READ AND SAVE THESE INSTRUCTIONS

VAPORSTREAM® and VAPORSTREAM® DI

ELECTRIC STEAM HUMIDIFIERS

**For Commercial, Institutional,
Industrial and Large Residential Applications
Without a Steam Boiler**

Installation Instructions and Maintenance Operations Manual

UL LISTED

CSA APPROVED

DRI-STEEM® HUMIDIFIER COMPANY

A SUBSIDIARY OF RESEARCH PRODUCTS CORPORATION

ISO 9001

TABLE OF CONTENTS

TO THE PURCHASER AND THE INSTALLER

Thank you for deciding to purchase VAPORSTREAM equipment. We have applied our best efforts in designing and building this equipment to give you total satisfaction and many years of trouble free service. Avoiding certain pitfalls during installation and observing proper operating practices thereafter will assure you of achieving that objective. We therefore respectfully urge you to familiarize yourself with the contents of this bulletin.

This bulletin covers material for both the VAPORSTREAM and VAPORSTREAM D.I. humidifiers. Most of the application material will apply to both units. When information differs for the two units it will be noted as such.

DRI-STEEM Humidifier Company

VAPORSTREAM Diagram 3

Installation
- Selecting the Location 4-5

Electrical Specifications 6

Mechanical Specifications 7-8

VPC Area-Type 9

Mounting Methods
- Mounting Procedures 10-12
- Dispersion Tube Installation 13
- RAPID-SORB Assembly 14

Piping Methods 15-17

Electrical 18

Operation
- Probe Control 19
- Timer-Operated Drain/Flush Operation 19

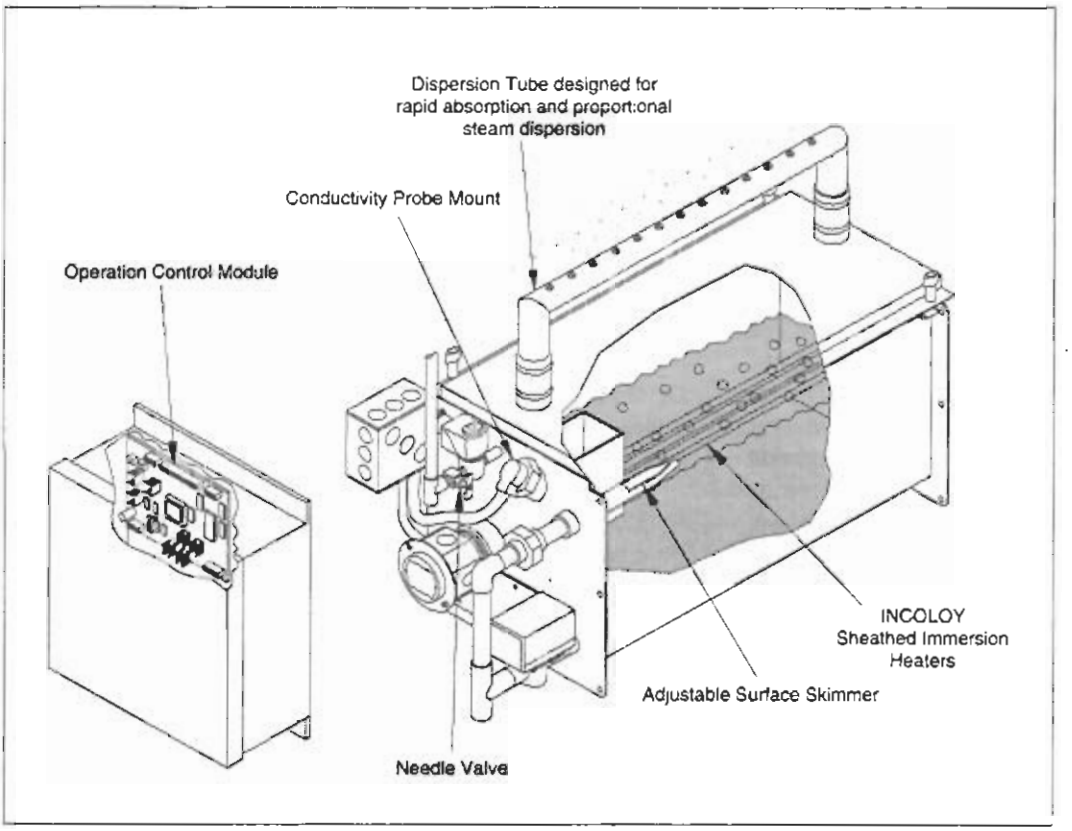
Maintenance Procedures
- VAPORSTREAM 20
- VAPORSTREAM D.I. 21

Trouble-Shooting Guide 22-23

VAPORSTREAM Replacement Parts 24-26

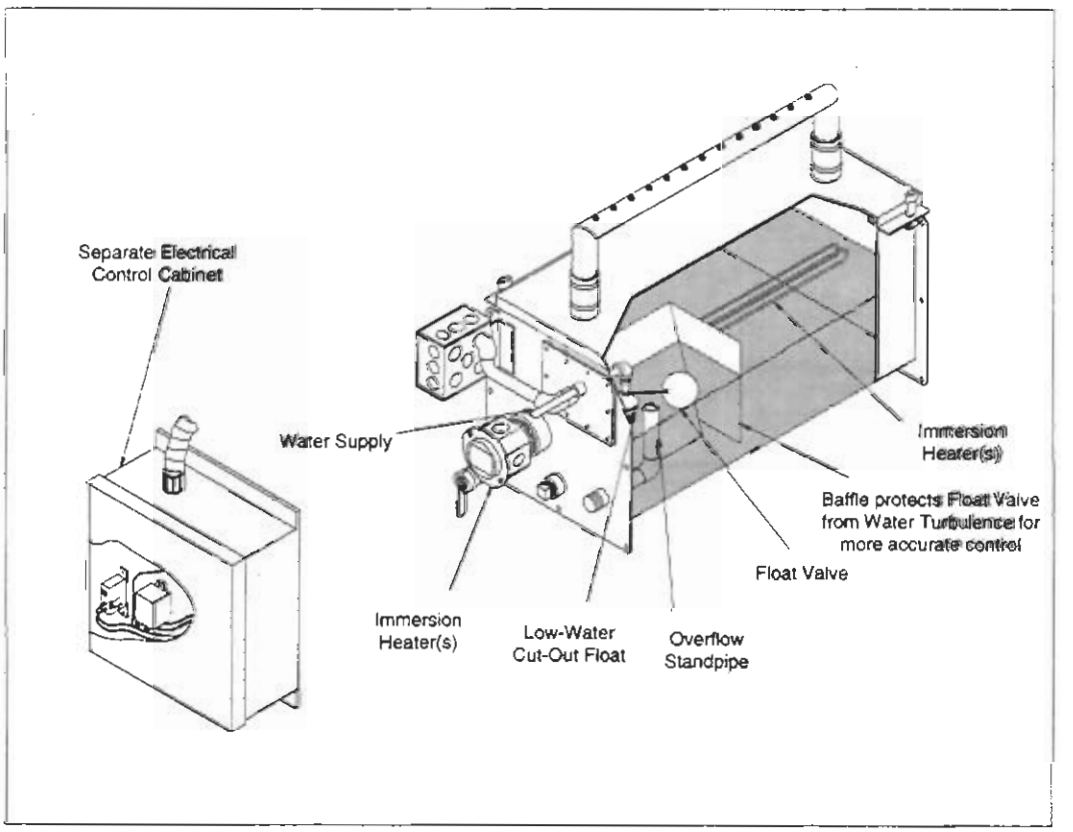
Maintenance Service Record 27

Warranty 28



VAPORSTREAM Electric Humidifier

Sophisticated state-of-the-art technology in a simple, low maintenance humidifier.



VAPORSTREAM Model D.I.

For use with deionized or reverse osmosis water. This unit produces chemically-free steam and reliable , accurate humidification control. And it is virtually maintenance-free with no wasted water, heat or downtime.

Selecting the Location

To put VAPORSTREAM humidifiers to work, you need just three things: available tap water (preferably softened) or DI/RO water, available electricity and a drain system. VAPORSTREAM humidifiers are not built to fit rigid, set situations, but are made to adapt to any existing physical condition.

When selecting the location, first consideration should be given to rapid, thorough absorption of the steam. *The warmest air will most readily absorb the steam. The most active part of the air stream will provide the best mixing of the steam and air. Avoid dead spots* such as the inside curve of an elbow or an area immediately downstream of a baffle plate. Since the "fog" will travel some distance before "disappearing" and will saturate objects it touches while visible, the distance steam will travel within a given airstream is predictable and can be determined using the VAPORSTREAM catalog. If this has already been done, the travel distance should be specified; if not, consult the VAPORSTREAM catalog.

A. It is very important that the humidifier be located where the water vapor being discharged will be carried off with the air stream and will not cause condensation or dripping from the duct.

B. In general, the electric evaporative humidifier is best placed where the air can most readily absorb the moisture being added without causing condensation at or after the unit. This will normally be after the heating coil or where the air temperature is highest.

C. Do not place in an outside air intake unless air is tempered with a preheat coil.

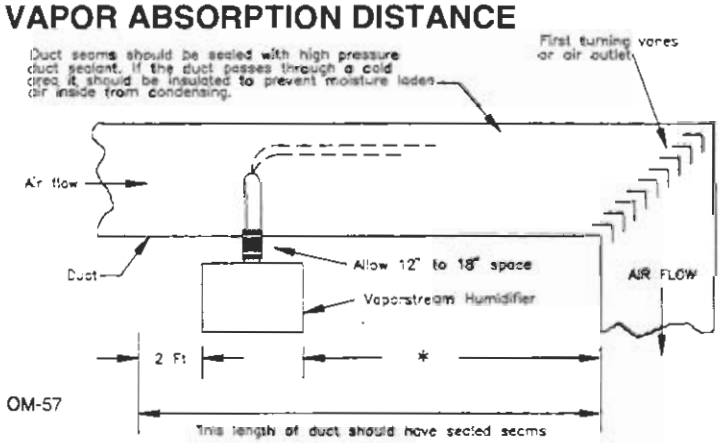
D. Do not place the unit too near to the intake of a high efficiency filter. The filter will remove the visible moisture and become waterlogged.

E. Do not place unit where discharged vapor will impinge on a metal surface.

F. Do not place the unit too close to a split in the duct. The unit may put more moisture in one branch than the other.

When adequate absorption distance is not available, a rapid absorption tube bank should be used. Refer to the VAPORSTREAM product catalog or contact DRI-STEEM or your DRI-STEEM representative.

VAPOR ABSORPTION DISTANCE

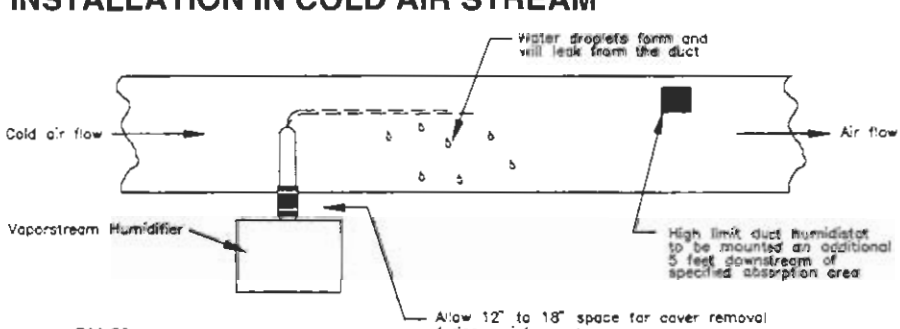


A distance of air travel is required for the steam to "disappear" or go into the gaseous state.

While visible, the steam will collect on internal devices such as turning vanes resulting in dripping.

A distance of 5 to 8 feet is recommended, depending on temperature. (When duct air is cooler than 80°F, up to 12 feet should be allowed.)

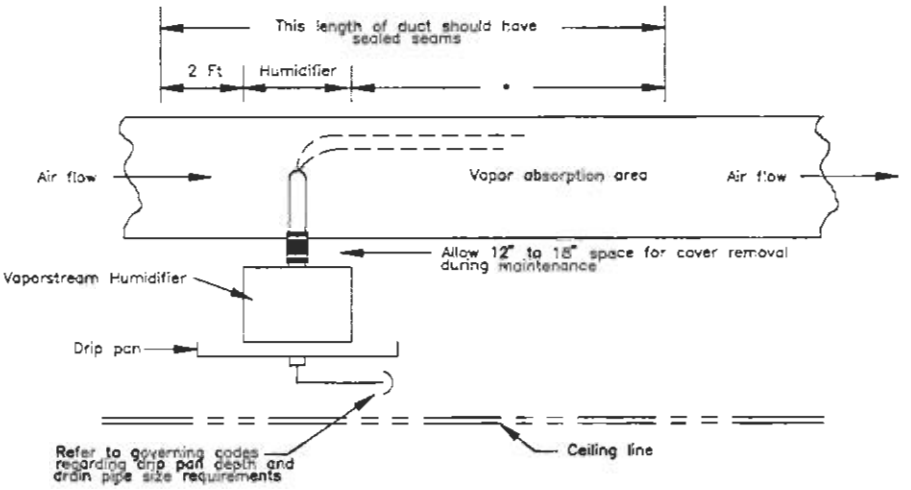
INSTALLATION IN COLD AIR STREAM



When a humidifier is installed in a duct that will carry cold air periodically, the dew point temperature should be determined.

