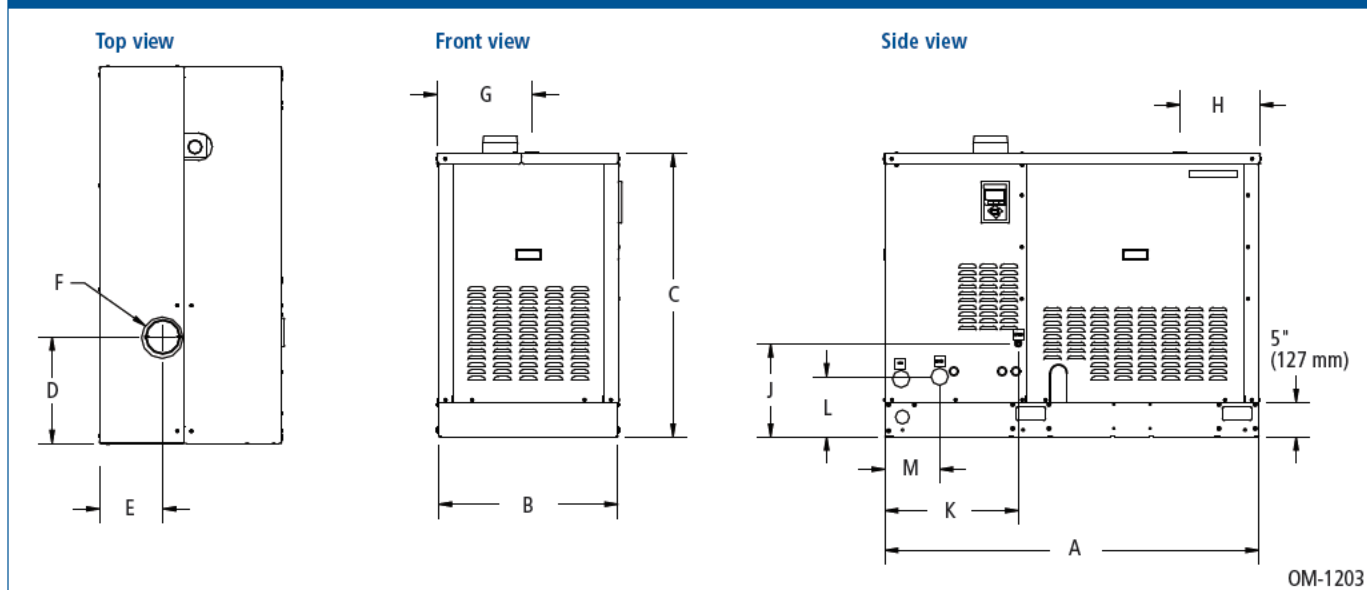
A derate in MBh/kW input exists when operating units at high altitude. See Table 8-2 for high altitude derate information.

\* GTS-400 models are derated 10% from 2001-4500 ft in Canada.



# GTS dimensions

**Figure 9-1:  
Dimensions**

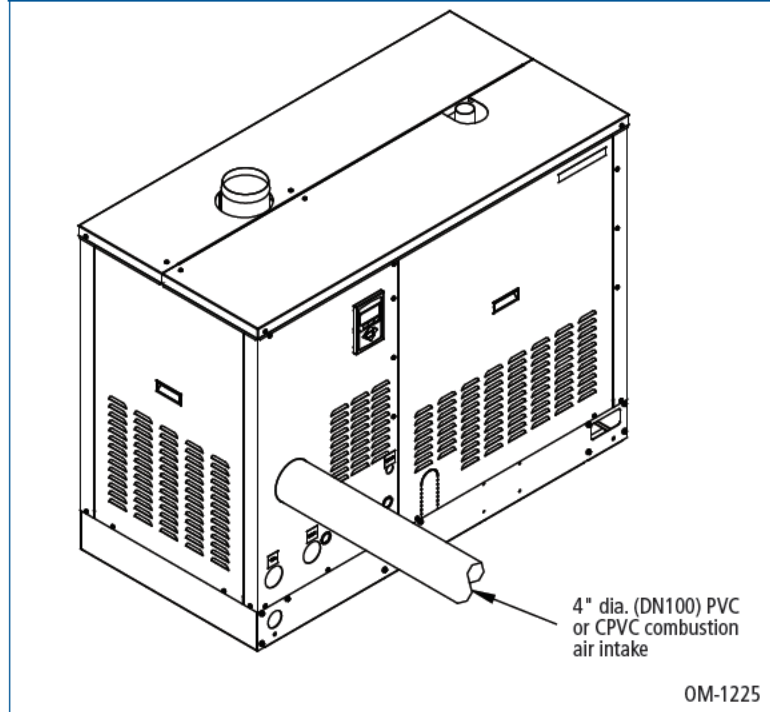


**Table 9-1:  
Dimensions**

	Description	GTS-100 GTS-200		GTS-300 GTS-400		GTS-500 GTS-600		GTS-700 GTS-800	
		inches	mm	inches	mm	inches	mm	inches	mm
A	Overall length	54.35	1380	54.35	1380	54.35	1380	54.35	1380
B	Overall width	26.38	670	32.38	822	42.38	1076	48.38	1229
C	Shroud height	41.00	1040	41.00	1040	41.00	1040	41.00	1040
D	Flue position	18.00	457	17.00	432	17.00	432	16.25	413
E		13.00	330	15.63	397	18.63	475	21.00	533
F	Flue diameter	5.00	127	7.00	178	8.00	203	10.00	254
G	Steam outlet position	14.00	356	20.50	521	29.25	743	35.25	895
H		11.63	295	11.63	295	11.63	295	11.63	295
J	Fill valve connection position	13.00	330	13.00	330	13.00	330	13.00	330
K		13.00	330	13.00	330	13.00	330	13.00	330
L	Drain position	8.75	222	8.75	222	8.75	222	8.75	222
M		8.00	203	8.00	203	8.00	203	8.00	203

## GTS connection sizes

**Figure 10-1:**  
GTS optional sealed combustion connection



OM-1225

**Table 10-1:**  
Connection sizes

Description	GTS-100 GTS-200		GTS-300 GTS-400		GTS-500 GTS-600		GTS-700 GTS-800	
	inches	DN	inches	DN	inches	DN	inches	DN
Gas supply	½ (pipe thread)	15	1 (pipe thread)	25	1 (pipe thread)	25	1¼ (pipe thread)	32
Sealed combustion piping (optional)	4	100	4	100	4	100	4	100
Flue vent	5	125	7	180	8	200	10	250
Water supply to fill valve and tempering device*	¾ (pipe thread)	10	¾ (pipe thread)	10	¾ (pipe thread)	10	¾ (pipe thread)	10
Drain	1½ (pipe thread)	40	1½ (pipe thread)	40	1½ (pipe thread)	40	1½ (pipe thread)	40
Steam outlet	2 (pipe thread or hose)	50	3 (flange)	80	4 (flange)	100	4 (flange)	100
Condensate return (recommended)	¾ (pipe thread)	20	¾ (pipe thread)	20	¾ (pipe thread)	20	¾ (pipe thread)	20

**Notes:**

\* In order to minimize DI/RO water use, disconnect factory piping to the water tempering device and pipe directly to tap water.