If the psychrometric chart reveals that saturation may occur, protection should be provided. A high limit humidistat or thermostat, set to cut off the humidifier at a safe temperature, can be used for this purpose.

INSTALLATION ABOVE VALUABLE EQUIPMENT



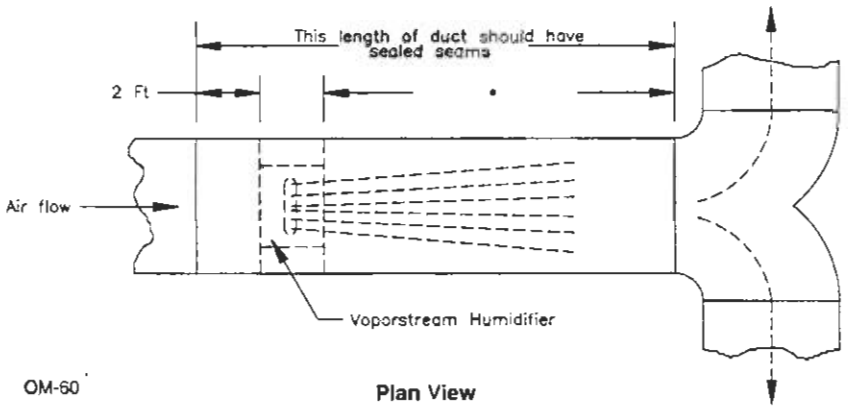
OM-59

Water piping and humidifiers should not be installed above expensive apparatus or equipment. A broken water pipe, leaking valve gland, condensation or other water leaks may occur causing serious damage and costly repairs to the equipment below.

Where this type of installation cannot be avoided install a drip tray constructed of galvanized sheet steel under the humidifier, valve, etc. to catch any possible water drip.

It is advisable to end the drain above an open floor drain. The overflow from the VAPORSTREAM should be piped to a floor drain rather than the drip pan.

INSTALLATION AHEAD OF DUCT SPLIT

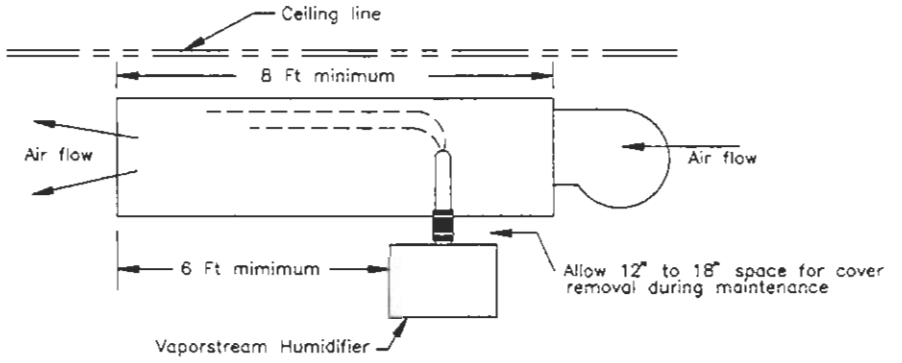


OM-60

Plan View

When a VAPORSTREAM humidifier is installed upstream of a duct split, the humidifier should span most of the duct width or be centered upon it to equalize the humidifying effect between the two branches.

RECIRCULATION UNIT



OM-61

In an application where no duct system exists, or if the duct air is too cool for proper humidity absorption, a recirculation fan can be used. The fan circulates room temperature air across the VAPORSTREAM humidifier and discharges humidified air into the space. The point of discharge should be carefully selected to avoid condensation on surfaces of the building or equipment.

* The distance steam will travel within a given airstream is predictable and can be determined using the VAPORSTREAM catalog. If this has already been done, the travel distance should be specified; if not, consult the VAPORSTREAM catalog or contact your DRI-STEEM representative or the DRI-STEEM factory.

VAPORSTREAM/VSDI ELECTRICAL SPECIFICATIONS

Capacities Notes:

Approximately 172 BTU's are required to raise the temperature of one pound of water from 40°F to 212°F. An additional 970 BTU's are required to change this one pound of water to water vapor.

A factor to consider when calculating humidifier capacity is the heat loss from the humidifier chamber to the air surrounding it. This will vary with air temperature and velocity. Calculations show that for a condition of 70°F. air and 1500 feet per minute velocity, the loss will be about 5%. In still air it will be about 3%. The addition of 3/4" of rigid foil faced fiberglass insulation (optional) on all surfaces except front of vaporizing tank will cut this loss to about 1%.

A second factor to consider is steam loss from hoses and tubes. Use the following steam loss guidelines: vapor hose, .15 lbs/ft/hr; insulated hard pipe, .05 lbs/ft/hr; dispersion tubes, u-tubes and standard tubes, .50 lbs/ft/hr.

** CSA approved unit has a prefix "C" in the model number (such as CVPC).

*** Alternative voltages available upon request.

\+ Control panel may be larger than indicated depending on the electrical options selected.

Table 6-1: Electrical Specifications

	Capacities-hr.*		Single Phase***					Three Phase***					
Model**	Lbs.	Kg	120V Amps	208V Amps	240V Amps	480V Amps	575V Amps	208V Amps	240V Amps	480V Amps	575V Amps	KW	+ Control Cabinets
VPC and VSDI-2	5.7	2.6	16.7	9.6	8.3	4.2	3.5	5.6	4.8	2.4	2.0	2	S
3	8.6	3.9	25.0	14.4	12.5	6.3	5.2	8.3	7.2	3.6	3.0	3	S
4	11.4	5.2	33.3	19.2	16.7	8.3	7.0	11.1	9.6	4.8	4.0	4	S
5	14.3	6.5	41.7	24.0	20.8	10.4	8.7	13.9	12.0	6.0	5.0	5	S
6	17.1	7.8		28.8	25.0	12.5	10.4	16.7	14.4	7.2	6.0	6	S
7	20.0	9.0		33.7	29.2	14.6	12.2	19.4	16.8	8.4	7.0	7	S
8	22.8	10.3		38.5	33.3	16.7	13.9	22.2	19.2	9.6	8.0	8	S
9	25.7	11.6		43.3	37.5	18.8	15.7	25.0	21.7	10.8	9.0	9	S
10	28.5	12.9			41.7	20.8	17.4	27.8	24.1	12.0	10.0	10	S
12	34.2	15.5				25.0	20.9	33.3	28.9	14.4	12.0	12	S
14	39.9	18.1				29.2	24.3	38.9	33.7	16.8	14.1	14	S
16	45.6	20.7				33.3	27.8	44.4	38.5	19.2	16.1	16	S
18	51.3	23.3				37.5	31.3		43.3	21.7	18.1	18	S
20	57.0	25.9				41.7	34.8			24.1	20.1	20	S
25	71.3	32.3					43.5			30.1	25.1	25	S
VPC and VSDI-2-2	11.4	5.2	33.3	19.2	16.7	8.3	7.0	11.1	9.6	4.8	4.0	4	M
3-3	17.1	7.8	50.0	28.8	25.0	12.5	10.4	16.7	14.4	7.2	6.0	6	M
4-4	22.8	10.3	66.7	38.5	33.3	16.7	13.9	22.2	19.2	9.6	8.0	8	M
5-5	28.5	12.9	83.3	48.1	41.7	20.8	17.4	27.8	24.1	12.0	10.0	10	M
6-6	34.2	15.5		57.7	50.0	25.0	20.9	33.3	28.9	14.4	12.0	12	M
7-7	39.9	18.1		67.3	58.3	29.2	24.3	38.9	33.7	16.8	14.1	14	M
8-8	45.6	20.7		76.9	66.7	33.3	27.8	44.4	38.5	19.2	16.1	16	M
9-9	51.3	23.3		86.5	75.0	37.5	31.3	50.0	43.3	21.7	18.1	18	M
10-10	57.0	25.9			83.3	41.7	34.8	55.5	48.1	24.1	20.1	20	M
12-12	68.4	31.0				50.0	41.7	66.6	57.7	28.9	24.1	24	M
14-14	79.8	36.2				58.3	48.7	77.7	67.4	33.7	28.1	28	M
16-16	91.2	41.4				66.7	55.7	88.8	77.0	38.5	32.1	32	M
18-18	102.6	46.5				75.0	62.6		86.6	43.3	36.1	36	M
20-20	114.0	51.7				83.3	69.6			48.1	40.2	40	M
25-25	142.5	64.6					87.0			60.1	50.2	50	M
VPC and VSDI-2-2-2	17.1	7.8	50.0	28.8	25.0	12.5	10.4	16.7	14.4	7.2	6.0	6	L
3-3-3	25.7	11.6	75.0	43.3	37.5	18.8	15.7	25.0	21.7	10.8	9.0	9	L
4-4-4	34.2	15.5	100.0	57.7	50.0	25.0	20.9	33.3	28.9	14.4	12.0	12	L
5-5-5	42.8	19.4	125.0	72.1	62.5	31.3	26.1	41.6	36.1	18.0	15.1	15	L
6-6-6	51.3	23.3		86.5	75.0	37.5	31.3	50.0	43.3	21.7	18.1	18	L
7-7-7	59.9	27.1		101.0	87.5	43.8	36.5	58.3	50.5	25.3	21.1	21	L
8-8-8	68.4	31.0		115.4	100.0	50.0	41.7	66.6	57.7	28.9	24.1	24	L
9-9-9	77.0	34.9		129.8	112.5	56.3	47.0	74.9	65.0	32.5	27.1	27	L
10-10-10	85.5	38.8			125.0	62.5	52.2	83.3	72.2	36.1	30.1	30	L
12-12-12	102.6	46.5				75.0	62.6	99.9	86.6	43.3	36.1	36	L
14-14-14	119.7	54.3				87.5	73.0	116.6	101.0	50.5	42.2	42	L
16-16-16	136.8	62.1				100.0	83.5	133.2	115.5	57.7	48.2	48	L
18-18-18	153.9	69.8				112.5	93.9		129.9	65.0	54.2	54	L
20-20-20	171.0	77.6				125.0	104.3			72.2	60.2	60	L
25-25-25	213.8	97.0					130.4			90.2	75.3	75	L
VPC and VSDI-14-14-14-14	159.6	72.4				116.7	97.4	155.4	134.7	67.4	56.2	56	XL
16-16-16-16	182.4	82.7				133.3	111.3	177.6	154.0	77.0	64.3	64	XL
18-18-18-18	205.2	93.1				150.0	125.2		173.2	86.6	72.3	72	XL
20-20-20-20	228.0	103.4				166.7	139.1			96.2	80.3	80	XL
25-25-25-25	285.0	129.3					173.9			120.3	100.4	100	XL

Table 6-2: Control Cabinet Dimensions

Size	Inches	cm	Shipping Wt.	
Series S	12" W x 12" H x 6" D	30.5 W x 30.5 H x 15.2 D	24 lbs.	11 Kg
Series M	14" W x 16" H x 6" D	35.6 W x 40.6 H x 15.2 D	32 lbs.	14.5 Kg
Series L	20" W x 20" H x 7" D	50.8 W x 50.8 H x 17.8 D	55 lbs.	25 Kg
Series XL	24" W x 24" H x 7" D	61 W x 61 W x 17.8 D	73 lbs.	33.2 Kg