If planning to use heated supply water, disconnect the water line to the water tempering device at the fill manifold, and reconnect it to a cold water supply. This will ensure that the water tempering device operates properly.

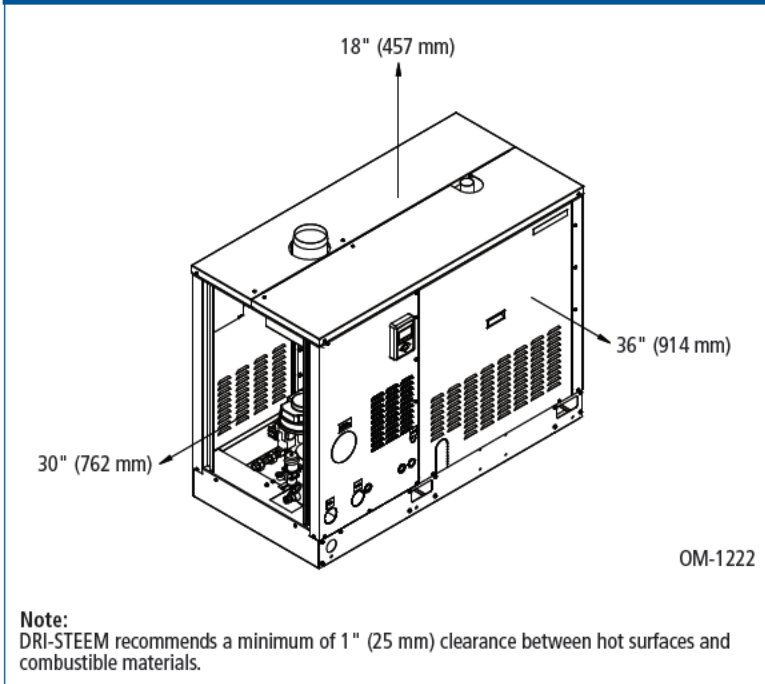
## GTS mounting

### Mounting

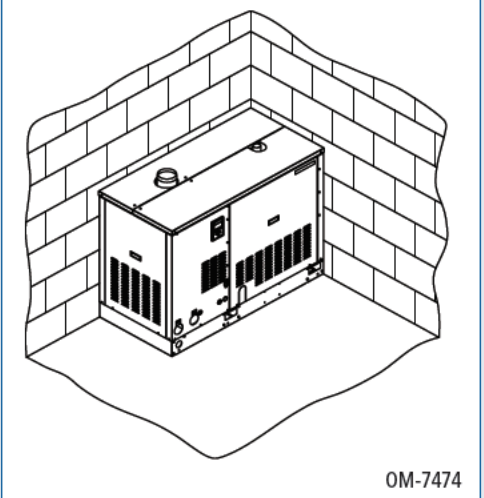
The GTS is available in two mounting configurations:

- Indoor installations: The humidifier is factory-installed in a painted enclosure with integral base.
- Outdoor installations: The humidifier is factory-installed in a galvanized steel enclosure with integral base and includes heaters and ventilation fans. The outdoor enclosure may also be ordered without the heater package, or with a factory-supplied roof curb.

**Figure 11-1:**  
GTS clearance recommendations



**Figure 11-2:**  
GTS only requires two-sided access



## GTS outdoor enclosure

**Figure 12-1:**  
**Outdoor enclosure**



The outdoor enclosure has heating and venting systems that ensure humidifier operation in temperatures from  $-40^{\circ}\text{F}$  ( $-40^{\circ}\text{C}$ ) to  $120^{\circ}\text{F}$  ( $48^{\circ}\text{C}$ ). The outdoor enclosure can also be ordered without the heater package, or with a factory-supplied curb.

### Heated and ventilated outdoor enclosure

DRI-STEEM offers a robust and affordable enclosure for mounting the GTS humidifier outdoors. Independent testing has proven that the GTS installed within this new outdoor enclosure provides error-free ignition and reliable operation under extreme conditions.

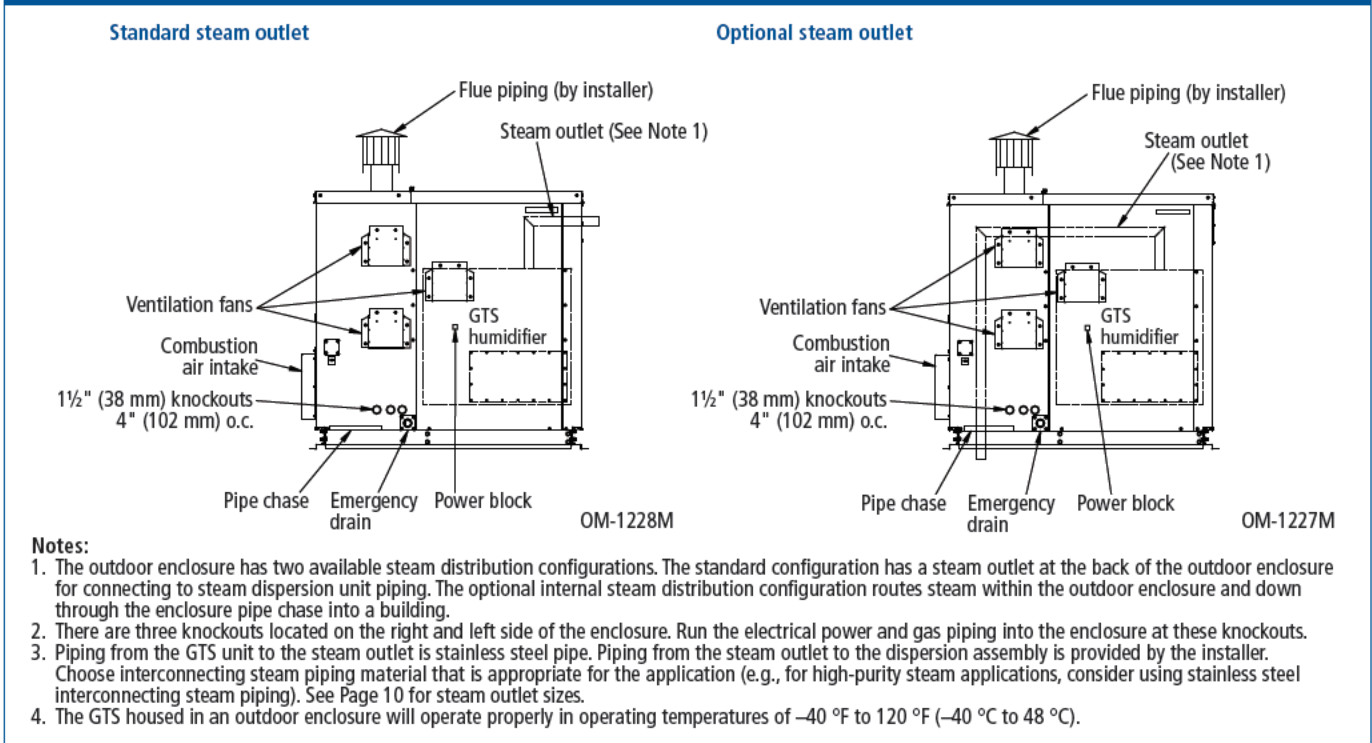
The GTS humidifier and outdoor enclosure are assembled at the factory. The unit ships complete to the job site, ready for easy-to-connect gas, water, electrical, and steam field connections.

### Outdoor enclosure features

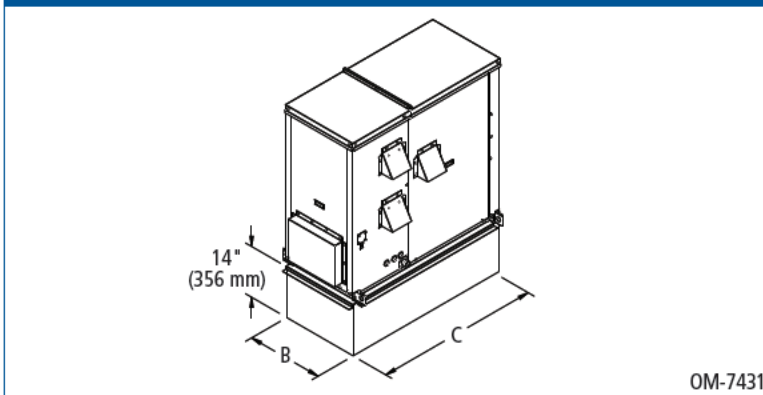
- **Protects in cold and hot climates.** To ensure complete safety and operation in all climates, the outdoor enclosure has heating and venting systems that ensure humidifier operation in temperatures from  $-40^{\circ}\text{F}$  ( $-40^{\circ}\text{C}$ ) to  $120^{\circ}\text{F}$  ( $48^{\circ}\text{C}$ ). The outdoor enclosure can also be ordered without the heater package.
- **Install on the ground or roof.** The outdoor enclosure is ideal for facilities that have limited interior space.
- **Factory constructed.** The outdoor enclosure ships complete with a GTS unit preinstalled and tested, ready to easily connect to gas, water, steam and electricity.
- **Certified, tested and proven.** GTS humidifiers and outdoor enclosures are CSA/AGA/CGA certified for outdoor operation. In addition, in-house testing has proven that the GTS and outdoor enclosure provide error-free ignition and reliable operation under extreme conditions.
- **Easy service access.** Easily removed panels provide access to all internal components.
- **Robust design.** The outdoor enclosure is ruggedly built to completely protect internal components. The enclosure is constructed of heavy-duty galvanized steel and is fully insulated. Serviceable gaskets on access panels ensure a tight seal.
- **Optional curb.** Factory-supplied curb provides base clearance and allows easy installation.

# GTS outdoor enclosure

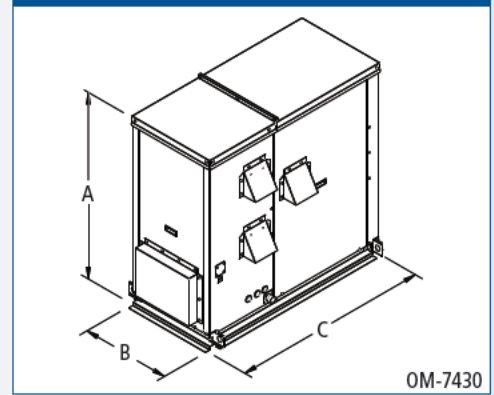
**Figure 13-1:**  
GTS outdoor enclosure with standard or optional steam outlet, elevation view



**Figure 13-2:**  
Outdoor enclosure mounted on a curb



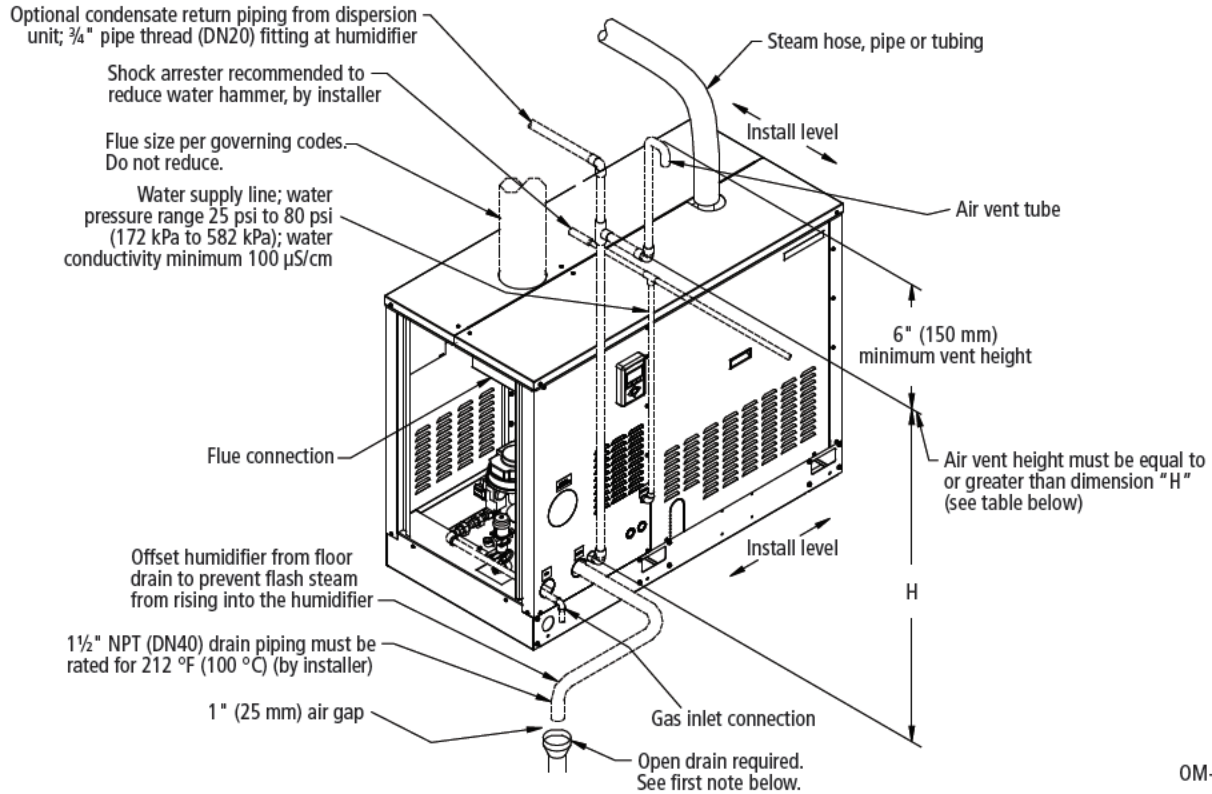
**Figure 13-3:**  
Outdoor enclosure mounted flush



**Table 13-1:**  
Outdoor enclosure dimensions

Description	GTS-100 GTS-200		GTS-300 GTS-400		GTS-500 GTS-600		GTS-700 GTS-800		
	inches	mm	inches	mm	inches	mm	inches	mm	
A	Enclosure height	54.63	1388	54.63	1388	54.63	1388	54.63	1388
B	Enclosure width	26.00	660	32.00	813	42.00	1067	48.00	1219
C	Enclosure length	57.25	1454	57.25	1454	57.25	1454	57.25	1454