VAPORSTREAM/VSDI MECHANICAL SPECIFICATIONS

Table 7-1: Mechanical Specifications

	Dim. "A."		Dim. "B."		Qty. U Tube	1½" Qty. Hose Kits	2" Qty. Hose Kits	Weight Empty		Weight Full	
Model No.	Inches	Cm	Inches	Cm	(L)	#	#	Lbs.	Kg	Lbs.	Kg
(1) VPC and VSDI-2	7.5	19	-	40.6	(L)	1	1	28	12.7	50	22.7
(1) 3	7.5	19	-	40.6	(L)	1	1	28	12.7	50	22.7
(1) 4	7.5	19	-	40.6	(L)	1	1	28	12.7	50	22.7
5	15.5	39.4	10.5	26.7	1	1	1	36	16.3	79	35.8
6	15.5	39.4	10.5	26.7	1	1	1	36	16.3	79	35.8
7	15.5	39.4	10.5	26.7	1	1	1	36	16.3	79	35.8
8	15.5	39.4	10.5	26.7	1	1	1	37	16.8	80	36.3
9	23.5	59.7	20.5	52.1	1	1	1	47	21.3	112	50.8
10	23.5	59.7	20.5	52.1	1	1	1	47	21.3	112	50.8
12	23.5	59.7	20.5	52.1	1	1*	1	47	21.3	112	50.8
14	39.5	100.3	32.5	82.6	1	1*	1	54	24.5	162	73.5
16	39.5	100.3	32.5	82.6	1	1*	1	54	24.5	162	73.5
18	39.5	100.3	32.5	82.6	1	1*	1	54	24.5	162	73.5
20	39.5	100.3	32.5	82.6	1	1*	1	55	25.0	163	73.9
25	50.0	127.0	32.5	82.6	1	2*	1*	85	38.6	235	106.7
(1) VPC and VSDI-2-2	7.5	19	-	40.6	(L)	1	1	35	15.9	62	28.1
(1) 3-3	7.5	19	-	40.6	(L)	1	1	35	15.9	62	28.1
(1) 4-4	7.5	19	-	40.6	(L)	1	1	35	15.9	62	28.1
5-5	15.5	39.4	10.5	26.7	1	1	1	46	20.9	100	45.4
6-6	15.5	39.4	10.5	26.7	2	1*	1	46	20.9	100	45.4
7-7	15.5	39.4	10.5	26.7	2	1*	1	46	20.9	100	45.4
8-8	15.5	39.4	10.5	26.7	2	1*	1	46	20.9	100	45.4
9-9	23.5	59.7	20.5	52.1	1	1*	1	56	25.4	137	62.1
10-10	23.5	59.7	20.5	52.1	1	1*	1	56	25.4	137	62.1
12-12	23.5	59.7	20.5	52.1	2	2*	1*	56	25.4	137	62.1
14-14	39.5	100.3	32.5	82.6	1	2*	1*	77	34.9	212	96.2
16-16	39.5	100.3	32.5	82.6	2	2*	2*	77	34.9	212	96.2
18-18	39.5	100.3	32.5	82.6	2	2*	2*	77	34.9	212	96.2
20-20	39.5	100.3	32.5	82.6	2	2*	2*	79	35.8	214	97.1
25-25	50.0	127.0	32.5	82.6	2	3*	2*	105	47.7	295	134.0
(1) VPC and VSDI-2-2-2	7.5	19	-	40.6	(L)	1	1	44	20.0	83	37.6
(1) 3-3-3	7.5	19	-	40.6	(L)	1	1	44	20.0	83	37.6
(1) 4-4-4	7.5	19	-	40.6	--	1*	1	44	20.0	83	37.6
5-5-5	15.5	39.4	10.5	26.7	2	1*	1	62	28.1	140	63.5
6-6-6	15.5	39.4	10.5	26.7	2	1*	1	62	28.1	140	63.5
7-7-7	15.5	39.4	10.5	26.7	3	2*	1*	62	28.1	140	63.5
8-8-8	15.5	39.4	10.5	26.7	3	2*	1*	64	29.0	142	64.4
9-9-9	23.5	59.7	20.5	52.1	2	2*	1*	72	32.7	188	85.3
10-10-10	23.5	59.7	20.5	52.1	2	2*	1*	72	32.7	188	85.3
12-12-12	23.5	59.7	20.5	52.1	2	2*	2*	72	32.7	188	85.3
14-14-14	39.5	100.3	32.5	82.6	2	3*	2*	96	43.6	290	131.5
16-16-16	39.5	100.3	32.5	82.6	2	3*	2*	96	43.6	290	131.5
18-18-18	39.5	100.3	32.5	82.6	2	3*	2*	96	43.6	290	131.5
20-20-20	39.5	100.3	32.5	82.6	2	3*	2*	99	44.9	293	132.9
25-25-25	50.0	127.0	32.5	82.6	3	4*	3*	125	56.8	385	174.8
(1) VPC and VSDI-14-14-14-14	39.5	100.3	32.5	82.6	2	3*	2*	110	49.9	347	157.4
16-16-16-16	39.5	100.3	32.5	82.6	3	4*	3*	110	49.9	347	157.4
18-18-18-18	39.5	100.3	32.5	82.6	3	4*	3*	110	49.9	347	157.4
20-20-20-20	39.5	100.3	32.5	82.6	3	4*	3*	114	51.7	351	159.2
25-25-25-25	50.0	127.0	32.5	82.6	4	---	4*	140	63.6	470	213.4

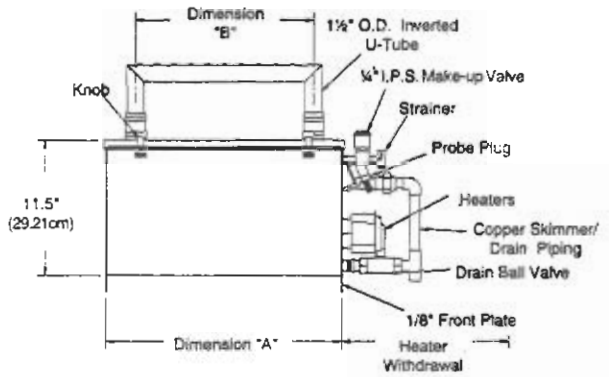
(1) See Table 7-2 and Figures at right for dimensions of these VSDI units.
\# Recommended minimum quantity of hose and tube kits (when used).
* These dispersion tubes include integral condensate drain tubes.
(L) L-tube instead of U-tube (see Table 7-1).

Dimensions and specifications subject to change without notice.

Table 7-2: Length and Weights for 2, 3 and 4 KW VSDI (DI/RO) Units

VSDI Model	Length		Weight Empty		Weight Full	
	Inches	Cm	Lbs.	Kg	Lbs.	Kg
2	11.5	29.2	32	14.5	65	29.5
3	11.5	29.2	32	14.5	65	29.5
4	11.5	29.2	32	14.5	65	29.5
2-2	11.5	29.2	35	15.9	62	28.1
3-3	11.5	29.2	35	15.9	62	28.1
4-4	11.5	29.2	35	15.9	62	28.1
2-2-2	11.5	29.2	44	20.0	83	37.6
3-3-3	11.5	29.2	44	20.0	83	37.6
4-4-4	11.5	29.2	44	20.0	83	37.6

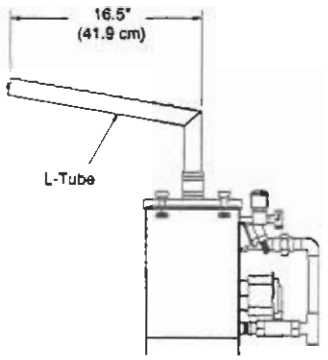
SIDE VIEW: U-TUBE MODELS



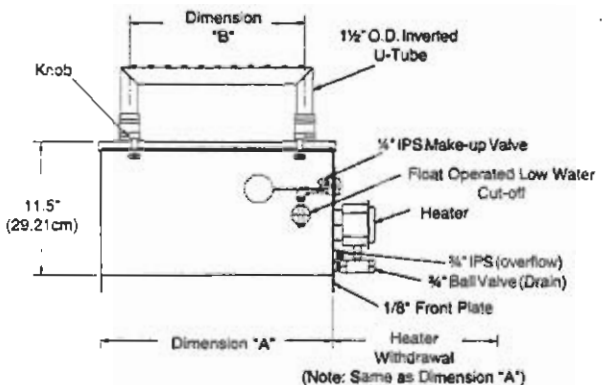
Drain Connection: ¾"
Copper Sweat: 6⅛" from Face Plate

(Note: Same as Dimension "A")

SIDE VIEW: L-TUBE MODELS

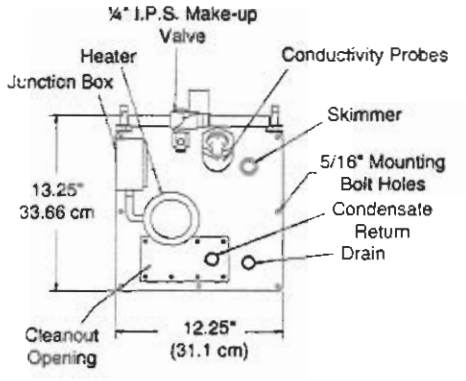
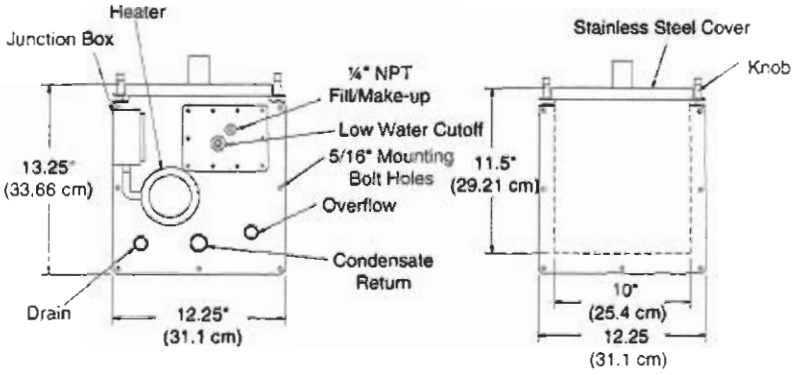
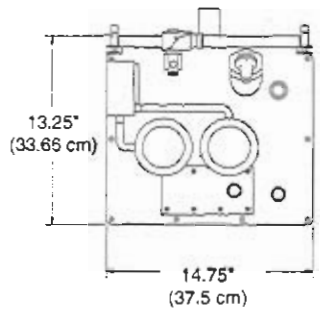
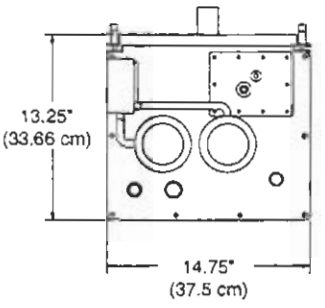
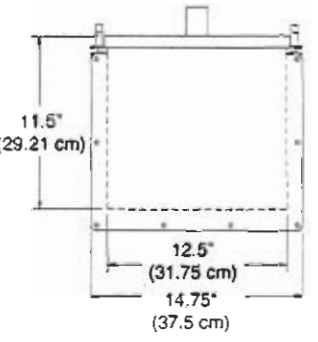
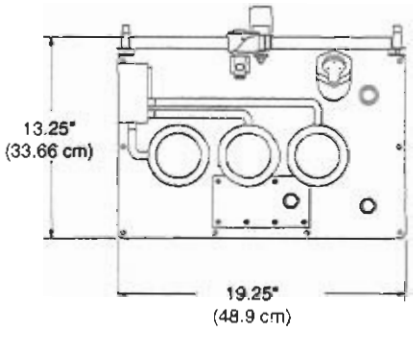
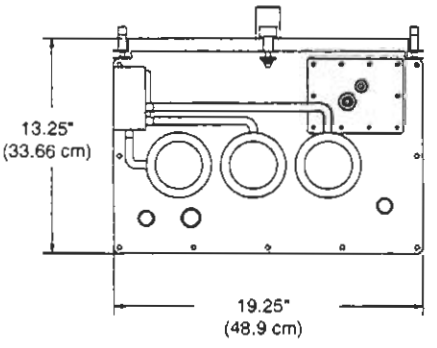
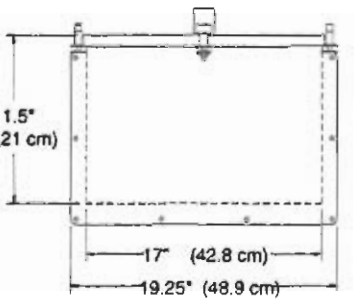
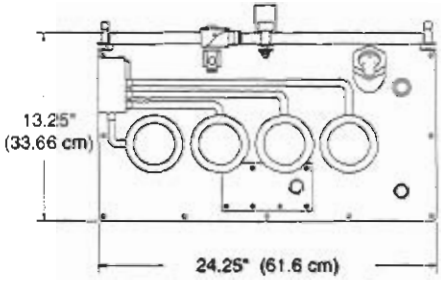
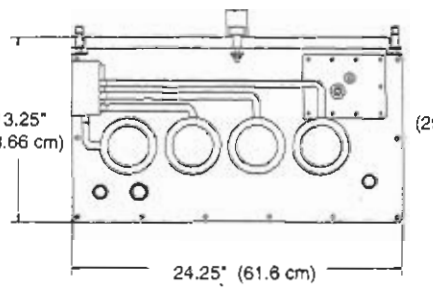
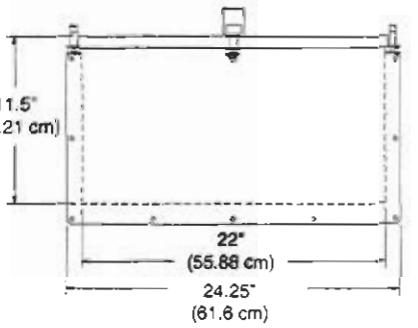


SIDE VIEW: VSDI U-TUBE MODEL



(Note: Same as Dimension "A")

MECHANICAL SPECIFICATIONS

	Front View VPC	Front View VSDI/RO	Back View
One Heater Units			
Two Heater Units			
Three Heater Units			
Four Heater Units			

OM41-OM48

Dimensions and specifications subject to change without notice.