**Figure 14-1:**  
Field piping overview for GTS standard water models



OM-1208

**Notes:**

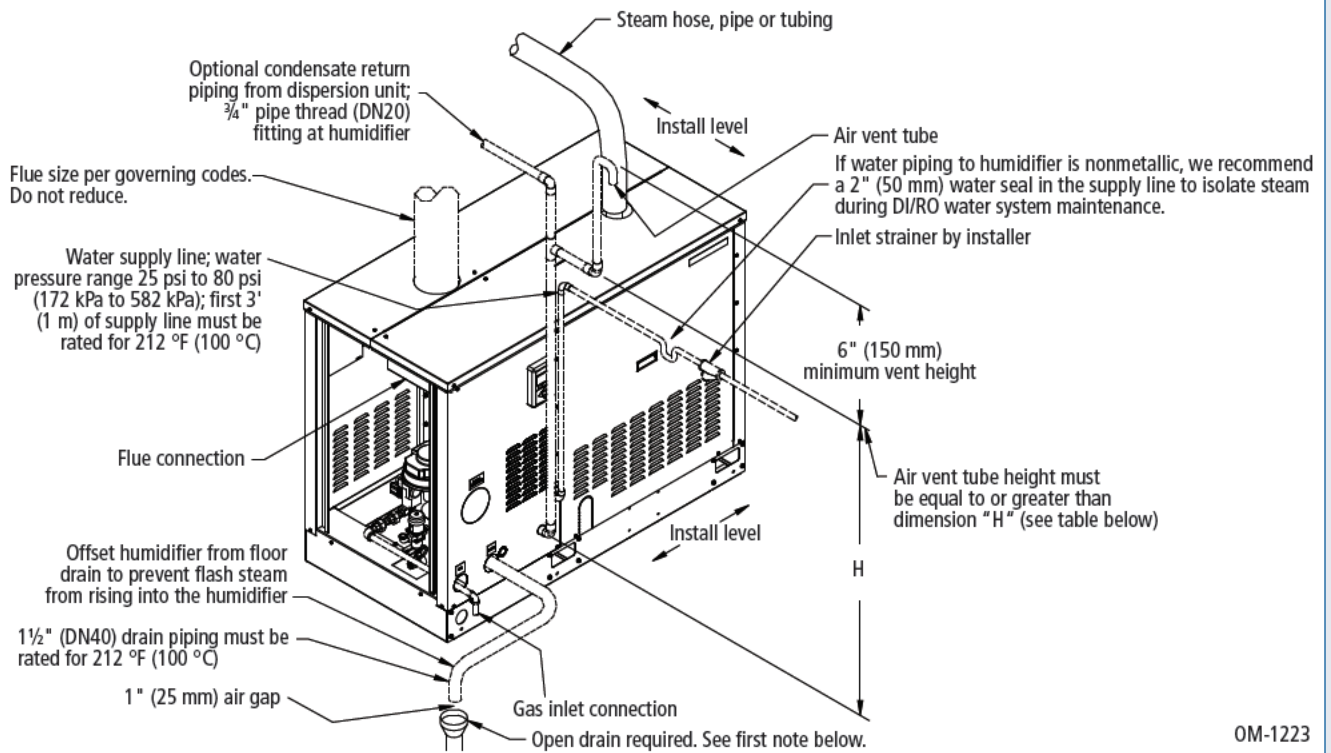
- Locate air gap only in spaces with adequate temperature and air movement to absorb flash steam; otherwise, condensation may form on nearby surfaces. Refer to governing codes for drain pipe size and maximum discharge water temperature.
- Dashed lines indicate provided by installer.
- Humidifier flue gases must be vented to the outside atmosphere.
- The water supply inlet is more than 1" (25 mm) above the skim/overflow port, eliminating the possibility of backflow or siphoning from the tank. No additional backflow prevention is required; however, governing codes prevail.
- Damage caused by chloride corrosion is not covered by your DRI-STEEM warranty.
- See the next page for recommended water supply piping for DI/RO water models.

**Table 14-1:**  
Height required to overcome GTS internal pressure (H)

GTS model number	H = Height required to overcome humidifier internal pressure	
	inches	mm
100, 200	35	889
300, 400, 500, 600, 700, 800	41	1041

# GTS piping, DI/RO water models

**Figure 15-1:**  
Field piping overview for GTS DI/RO water models



OM-1223

**Table 15-1:**  
Height required to overcome GTS-DI internal pressure (H)

GTS-DI model number	H = Height required to overcome humidifier internal pressure	
	inches	mm
100, 200	35	889
300, 400, 500, 600, 700, 800	41	1041

**Notes:**

- Locate air gap only in spaces with adequate temperature and air movement to absorb flash steam; otherwise, condensation may form on nearby surfaces. Refer to governing codes for drain pipe size and maximum discharge water temperature.
- Dashed lines indicate provided by installer.
- Humidifier flue gases must be vented to the outside atmosphere.
- The water supply inlet is more than 1" (25 mm) above the overflow port, eliminating the possibility of backflow or siphoning from the tank. No additional backflow prevention is required; however, governing codes prevail.
- Damage caused by chloride corrosion is not covered by your DRI-STEEM warranty.
- In order to minimize DI/RO water use, disconnect factory piping to the water tempering device and pipe directly to tap water.
- See the previous page for recommended water supply piping for standard water models.

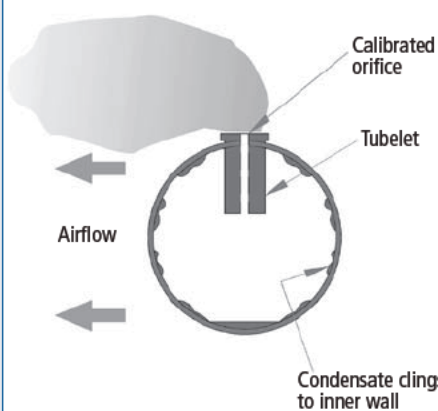
## Drip-free dispersion basics

**Figure 16-1:**  
DRI-STEEM dispersion tubes



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

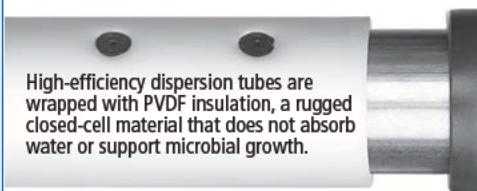
**Figure 16-2:**  
DRI-STEEM tubelets



DRI-STEEM's unique tubelets extend into the center of the tube so only the driest steam discharges into the air.

150-3bw

**Figure 16-3:**  
High-efficiency tube option



High-efficiency dispersion tubes are wrapped with PVDF insulation, a rugged closed-cell material that does not absorb water or support microbial growth.

An option for new and existing Ultra-sorb and Rapid-sorb dispersion assemblies, high-efficiency tubes provide significant energy savings: Wasted energy is reduced by up to 85%. Airstream heat gain and condensate are also lowered significantly.

### Guaranteed absorption distances

Using data collected in our on-site test lab, we have developed guaranteed steam absorption distances. Performance charts allow you to confidently choose equipment that accommodates any application.

### Dry steam

Adding humidification to an airstream without creating wet ducts is essential for a healthy environment. Wet ducts are a threat to building occupants' health since they moisten dust on duct floors, creating ideal breeding grounds for mold. In addition, water accumulating in ducts can drip, causing equipment and building damage.

### Steam escapes drip free through tubelets

All DRI-STEEM evaporative dispersion products discharge steam through thermal-resin tubelets fitted into dispersion tubes. These tubelets extend from the tube center, where the steam is driest, through the tube wall, to the duct airstream. In essence, tubelets provide a temperature-neutral escape tunnel for steam, allowing steam to cross over metal without condensing or dripping. Each tubelet contains a calibrated orifice sized for steam capacity. Thermal-resin tubelets — a DRI-STEEM exclusive — are essential for drip-free steam dispersion.

### Condensate drains away

Some condensation is inevitable in steam dispersion, but through careful design, condensate can be controlled and directed away from where it can cause problems.

For example, the Ultra-sorb® dispersion panel has a unique double-header design that uses gravity to remove condensate. Steam entering the supply header escapes through the tubelets; then condensate drains out the return header.

In Rapid-sorb® dispersion units, steam enters one end of a single bottom header with velocities carefully managed so condensate is not pushed into the air with the steam; instead it drains out at the opposite end of the header.

### Reduce condensate, wasted energy with high-efficiency tubes

To significantly reduce condensate and wasted energy, use DRI-STEEM's high-efficiency tubes, which reduce dispersion-generated condensate and wasted energy by up to 85%.

See the following pages for more information about dispersion.



## GTS steam dispersion options

### Ultra-sorb

- Double header design
- Shortest non-wetting distance; install within dampers, coils, or elbows without dripping
- Steam capacity up to 1,850 lbs/hr
- Factory assembled for easy installation
- High-efficiency tube option
- See Pages 18-20 for more information



### Rapid-sorb

- Single header design
- Short non-wetting distance
- Steam capacity up to 800 lbs/hr
- Assembled on-site
- High-efficiency tube option
- See Pages 18 and 21-22 for more information



### High-efficiency tube option

- Up to 85% reduction in wasted energy, airstream heat gain, and condensate production
- PVDF insulation is plenum-approved for in-duct installation
- Will not absorb water or support microbial growth; has a closed-cell structure
- Available on Ultra-sorb and Rapid-sorb



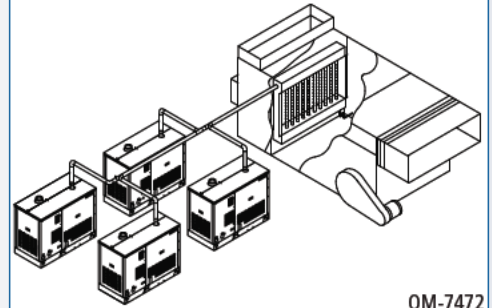
Ultra-sorb panel with high-efficiency tubes

### Area-type

- Disperses steam in large open spaces
- Use where there are no air-handling ducts
- Steam is dispersed quietly without introducing water droplets into the air
- Available option for GTS-100, -200, -300, and -400 only
- See Page 23 for more information

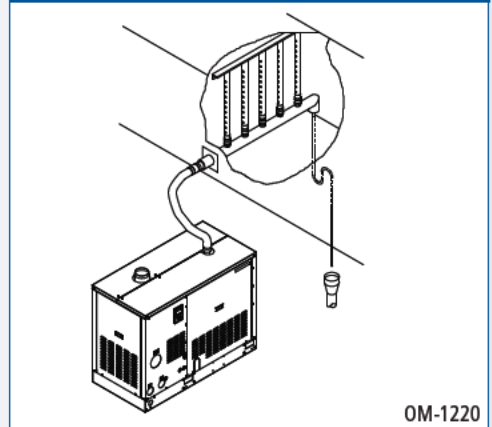


Figure 17-1:  
Ultra-sorb dispersion



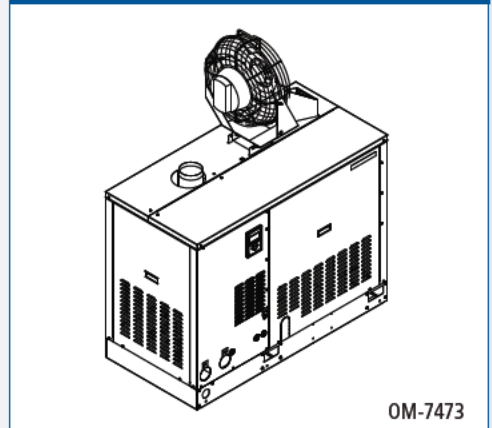
OM-7472

Figure 17-2:  
Rapid-sorb dispersion



OM-1220

Figure 17-3:  
Area-type dispersion



OM-7473

## Calculating non-wetting distances

### Notes:

- Let Dri-calc do the calculating! Visit our Web site, [www.dristeem.com](http://www.dristeem.com), to order a free copy of Dri-calc, DRI-STEEM's sizing and selection software.
- Final equipment selection should account for condensate loss. See the DRI-STEEM Design Guide for steam loss tables.
- Dispersion assembly should accommodate the humidifier's maximum output capacity.
- DRI-STEEM's high-efficiency dispersion tubes significantly reduce condensate to the point where a smaller GTS humidifier may meet the humidification load.

### Sample exercise

To learn more about specifying a dispersion unit based on non-wetting distance, read the sample problem below. For purposes of the sample, assume you chose Ultra-sorb units because you want pre-assembled panels.

Assume entering air is 20% RH, and leaving air needs to be 70% RH. Design for a non-wetting distance of 24" (610 mm) maximum.

### Solution

Refer to the graph on Page 19: "Ultra-sorb non-wetting distances." Find 20% entering RH. Proceed vertically until you intersect the 70% leaving RH line. Draw a line horizontally from that point to the right to see that for a 24" (610 mm) non-wetting distance, 6" (152 mm) tube spacing is the closest match.