Area-Type Humidifier Application Information

The operating characteristics of Area-Type steam humidifiers should be considered when selecting humidifier capacities and choosing mounting locations.

Steam discharge from the humidifier quickly cools and turns to visible, warm, microscopic drips of water (fog) which are lighter than air.

Should this fog contact any solid surface (columns, beams, ceiling, pipes, etc.) before it disappears, it may collect and drip, as water.

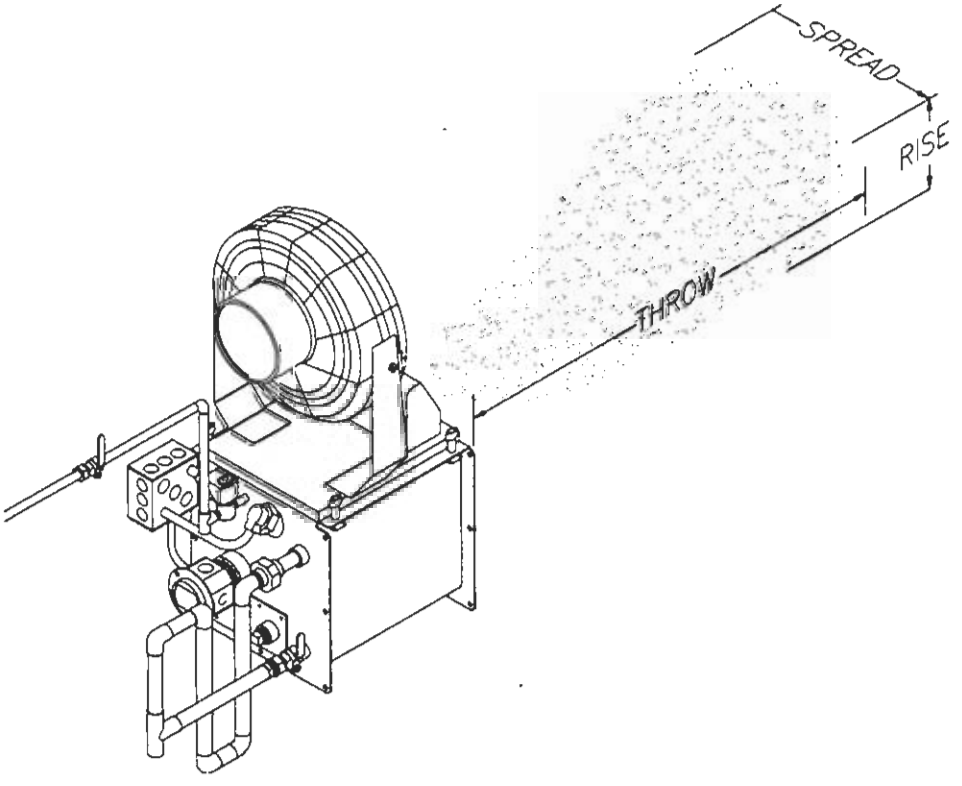
The greater the space relative humidity, the higher and further the "fog" will carry and rise in the space before disappearing.

The table at right states the vertical (rise), horizontal (throw), and width (spread) dimensions that can be expected with the Area-Type humidifiers.

To avoid steam impingement on surrounding areas, these dimensions should be observed.

Note: Tank must be at least 23.5" and output should not exceed 200 lbs/hr. For more detailed information see Table 7-1 on page 7.

Space Temp.	Space R.H.		1-50 PPH	51-100 PPH	101-150 PPH	151-200 PPH
60°F	30%	Rise	1 ft.	4 ft.	6 ft.	7 ft.
		Spread	2 ft.	4 ft.	5 ft.	7 ft.
		Throw	6 ft.	10 ft.	12 ft.	13 ft.
	40%	Rise	1 ft.	4 ft.	6 ft.	8 ft.
		Spread	2 ft.	4 ft.	5 ft.	7 ft.
		Throw	6 ft.	10 ft.	12 ft.	14 ft.
	50%	Rise	1 ft.	4 ft.	6 ft.	8 ft.
		Spread	2.5 ft.	5 ft.	5 ft.	7 ft.
		Throw	6 ft.	10 ft.	12 ft.	14 ft.
70°F	30%	Rise	1 ft.	3 ft.	4 ft.	5 ft.
		Spread	1.5 ft.	3 ft.	4 ft.	5 ft.
		Throw	4 ft.	8 ft.	10 ft.	11 ft.
	40%	Rise	1 ft.	3 ft.	4 ft.	5 ft.
		Spread	2 ft.	3 ft.	4 ft.	5 ft.
		Throw	4 ft.	8 ft.	11 ft.	12 ft.
	50 %	Rise	1 ft.	3 ft.	4 ft.	5 ft.
		Spread	2 ft.	3 ft.	4 ft.	5 ft.
		Throw	4 ft.	8 ft.	11 ft.	12 ft.



Mounting Procedures

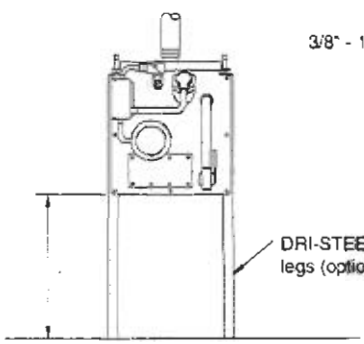
For proper operation of the electrode probe water level control and the skimmer system the humidifier should be mounted level.

Access for periodic removal of the top cover is recommended. In most cases, scale that forms on the heating elements continuously flakes off as it forms and the loose scale that settles to the bottom can be raked or flushed out through the front face cleanout opening. However, removal through the top cover is easier.

If the VAPORSTREAM is to be installed above expensive materials or devices, a drain pan of sufficient size and depth to retain rapid or sudden drainage of the contents of the humidifier should be provided. The drain pan should be drained to a sanitary waste.

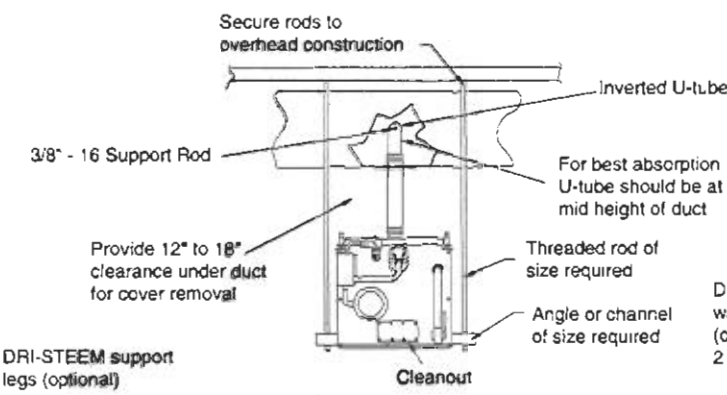
Mounting Support Methods

Floor Stand Method



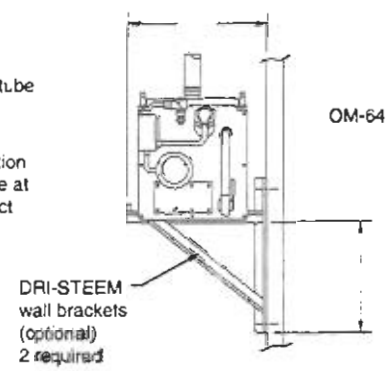
OM-62

Trapeze Hanger Method



OM-63

Wall Brackets Method

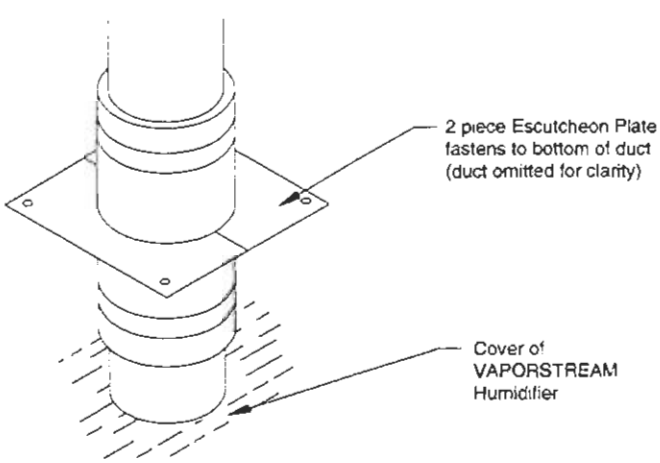


OM-64

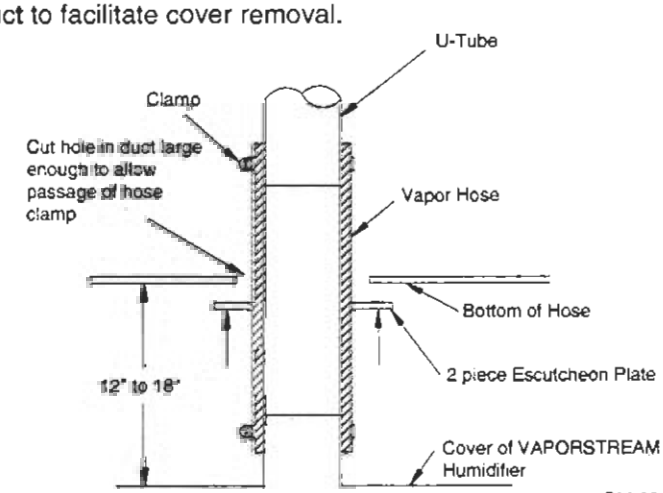
Unit	Dimensions A	B
Single Heater	15"	13"
Double Heater	19"	15½"
Triple Heater	21"	21"
Quad Heater	40"	25"

Mounting Unit on Underside of Duct

Manufacturer recommends mounting humidifier 12" below duct to facilitate cover removal.



OM-65

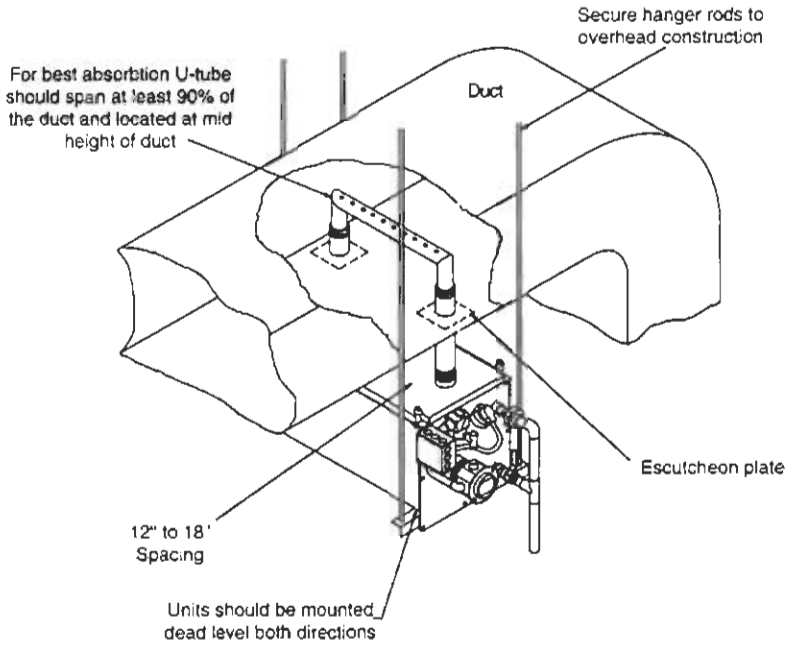


OM-66

(Continued on next page.)

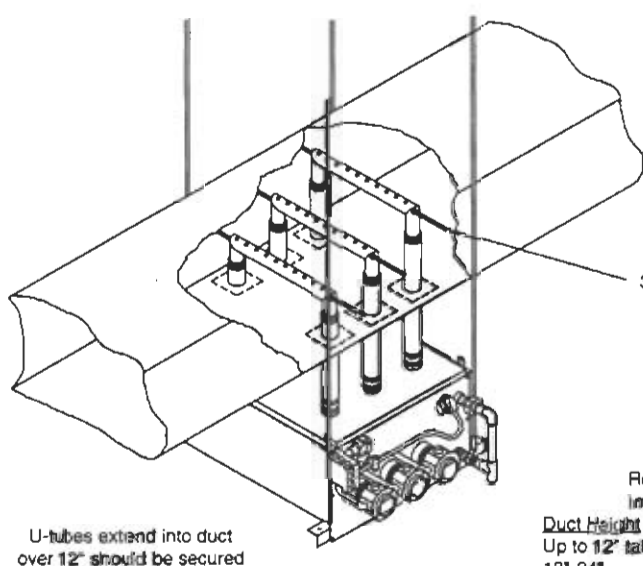
Mounting Unit on Underside of Duct (continued)

All units ordered with U-tube or L-tube covers are shipped with one set of trapeze type mounting brackets. Each bracket set comes with 4 rods 3 feet in length, trapeze bars, nuts and washers. When longer length mounting rods are required (field supplied by others) use 3/8" material.



OM-75

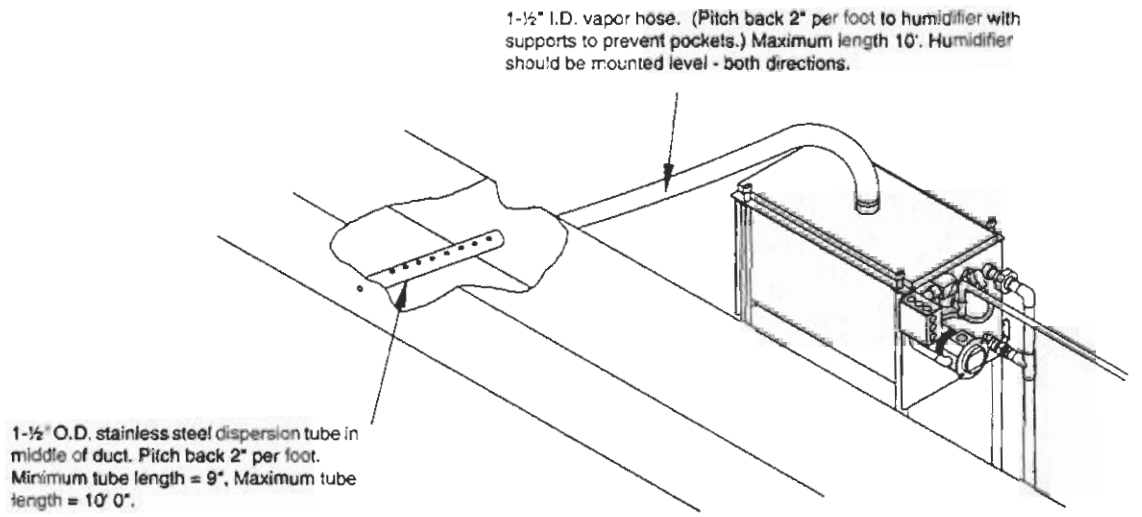
Multiple Inverted U-Tubes For "Tall" Air Streams



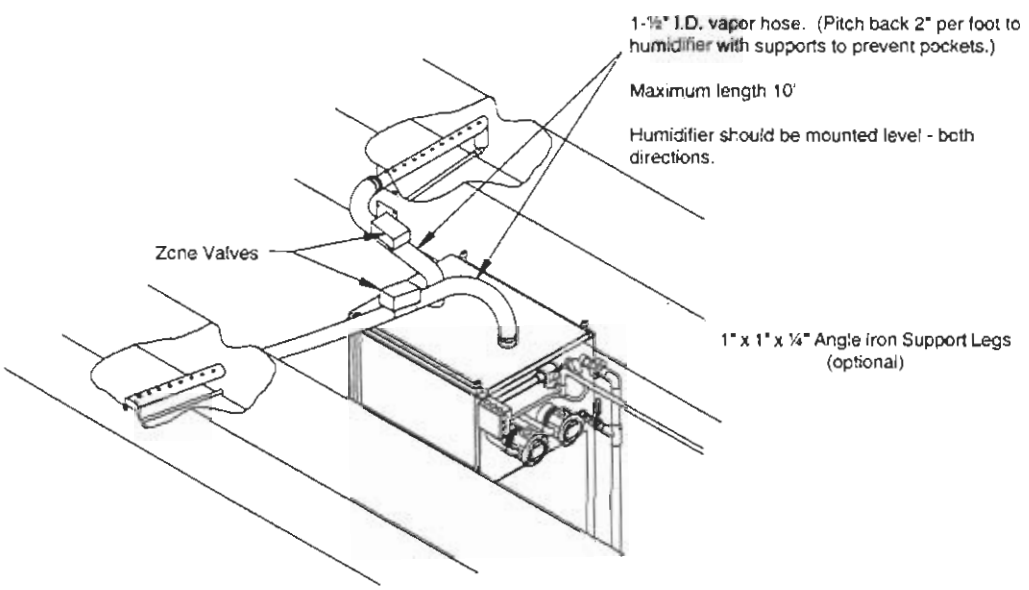
Recommendation for improved absorption

Duct Height	Number of Tubes
Up to 12" tall	One tube
13"-24"	Two tubes
25"-36"	Three tubes

Mounting Units Away from Duct(s) by Use of Vapor Hose

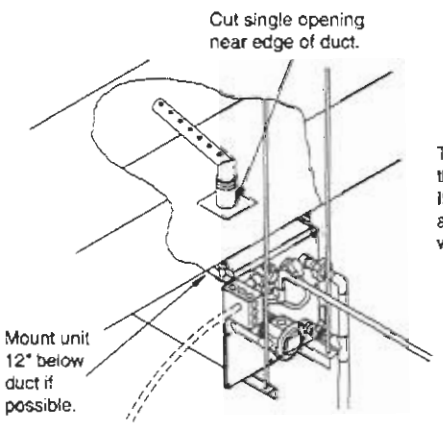


OM-82



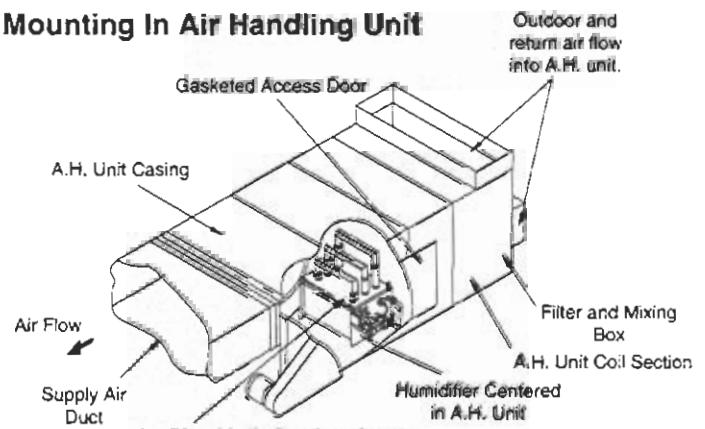
OM-83

Mounting L-Tube Under Duct



OM-96

Mounting In Air Handling Unit



OM-84

VAPORSTREAM Dispersion Tube Installation with Condensate Drain *(over 28 pph per disperion tube)*

Vapor Hose

- Vapor hose should be supported to prevent sags or low spots and to maintain a minimum pitch of 2" per foot back to the humidifier.
- When mounting the humidifier above the level of dispersion tube, see pg 15.

Failure to follow the above recommendation may result in excessive back pressures being imposed on the humidifier. This in turn may lead to dispersion tube(s) spitting, lost water seals or leaking gaskets. When distance between humidifier and the dispersion tube(s) exceeds 10 feet, consult factory for special recommendations.

Vapor Rigid Piping (when used)

- Vapor piping should have a minimum I.D. of 1.5 inches.
- A minimum pitch of 2" per foot back to the humidifier should be maintained.
- 90° elbows are not recommended, use two 45° elbows one foot apart instead.
- Thin wall tubing will heat up faster and cause less start up loss than heavy wall pipe.
- Insulating the rigid piping will reduce the loss in output caused by condensation.

Tube Mounting

- Mount dispersion tubes pitched as stated above.
- Tubelets must discharge perpendicular to air flow;

** Return line piping material must be suitable for 212°F (100°C) water

Min. Condensate Drain Line Sizing

- One or two tubes: 3/4" I.D.
- Three or more tubes: 1" I.D.

Table 13-1

Water Seal Minimum Height *	
Lbs/Hr	Height (Inches)
5-138	12
139-183	14
184-227	18

Single Tube

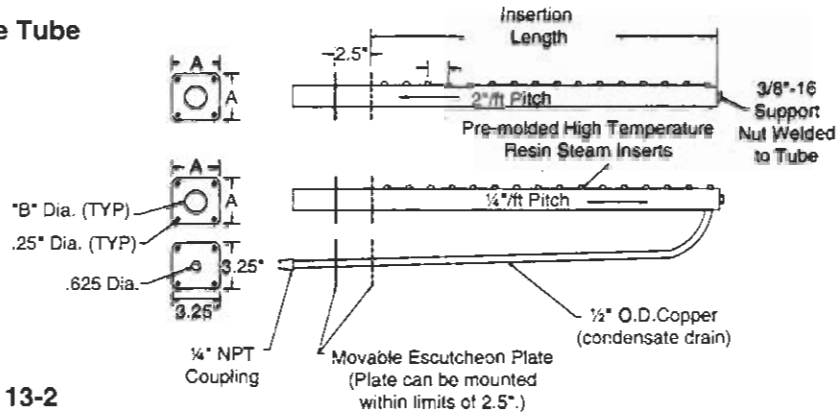
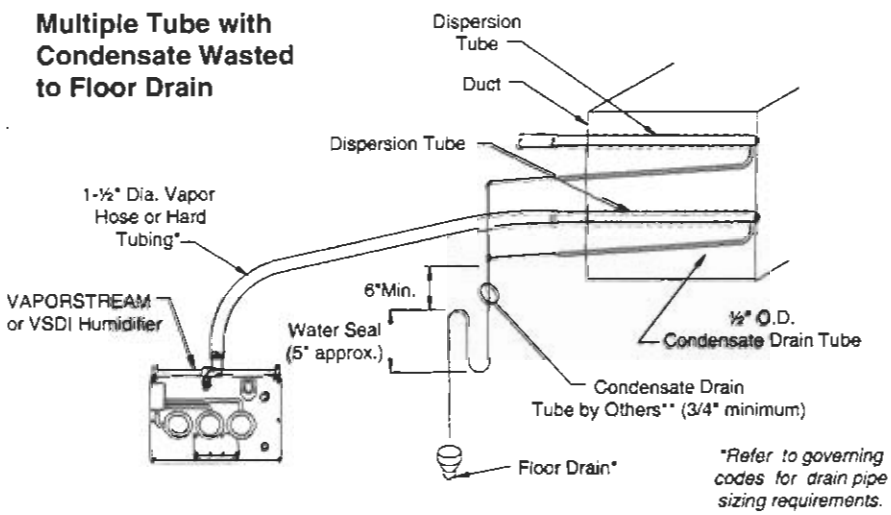


Table 13-2

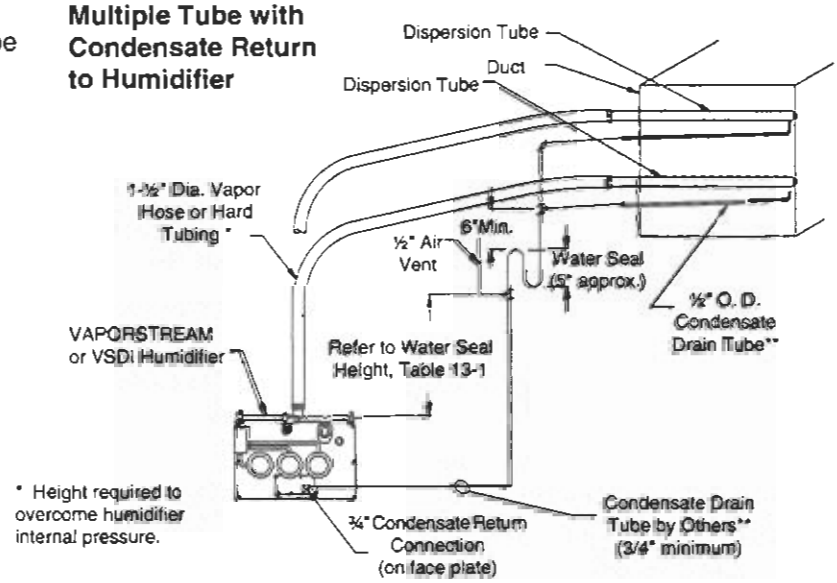
Tube Dia.	Capacity without drain	Capacity with drain	A	B
1"	10 lbs/hr	N/A	3.25"	1.03"
1½"	28 lbs/hr	57 lbs/hr	3.25"	1.51"
2"	57 lbs/hr	85 lbs/hr	5.00"	2.03"

Multiple Tube with Condensate Wasted to Floor Drain



Refer to governing codes for drain pipe sizing requirements.

Multiple Tube with Condensate Return to Humidifier



RAPID-SORB Assembly Installation

1. Unpack Shipment and verify receipt of all RAPID-SORB components with packing list. Report any shortages at once to the DRI-STEEM factory.

2. Provide necessary access around and into duct work.

3. Locate 1" x 1½" stainless steel channel inside duct centered between duct side walls. Hang channel from top of duct with the two mounting holes provided.

4. Locate dispersion tubes and slide hose cuffs over end of each tube, include a pair of hose clamps.

5. Note direction of air flow within duct then arrange each dispersion tube so steam will blow perpendicular to the air flow. Use the hex bolts provided to attach tubes to overhead 1" x 1½" channel. Do not secure. On style 2, punch-out necessary clearance holes in base of duct to slide dispersion tubes up from bottom.