### Verify capacity

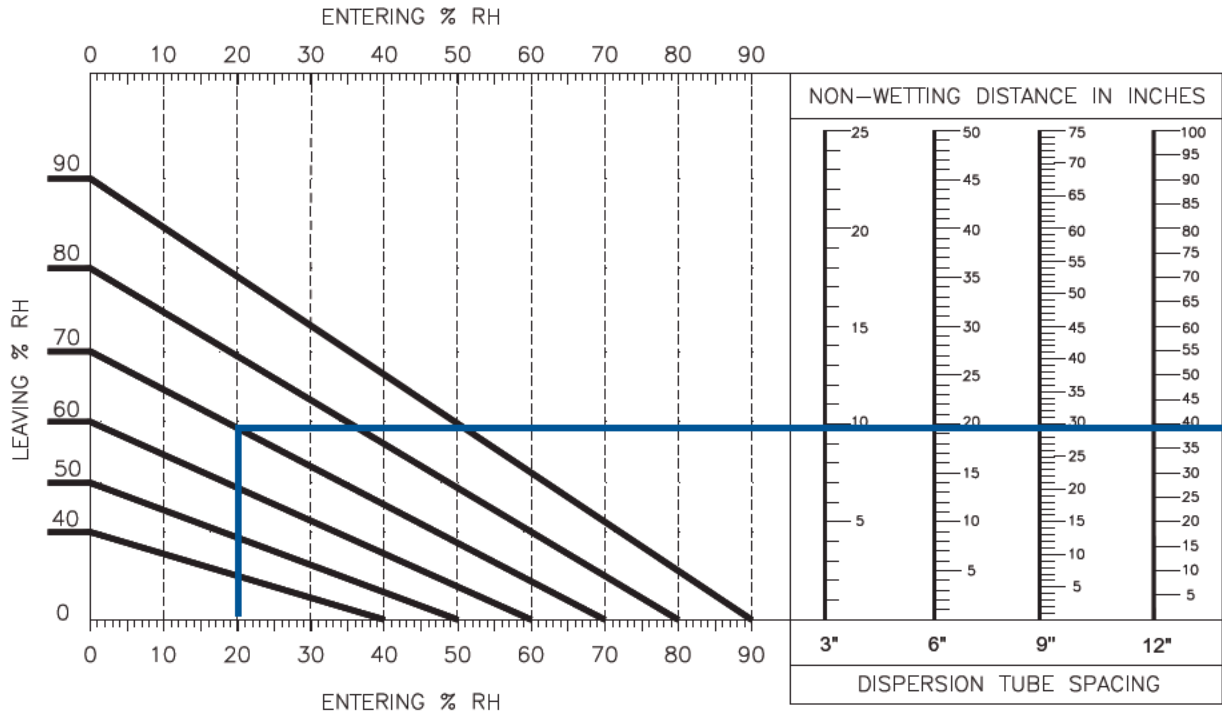
From Table 19-1: "Ultra-sorb tube spacing and capacity" on Page 19, note that for 6" (152 mm) spacing, maximum capacity is 18 lbs/hr/ft<sup>2</sup> (88 kg/h/m<sup>2</sup>). Multiply this value by the active face area of the Ultra-sorb to determine if the unit will produce adequate output capacity. If the capacity is inadequate, go to the next smaller tube spacing and recheck.

### Steam absorption considerations

1. Non-wetting distance is the dimension downstream from the leaving side of the steam dispersion assembly to the point where wetting will not occur, although steam wisps may be present. Solid objects at duct air temperature, such as coils, dampers, fans, etc., downstream of this dimension will remain dry.
2. **CAUTION!** Non-wetting distances described in this catalog do not apply when installing a steam dispersion assembly upstream of filter media. If you need to install a steam dispersion assembly upstream of filter media, consult your representative or DRI-STEEM directly for special recommendations.
3. Note that the RH rise ( $\Delta$ RH, or, the difference between entering and leaving RH) has a direct bearing on the non-wetting distance. As the rise increases, more vapor needs to be dispersed into the air, and thus the non-wetting distance increases.
4. Uneven airflow over the cross-section of a dispersion assembly can result in nonuniform mixing of steam with air which, in turn, adversely affects the non-wetting distance.

# Ultra-sorb dispersion

**Figure 19-1:  
Ultra-sorb non-wetting distances**



**Note:**  
The above data applies to all air velocities up to 1,500 fpm (7.6 m/s), and is based on air leaving the zone of humidification at conditions of 55 °F (13 °C) and the stated % RH. The blue lines in the graph refer to the sample exercise described on Page 18.

**Table 19-1:  
Ultra-sorb tube spacing and capacity**

Tube spacing		Maximum capacity	
inches	mm	lbs/hr/ft <sup>2</sup>	kg/h/m <sup>2</sup>
3	76	36	175
6	152	18	88
9	229	12	59
12	305	9	44

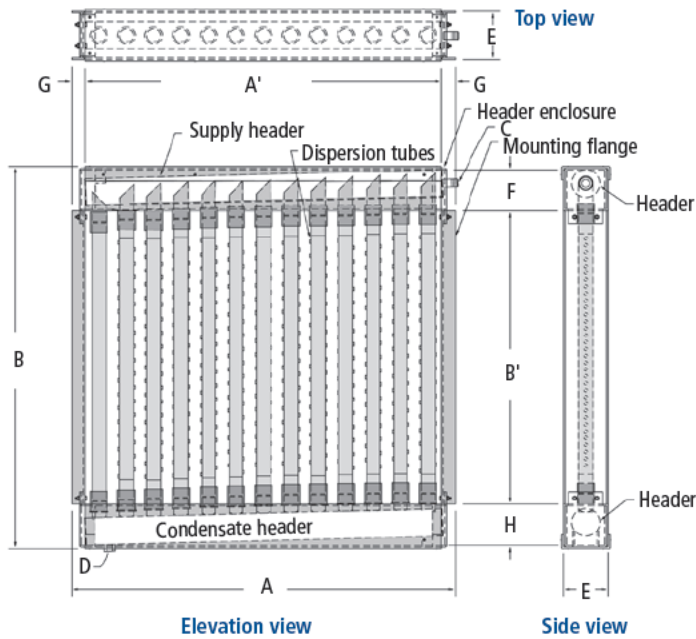
**Note:**  
The above steam flow capacity data is based on pounds (kg) of steam per hour per square foot (meter) of face area, exclusive of headers, at various tube spacings.

**Table 19-2:  
Ultra-sorb header capacities**

Header diameter		Header capacity	
inches	DN	lbs/hr	kg/h
3	80	300	135
4	100	600	270
5	125	1100	500
6	150	1850	820