6. Style 1: punch or cut out necessary clearance holes for RAPID-SORB header. Slide header into the duct, position header and slide the dispersion tube hose cuffs over the header dispersion tube nipples. Style 2: position header under dispersion tubes, then slide hose cuffs over header dispersion tube nipples. Secure some hose clamps.

7. Style 1: position the header so vertical dispersion tubes are perpendicular to duct and the header is pitched to condensate drain. Secure header with the header escutcheon plate provided and to mounting bracket. Style 2: position the header and dispersion tubes as stated above, then secure dispersion tubes in place with the tube escutcheon plates provided.

8. Style 1: check that the dispersion tube release steam perpendicular to the air flow. Secure tubes to overhead channel (1" x 1½"). Secure channel to duct, position hose cuffs over tube and header tube nipples, then secure hose clamps. Style 2: check position of tubes for steam release perpendicular to the air flow. Secure tubes to overhead channel, secure channel to duct. With header pitched to condensate position slip hose cuffs over tube and header tube nipples, secure hose clamps.

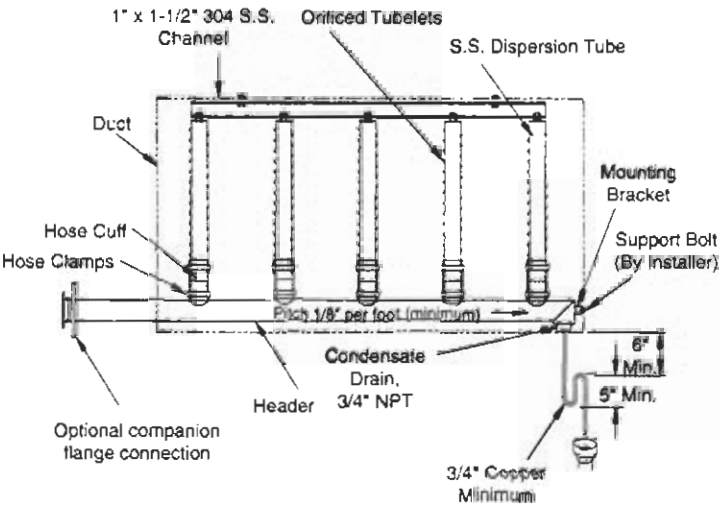
9. Connect a condensate drain to header, provide the water trap as shown and run to open drain, sized per governing codes.

10. Attach the header swivel hose connector to main header using the hose cuff and clamps provided, do not secure.

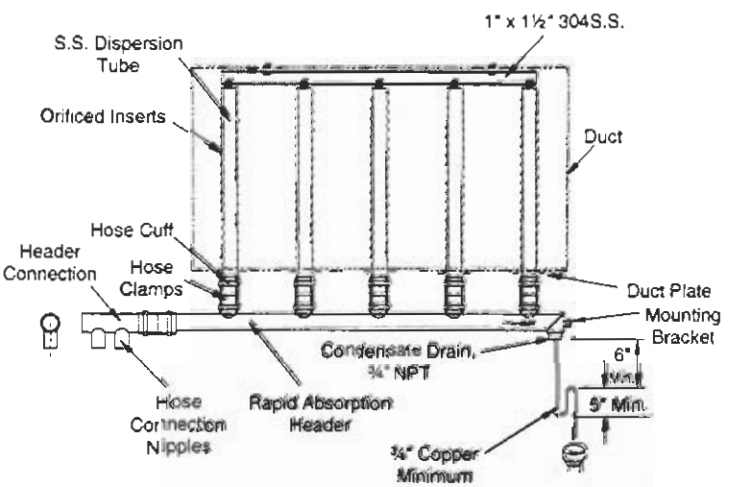
11. Route the necessary number of vapor hoses from humidifier tank, position swivel to except these hoses, then secure all necessary hose clamps.

Note: Refer to page 13 for vapor hose information on routing and page 15 for alternate vapor hose piping methods.

RAPID-SORB Unit (Style 1)
Header Inside Duct



RAPID-SORB Unit (Style 2)
Header Under Duct



Drain Piping

A drain line should be extended from the skimmer connection to a sanitary waste or suitable drain. If non-metallic pipe or hose is used it must be capable of withstanding 212°F temperature.

To prevent steam from escaping from the drain line, a water seal must be provided in the drain line of sufficient height to contain the pressure developed within the humidifier. This pressure is the sum of the flow resistance in the dispersion tube and hose plus the static pressure of the duct system. Without this water seal, steam will escape from the drain line. The depth of the water seal must be sufficient to overcome the static pressure of the air handling system plus the pressure developed by the humidifier itself. See table on page 15.

Makeup Water Piping

This humidifier is designed for use with either softened or unsoftened water (preferably softened). The probe type level control system requires water conductivity of 100 micromhos/cm (2 grains/gal) minimum, to function and therefore will not operate on water treated by the reverse osmosis or deionizing process. However, special design VAPORSTREAM humidifiers are available for use with these water types.

When non-metallic water piping is used it must be rated to withstand 212°F or greater temperature. If not, the final 3 feet connected to the humidifier should be metallic and should not be insulated.

If the water pressure is above 60 psi and/or water hammer would be objectionable, a pressure reducing valve or shock arrester should be installed.

The VAPORSTREAM has a one inch internal "air gap". However, local codes may require a vacuum breaker.

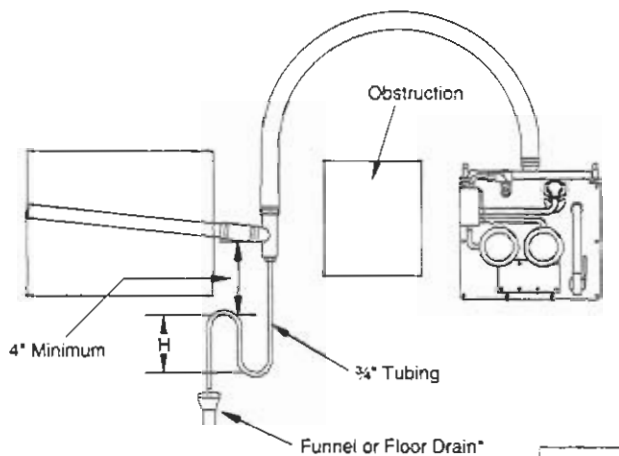
Vapor Hose Piping

When the vapor hose and stainless steel dispersion tube are used they should be pitched back to the humidifier. A gradual slope of 2" per foot of length (min.) with no "low spots" is recommended. When this is not possible due to duct elevation or an obstruction, alternate arrangements may be used as shown.

However, the condensate that forms in the vapor hose must be removed. Preferably is should be returned to an open drain with a water seal of sufficient height to contain the duct static pressure, as shown on page 13.

When the condensate must be returned to the VAPORSTREAM a method is shown on page 13, air vent arrangement. This method does require a water seal and an air gap to prevent back pressure from the VAPORSTREAM tank effecting condensate returning below the VAPORSTREAM water line.

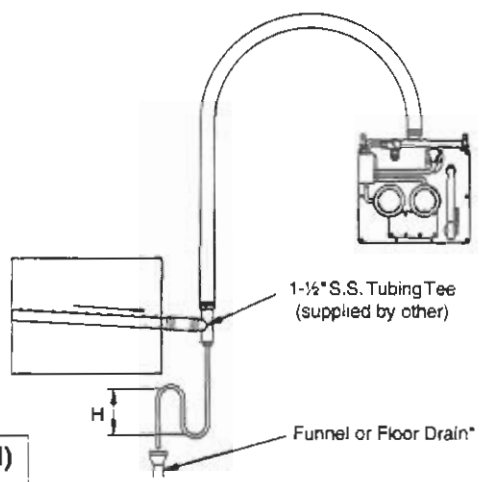
Piping method recommended when obstruction prevents dispersion tube from being continuously pitched back to humidifier.



* Refer to governing codes for drain pipe size requirements.

OM-67

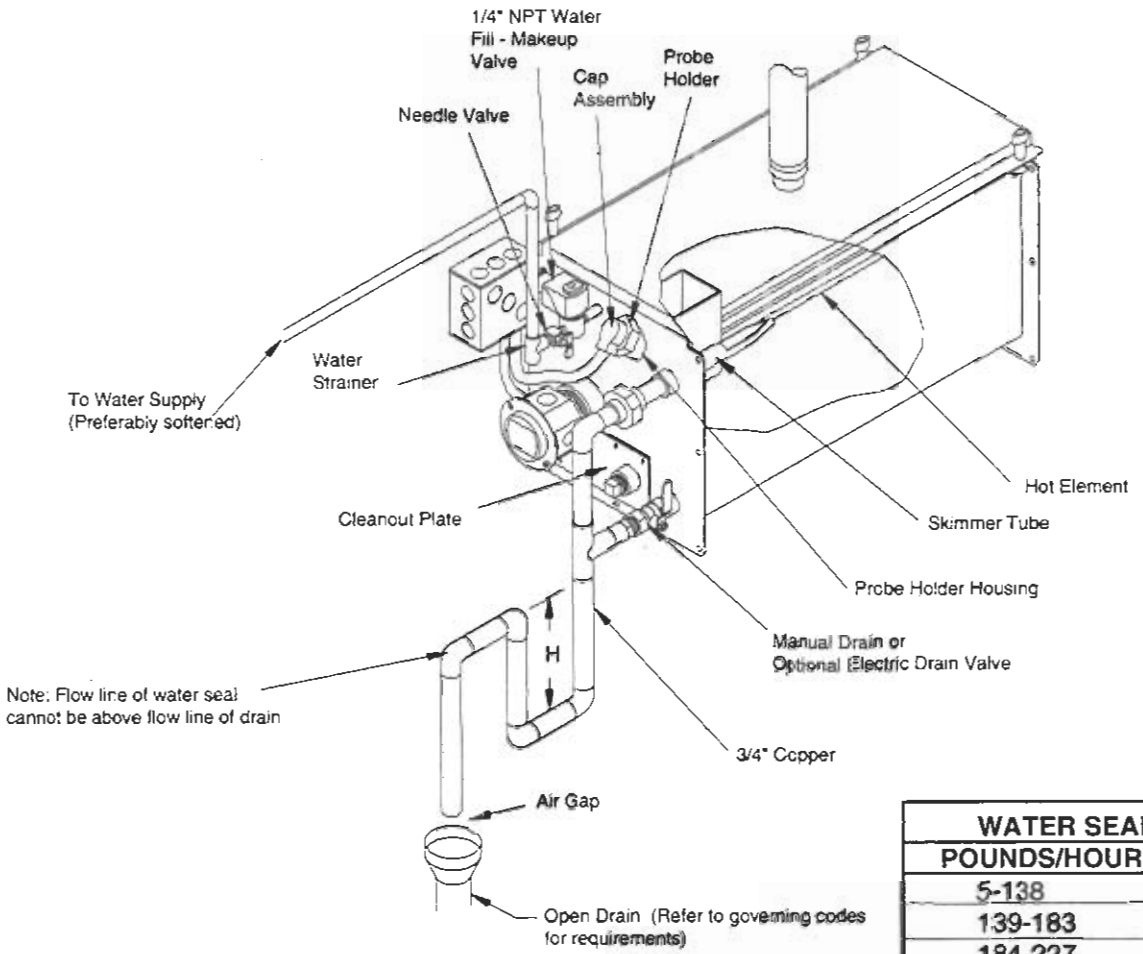
Piping Method recommended when humidifier must be mounted higher than the duct.



OM-68

For water seal height (H) follow chart on page 16.

PIPING METHODS

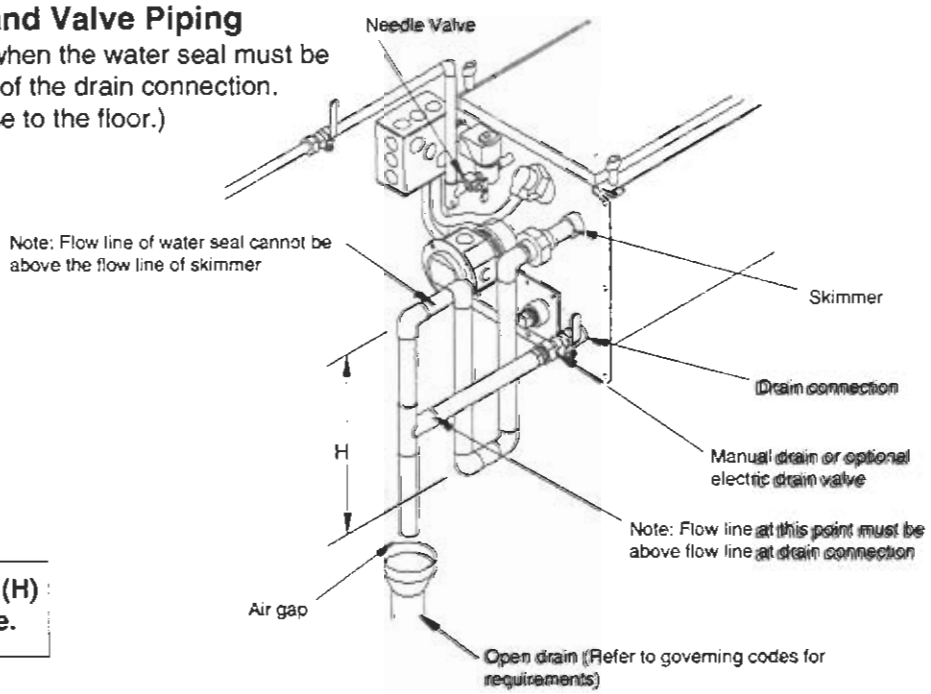


OM-85

WATER SEAL HEIGHT	
POUNDS/HOUR	H(Inches)
5-138	12
139-183	14
184-227	18

Alternate Water Seal and Valve Piping

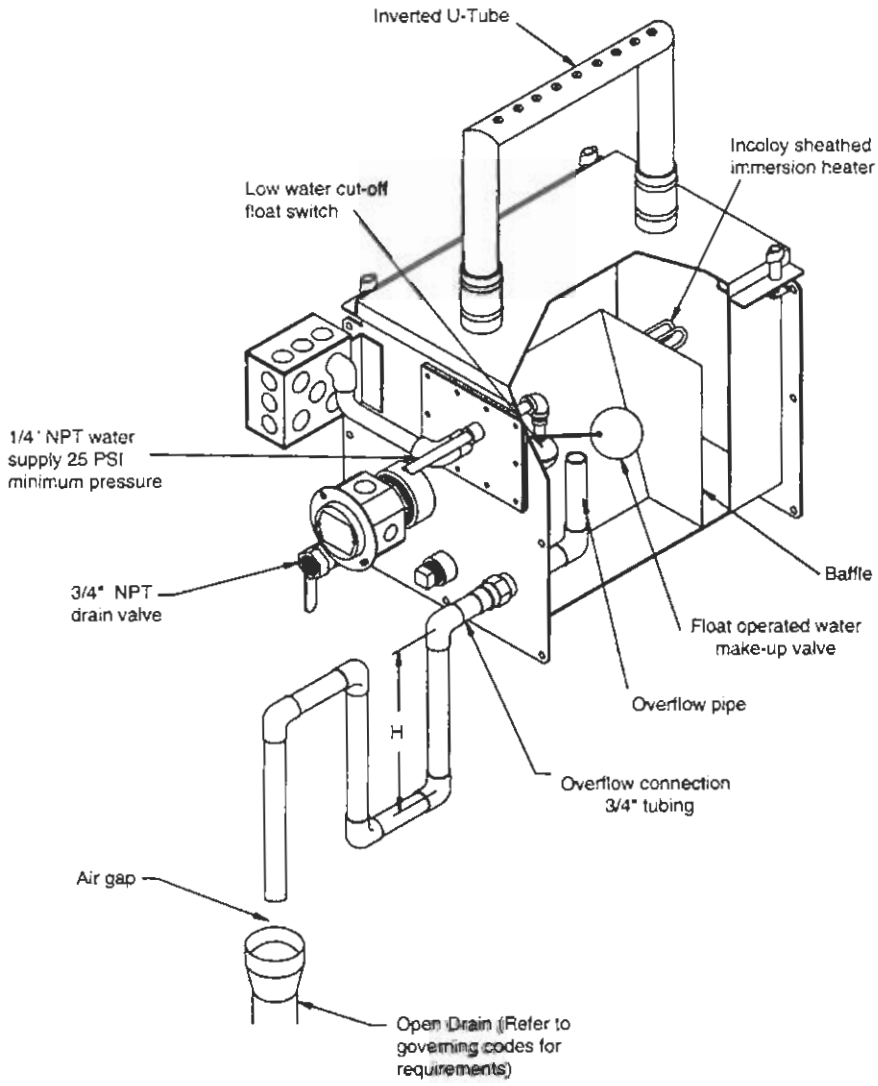
This piping method is used when the water seal must be elevated above the flow line of the drain connection. (i.e. VAPORSTREAM is close to the floor.)



For water seal height (H) follow the chart above.

OM-100

Piping for Deionized Water Unit (VSDI)



Notes

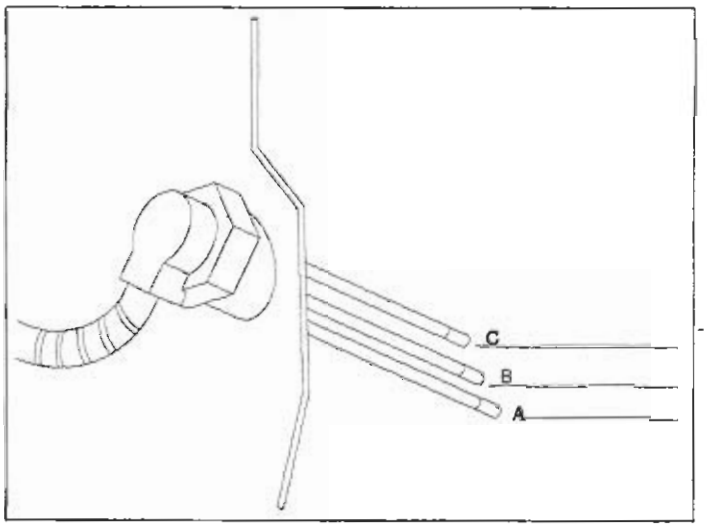
1. Drain piping material must be suitable to handle 212° F (100° C) water.
2. For water seal height (H), see page 16.

Electrical

The current characteristics, and capacity requirements should be checked against the nameplates. The control cabinet should be mounted in a location convenient for service. All wiring must be in accordance with all governing codes and the VAPORSTREAM wiring diagram. The diagram is inside the control cabinet. The wiring between the control cabinet and humidifier must be 105° C rated wire.

Caution: Only qualified electrical personnel should perform installation and startup procedures.

Reliable Electronic Probe Control Maintains Water Level



The *exclusive* VAPORSTREAM probe system consists of 3 stainless steel probes, molded in a thermoset plastic threaded plug. The stainless steel probes are TEFLON® coated for easy cleaning. Both the probe mounting fixture and the plug are indexed for proper and easy remounting after cleaning.

The 3 probe sensors perform all of the necessary functions of water level control.

Probe A provides low water protection for the heating element(s). When the water level is below Probe A no conductivity is established thus preventing the heater(s) from being energized.

Probes B and C perform the functions of maintaining proper operating water level. The level of probe B signals the water valve to open and fill to probe C level. Upon reaching probe C level, the water valve is closed. A 1" space for air gap is provided between the top probe (Level C) and the water inlet level.

Note: Preferably this humidifier should be supplied with softened water. However, the probe type level control system requires water conductivity of 100 micromhs/cm (2 gr/gal) minimum to function and may not operate in water treated by the reverse osmosis or deionizing process. Specially designed VAPORSTREAM Model DI humidifiers are available for use with these water types.

Optional: Timer-Operated Drain/Flush Operation

This option, in addition to the features of the standard control module, provides a drain and flush sequence at preset intervals. This feature effectively reduces the frequency of cleaning associated with VAPORSTREAM humidifiers. It is recommended when the water supply contains a large quantity of dissolved minerals and softened water for make-up is not available.

An integral electronic timer accumulates the "on" or "humidifying" time of the unit. When this accumulated time reaches the hours pre-selected by the user (field adjustable between 5 and 50 hours), an electronic programmer automatically activates the drain/flush cycle.

Then this cycle, which is also field adjustable (between 1 and 30 minutes), is activated the drain valve opens, beginning the drain-off of the humidifier water. When 50% of the pre-set drain duration time has elapsed the fill valve opens for the remainder of the time, completing the flushing action.

At the end of the flushing time the control module closes the drain valve, keeps the fill valve open which refills the unit, restarts the cumulative timer and allows the humidifier to resume operation normally.

When draining the humidifier prior to servicing, the "manual drain" feature of this control module is used. Placing the three-position switch in the "manual drain" position deactives the fill valve and opens the drain valve.

The chart below shows recommended hours of operation for various water hardness.

Hours of Grains/Gal.	Operating Time	Hours of Grains/Gal.	Operating Time
14	24	24	14
16	22	26	13
18	19	28	12
20	18	30	11
22	16	32	10

* Note: Due to various waters, these are starting points. Field adjustments may be made to suit a particular water condition.

Recommended Maintenance
(VAPORSTREAM only)

The use of softened water will significantly reduce mineral build-up in the humidifier. When softened water is not available, the VAPORSTREAM is designed to deal with dissolved minerals in one of two ways depending on the degree of hardness. For light to moderate hardness (up to 10 grains per gallon), the surface skimmer action plus annual cleaning is usually adequate. For high mineral content water (above 10 grains per gallon) an electronic timer and motorized "drain" valve is recommended in addition to the surface skimmer, along with cleaning as needed. If the VAPORSTREAM was originally purchased without a timer and drain valve they usually can be easily added in the field. Consult factory for details. The frequency of cleaning will be dictated by water condition and evaporation load.

Note: *When performing maintenance on the VAPORSTREAM, always place control module switch in "standby" and place main disconnect in "off" position and close manual water shut-off valve.*

Seasonally or as Required

1. Cleaning Tank - Remove loose scale in humidifier tank before the build-up reaches the underside of the heating element(s).

2. Cleaning Probes - Disconnect the plug and cable assembly and unscrew the probe holder from the VAPORSTREAM unit. The scale will easily flake off from the TEFLON® coated sensing portion. The uncoated sensing portion (bottom 3/8") of the probe should be brushed clean with stainless steel wool. Reinstall the probe holder with arrows up and "top" marking at the top.

3. Cleaning Skimmer Tube - Remove the elbow section of the skimmer and rotate tube so that loosened material will drop out. Loosen deposits with a long tool such as screwdriver or section of small diameter pipe and reassemble elbow. Skimmer drainage should be verified by visual inspection once per week. Water should drain from skimmer drain pipe after each fill cycle.

Summer Maintenance

At the conclusion of the humidification season a complete cleaning of the heaters, probe control, skimmer, and water chamber is recommended. After cleaning the unit should be left unfilled until such time when humidification is required again.

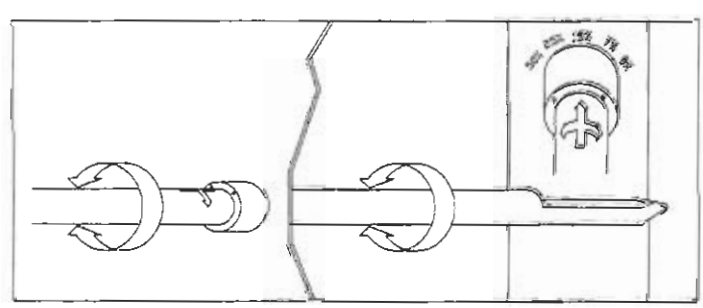
Adjusting the Surface Skimmer

The elevation of the lip of the skimmer tube in respect to the water line, determines the quantity of "skimming" that takes place with each fill cycle. The height is field adjustable by rotation of the tube. As evaporation takes place, a portion of the dissolved minerals precipitate (come out of solution) and remain on the water surface.

Each time the VAPORSTREAM refills, it fills to an elevation above the lip of the skimmer tube. A portion of the refill water then flows to drain carrying the floating mineral with it. This action constantly reduces the mineral concentration thereby reducing the frequency of cleaning needed.

The heated water that flows to drain is a cost of operation. Cleaning the humidifier is also a cost as well as in inconvenience. It is, therefore, recommended that the user, at the time of initial startup, observe and adjust the skimming quantity. By doing so, a balance between minimized mineral build-up and conservation of waste water can be achieved.

The quantity of skimming water drained off per fill cycle is adjusted by rotation of the skimmer tube which alters the height of the overflow lip. It is factory set to skim about 15% of the total evaporating capacity of the unit. For example: a Model VPC 10-10 having an output capacity of 56.8 pounds per hour would skim about 8.5 pounds (one gallon) per hour.



Surface Skimmer OM-81

To adjust, loosen the union nut and rotate the tube to the desired percentage of skimming rate. Markings on the unit indicate the following:

50% 25% 15% 7% 0%

Allow the VAPORSTREAM to operate five or ten days and then inspect it. If a mineral buildup is evident, increase the skim amount. If not, it should be reduced. Repeat the above process several times or until it is felt the proper adjustment has been attained.

Recommended Maintenance
(VAPORSTREAM DI only)

The VAPORSTREAM DI should follow the same basic rules for humidifier location and mounting as is required for the standard VAPORSTREAM unit. See pages 4 and 5 for location, pages 10-13 for mounting methods and page 15 for drain piping.

Makeup Water Piping
Use cold or hot makeup water. If the water pressure is above 60 psi and/or water hammer would be objectionable, a pressure reducing valve or shock arrester should be installed. Even though the VAPORSTREAM has an internal 1" air gap, some local codes may require a vacuum breaker.

Warning: Minimum water supply pressure is 25 psi.