# Ultra-sorb dimensions

**Figure 20-1:**  
Ultra-sorb Model LV dimensions



OM-123us

**Table 20-1:**  
Ultra-sorb dimensions

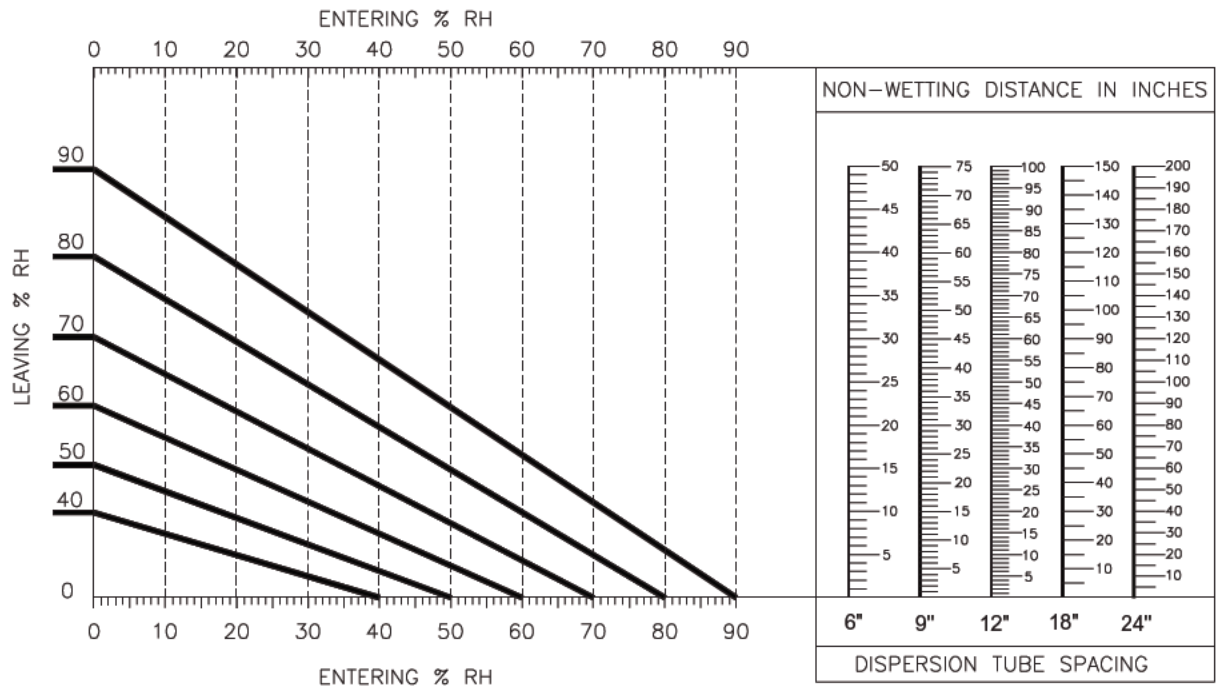
Dimension	Description	Inches (mm)
A	Overall width	15" (381) minimum to 147" (3734) maximum in 1" (25) increments
A'	Face width	12" (305) minimum to 144" (3658) maximum in 1" (25) increments
B	Overall height	21" (533) minimum to 156" (3962) maximum in 1" (25) increments
B'	Face height	12" (305) minimum to 144" (3658) maximum in 1" (25) increments
C	Steam inlet diameter	Determined by maximum capacity
D	Condensate drain	3/4" pipe thread (DN20)
E	Header enclosure (front to back)	For 3" (76) and 4" (102) headers, E = 5" (127); for 5" (127) header, E = 6" (152); for 6" (152) header, E = 7" (178)
F	Header enclosure (top to bottom)	For 3" (76) header F = 4.5" (114); for 4" (102) header, F = 5.5" (140); for 5" (127) header, F = 6.5" (165); for 6" (152) header F = 7.5" (191)
G	Flange	1.5" (38)
H	Condensate header enclosure	4.5" (114)

**Notes:**

- Header diameter varies with capacity.
- Dimensions and specifications subject to change without notice.

# Rapid-sorb dispersion

**Figure 21-1:**  
Rapid-sorb non-wetting distances



**Note:**  
The above data applies to all air velocities up to 1,500 fpm (7.6 m/s), and is based on air leaving the zone of humidification at conditions of 55 °F (13 °C) and the stated % RH.

**Table 21-1:**  
Rapid-sorb dispersion tube capacities\*

Tube capacity		Tube diameter	
lbs/hr	kg/h	inches	DN
≤35	≤16	1½	40
36–70	17–32	2	50

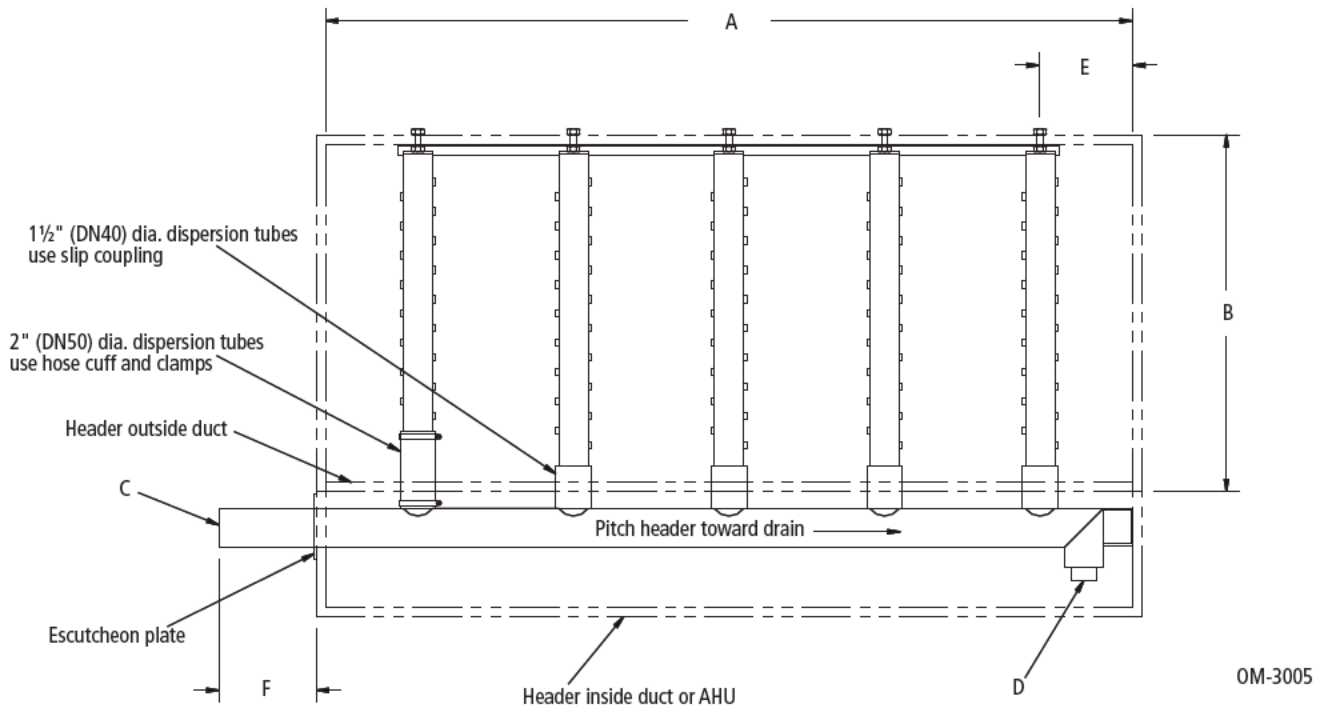
**Note:**  
\* If duct height is <15" (381 mm), tube quantities may need to increase to compensate for reduced capacity of short tubes. Consult DRI-STEEM or see Dri-calc for the correct calculation.

**Table 21-2:**  
Rapid-sorb header capacities

Header capacity		Header diameter	
lbs/hr	kg/h	inches	DN
≤250	≤113	2	50
251–500	114–227	3	80
501–800	228–363	4	100

## Rapid-sorb dimensions

**Figure 22-1:**  
Rapid-sorb dimensions



OM-3005

**Note:**  
Add water seal to condensate drain as shown in the Dri-calc Installation Guides or the GTS Installation, Operation, and Maintenance manual.

**Table 22-1:**  
Rapid-sorb dimensions

Dimension	Description	Inches (mm)
A	Face width	12" (305) minimum to 120" (3048) maximum in 1" (25) increments
B	Face height	12" (305) minimum to 120" (3048) maximum in 1" (25) increments
C	Steam inlet	Determined by humidifier maximum capacity
D	Condensate drain	¾" pipe thread (DN20)
E	Distance from tube center to inside of duct or AHU wall	4.5" (114) minimum
F	Distance from outside of duct or AHU wall to end of Rapid-sorb leader	4.5" (114) minimum

**Note:**  
All Rapid-sorb units are custom-sized and field-assembled to fit the duct or air handler. Consult DRI-STEEM for sizes larger or smaller than those listed above.