Electrical
The current characteristics, and capacity requirements should be check against the nameplates. The control cabinet should be mounted in a location convenient for service. All wiring must be in accordance with all governing codes and the VAPORSTREAM wiring diagram. The diagram is inside of the control cabinet. The wiring between the control cabinet and the humidifier must be 105° degrees C rated wire.

The basic water level system and low water protection circuit found on page 20 is common to all VSDI humidifiers.

Caution: Only qualified electrical personnel should perform installation and startup procedures.

Startup and Checkout Procedures

Mounting
Check mounting to see that unit is level and securely supported before filling with water.

Piping
Verify that all piping connections have been completed as recommended and that water pressure is available.

Electrical
Verify that all wiring connections have been made in accordance with the VAPORSTREAM wiring diagram.

Control Circuit
a) Adjust humidistat to "call" setting.
b) Open shut off valve on water supply line. Unit should begin filling through operated fill valve.
c) Shortly before fill valve shuts off, the low water cutoff switch will "make". When this switch makes, the heating element contactor(s) will be actuated after a ten second delay. A time delay relay prevents contactor chatter due to bouncing of low water cutoff float.
d) Check low water cutoff circuit.
   1. Close manual top valve on water supply.
   2. Open ball valve and start draining unit.
   3. When water level drops past switching level on the low water cutoff float, the heating element contactor(s) will drop out.
   4. When step 3 has been satisfactorily completed, close drain valve.
e) Check out function of field installed safety controls such as fan proving switch etc. Contactor(s) should drop out when any proving switch is "open".
f) Check heater draw by testing and recording voltage and amperage in each phase. Readings should match nameplate readings - nameplate is located on the humidifier housing.
g) Inspect installation for leaks by operating the VAPORSTREAM. Any steam or air leaks should be sealed.

Recommended Maintenance
Assuming that the demineralizing equipment has supplied the VAPORSTREAM with mineral free water, cleaning and flushing will not be needed.

At least annually however, the humidifier should be inspected for leaks. Also, the current draw of the heaters should be checked and all safety devices in the control circuit should be cycled on and off to verify that they are functioning.

VAPORSTREAM TROUBLE-SHOOTING GUIDE

	CONTROL MODULE LIGHTS				
PROBLEM	**POWER**	**FILL**	**READY WATER**	**POSSIBLE CAUSE**	**RECOMMENDED ACTION**
Humidifier will not heat	Off	Off	Off	Control transformer	Verify control voltage across terminals 6 & 7.
	On	Off	On	Humidistat is not calling	Set humidistat to call. Inspect for faulty humidistat.
				Safety controls open	Check safety controls.
				Faulty control module	Verify control voltage between terminals 6 & 8.
				Probe head deterioration*	Replace probe head.
Humidifier will not fill	On	On	Off	No water pressure at valve.	Check water supply/shut off valves.
				Faulty water fill valve	Verify action of fill water solenoid valve by turning control module switch from standby to normal op. Audible click should be heard as solenoid operates.
				Plugged strainer	Check strainer.
				Plugged valve	Check valve.
				Faulty control module	Verify control voltage across terminals 5 & 6.
Humidifier does not stop filling	On	On	Off	Lack of tank to probes electrical continuity. Water conductivity 100 micromhos/cm (2 gr/gal) minimum	Jumper terminals 1 & 4. If water stops, verify tank ground to terminal 4; check water supply conductivity; then consult factory.
				Fill valve is stuck open	Check the fill valve for obstructions.
				Drain Valve not closed	
				Fill valve installed backward	Check for correct water flow through valve, note arrow.
Low output	On	Off	On	Electric drain valve not seating	Repair cause of leakage or replace valve.
	On	Off	On	Too much skimmer/drain	Adjust skimmer drain amount.
				Fill valve is stuck open	Check the fill valve for obstructions.
Unit short cycles				Probes may be incorrectly wired or need cleaning	Confirm that unit is wired per diagram. Clean probe rod tips with steel wool.

*Probe rod corrosion or probe head material aging may cause level control system failure. This generally does not occur in the first two years of operation.

VAPORSTREAM VSDI TROUBLE-SHOOTING GUIDE

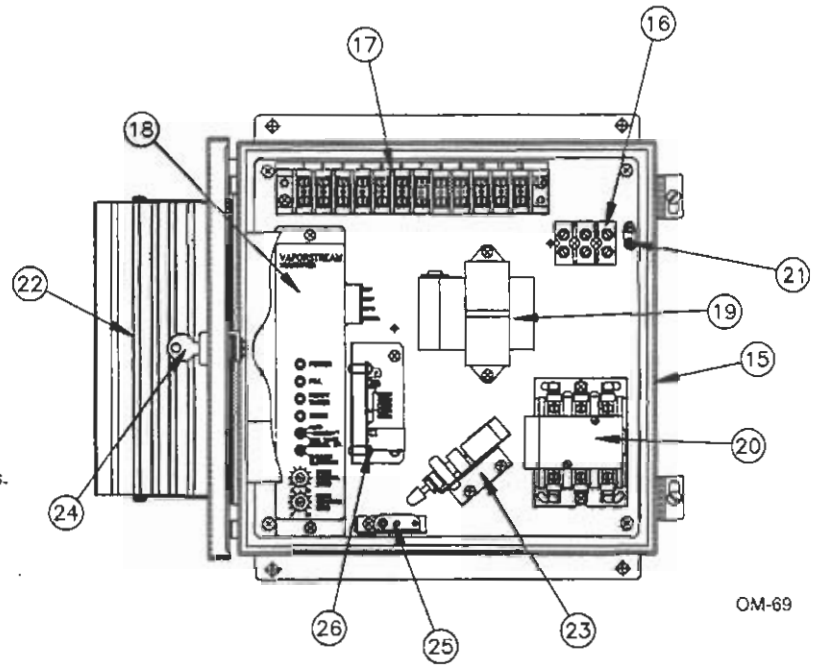
PROBLEM	POSSIBLE CAUSE	RECOMMENDED ACTION
Humidifier will not heat	Control transformer	Verify control voltage across terminal #1 and transformer secondary common.
	Humidistat is not calling	Set humidistat to call. Inspect for faulty humidistat.
	Safety controls open	Check safety control. Air flow switch, high limit humidistat, etc.
	Low water float switch	Verify control voltage #3 and transformer secondary common.
Humidifier will not fill	No water pressure at valve	Check water supply/shut off valves. Minimum 20 psi water pressure.
	Malfunctioning water float valve	Check to make sure that valve float & stem move freely.
	Plugged float valve	Check float valve seat.
Water Float Valve does not close	Open drain valve	Obstruction in drain valve will not allow complete closure, clean or replace valve.
	Manual drain valve not closed	Close drain valve.
	Malfunctioning Float Valve	Float ball has water leak. Float valve seat defective, replace.
	Water passing into overflow stand pipe	Readjust float valve rod, so water level reaches 1/4-3/8" from over flow edge when water is at ambient or cold state. Excessive water pressure, 100 psi maximum.
	Float valve stuck	Obstruction will not allow float valve to seat properly, clean or replace with new seat.
Reduced or no output even though water level is proper	Heater malfunctioning	Verify that proper voltage is being applied to heaters. Check heaters (amp draw on each leg should be equal.)
	Malfunctioning control system	Heater contactor not functioning, replace. Heater fuses blown. Auxiliary limit controls not allowing system to operate (duct humidistat, air flow proving switch, etc.). Reset, replace or calibrate as required. Faulty or inaccurate humidistat, replace or calibrate.
	Time delay/interlock relays	On delay relay delay time 10-15 seconds. Check relays.
	Low water cut-off switch	Check for proper operation.

VAPORSTREAM VPC Single Heater Control Cabinet

No.	Description	Part No.
15	Control Cabinet	4
16	Power Block	4
17	Terminal Strip	408250
18	Level Control Box	4
19	Transformer	408970-001, 002
20	Contactor	407001
21	Ground Lug	409250-017
22	SCR Master (2, 3)	4
23	P.E. Switch (3)	408100
24	Keylock (3)	407100-009
25	Door Interlock Switch (3)	408470
26	S-10 TP Modulator Board (2, 3)	408680
27	Pneumatic Transducer (1, 3)	501490

Note: When ordering specify humidifier model and serial numbers.

1 Not Shown. Transducer is mounted on control cabinet door exterior at SCR location.
2 Specify component part number when ordering.
3 Optional
4 Varies with specific order.



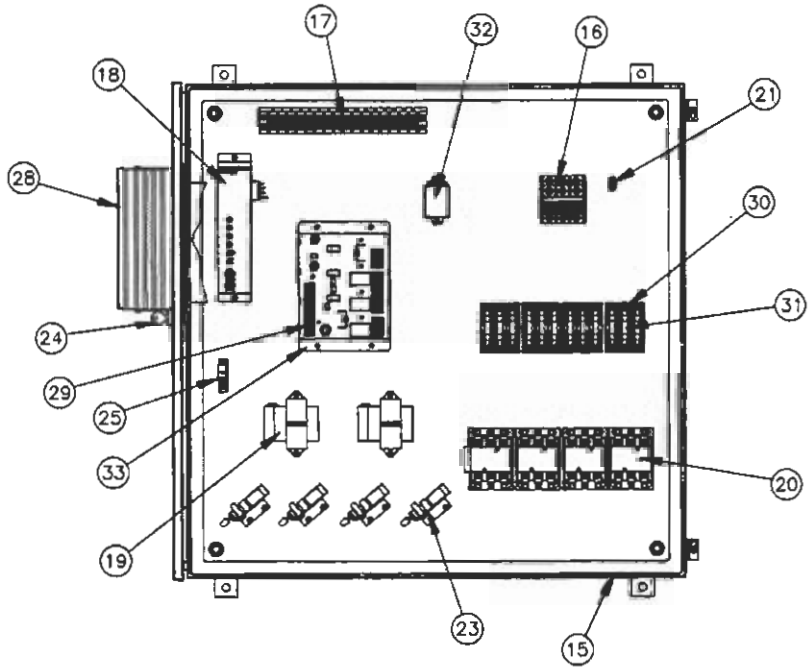
OM-69

VAPORSTREAM VPC Multiple Heater Control Cabinet

No.	Description	Part No.
15	Control Cabinet	4
16	Power Block	4
17	Terminal Strip	408250
18	Level Control Box	4
19	Transformer	408970-001, 002
20	Contactor	407001
21	Ground Lug	409250-017
22	SCR Master (2, 3)	4
23	P.E. Switch (3)	408100
24	Keylock (3)	407100-009
25	Door Interlock Switch (3)	408470
26	S-10 TP Modulator Board (2, 3)	408680
27	Pneumatic Transducer (1, 3)	501490

Note: When ordering specify humidifier model and serial numbers.

1 Not Shown. Transducer is mounted on control cabinet door exterior at SCR location.
2 Specify component part number when ordering.
3 Optional
4 Varies with specific order.
5 Specify S-20, S-71, S-81 or CC-8104
6 Supplied with some options and high current output conditions.
7 Two supplied when control load exceeds rating of one transformer.



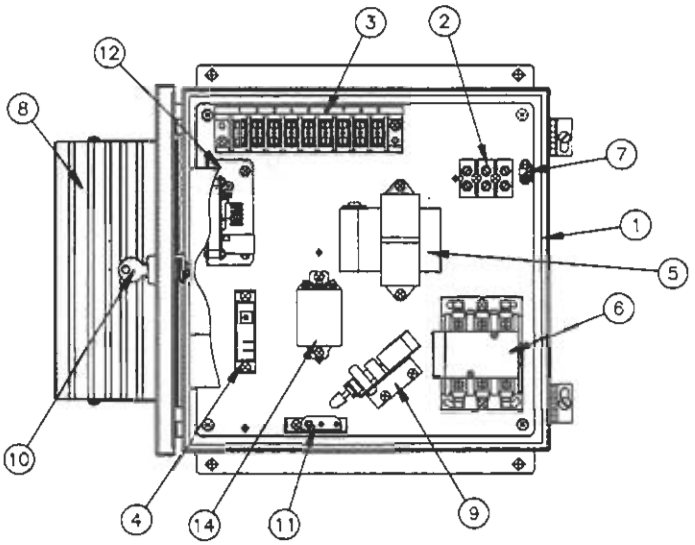
OM-71

VAPORSTREAM DI Single Heater Control Cabinet

No.	Description	Part No.
1	Control Cabinet	4
2	Power Block	4
3	Terminal Strip	408250
4	Time Delay Relay	408440
5	Transformer	4
6	Contactor	407000
7	Ground Lug	409250-017
8	SCR Master(2, 3)	4
9	P.E. Switch (3)	408100
10	Keylock (3)	407100-009
11	Door Interlock Switch (3)	408470
12	S-10 TP Modulator Board (2, 3)	408680
13	Pneumatic Transducer (1, 3)	501490
14	Relay	407900

Note: When ordering specify humidifier model and serial numbers.

1 Not Shown. Transducer is mounted on control cabinet door exterior at SCR location.
2 Specify component part number when ordering.
3 Optional