# Area-type dispersion

**Table 23-1:**  
Area-type (evaporative steam) minimum non-wetting distances\*

Maximum steam capacity		60 °F (16 °C)																	
		30% RH						40% RH						50% RH					
		Rise		Spread		Throw		Rise		Spread		Throw		Rise		Spread		Throw	
lbs/hr	kg/h	ft	m	ft	m	ft	m	ft	m	ft	m	ft	m	ft	m	ft	m	ft	m
50	20	1.0	0.3	2.0	0.6	6.0	1.8	1.0	0.3	2.0	0.6	6.0	1.8	1.0	0.3	2.5	0.8	6.0	1.8
75	34	3.0	0.9	3.0	0.9	8.0	2.4	3.0	0.9	3.0	0.9	8.0	2.4	3.0	0.9	4.0	1.2	8.0	2.4
100	45	4.0	1.2	4.0	1.2	10.0	3.1	4.0	1.2	4.0	1.2	10.0	3.1	4.0	1.2	5.0	1.5	10.0	3.1
150	68	6.0	1.8	5.0	1.5	12.0	3.7	6.0	1.8	5.0	1.5	12.0	3.7	6.0	1.8	5.0	1.5	12.0	3.7
200	90	7.0	2.1	7.0	2.1	13.0	4.0	8.0	2.4	7.0	2.1	14.0	4.3	8.0	2.4	7.0	2.1	14.0	4.3
225	102	7.0	2.1	7.0	2.1	13.0	4.0	8.0	2.4	7.0	2.1	14.0	4.3	8.0	2.4	7.0	2.1	14.0	4.3
250	110	8.0	2.4	8.0	2.4	15.0	4.6	9.0	2.7	9.0	2.7	16.0	4.9	9.0	2.7	9.0	2.7	16.0	4.9
285	130	9.0	2.7	9.0	2.7	17.0	5.2	10.0	3.1	10.0	3.1	18.0	5.5	10.0	3.1	10.0	3.1	18.0	5.5
300	136	9.0	2.7	9.0	2.7	17.0	5.2	10.0	3.1	10.0	3.1	18.0	5.5	10.0	3.1	10.0	3.1	18.0	5.5

Maximum steam capacity		70 °F (16 °C)																	
		30% RH						40% RH						50% RH					
		Rise		Spread		Throw		Rise		Spread		Throw		Rise		Spread		Throw	
lbs/hr	kg/h	ft	m	ft	m	ft	m	ft	m	ft	m	ft	m	ft	m	ft	m	ft	m
50	20	1.0	0.3	1.5	0.5	4.0	1.2	1.0	0.3	2.0	0.6	4.0	1.2	1.0	0.3	2.0	0.6	4.0	1.2
75	34	2.0	0.6	2.0	0.6	6.0	1.8	2.0	0.6	2.5	0.8	6.0	1.8	2.0	0.6	2.5	0.8	6.0	1.8
100	45	3.0	0.9	3.0	0.9	8.0	2.4	3.0	0.9	3.0	0.9	8.0	2.4	3.0	0.9	3.0	0.9	8.0	2.4
150	68	4.0	1.2	4.0	1.2	10.0	3.1	4.0	1.2	4.0	1.2	11.0	3.4	4.0	1.2	4.0	1.2	11.0	3.4
200	90	5.0	1.5	5.0	1.5	11.0	3.4	5.0	1.5	5.0	1.5	12.0	3.7	5.0	1.5	5.0	1.5	12.0	3.7
225	102	5.0	1.5	5.0	1.5	11.0	3.4	5.0	1.5	5.0	1.5	12.0	3.7	5.0	1.5	5.0	1.5	12.0	3.7
250	110	6.0	1.8	6.0	1.8	12.0	3.7	6.0	1.8	6.0	1.8	13.0	4.0	6.0	1.8	6.0	1.8	14.0	4.3
285	130	7.0	2.1	7.0	2.1	14.0	4.3	7.0	2.1	7.0	2.1	15.0	4.6	7.0	2.1	7.0	2.1	16.0	4.9
300	136	7.0	2.1	7.0	2.1	14.0	4.3	7.0	2.1	7.0	2.1	15.0	4.6	7.0	2.1	7.0	2.1	16.0	4.9

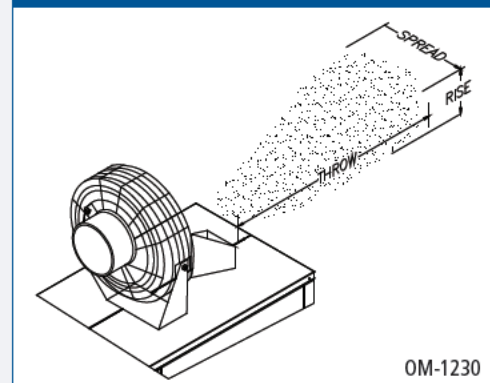
**Notes:**

- \* With fan on high speed
- Rise: Minimum non-wetting height above the steam chute
- Spread: Minimum non-wetting width from the steam chute
- Throw: Minimum non-wetting horizontal distance from the steam chute

**Fan specifications:**

- Motor: 120 V, 50/60 Hz
- Speeds: 3
- Control: Rotary switch
  - cfm: 5350 (high speed)
  - m<sup>3</sup>/s: 2.52 (high speed)
  - rpm: 1500 (high speed)
  - Amps: 1.52 (high speed)

**Figure 23-1:**  
Area-type rise, spread, throw



OM-1230

## Energy savings calculator

### Expect quality from the industry leader

For more than 40 years, DRI-STEEM has been leading the industry with creative and reliable humidification solutions. Our focus on quality is evident in the construction of the GTS humidifier, which features cleanable, stainless steel construction, and an industry-leading Two-year Limited Warranty.

### For more information

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For the most current product information, visit our Web site: [www.dristeem.com](http://www.dristeem.com)

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Form No. GTS-CAT-1208

### Let Energy-calc™ estimate saved energy costs!

In many locations, the savings from switching to gas are so significant that you can replace old electric humidifiers with new GTS gas humidifiers — and let the energy savings pay for replacement equipment and installation costs.

To quickly estimate energy savings for your application, go to [www.dristeem.com/energycalc.jsp](http://www.dristeem.com/energycalc.jsp)

**Sample Energy-calc screen**

**Enter your values to calculate your savings.**

	Unit of measure	Value
Select your country		Select One
Select your state/province		Select a country first
Select the city nearest you		Select a state first
Select your natural gas utility rate	Select One	Select a unit first
Select your electric utility rate		Select One
Select the air flow rate of your air handler(s)	Select One	Select a unit first
Select your entering outside air percentage		Select One
Select your desired temperature	Select One	Select a unit first
Select your desired RH		Select One
Select the hours per week the humidifier will be allowed to operate to maintain set point		Select One

**CALCULATE SAVINGS**

Your DRI-STEEM representative is: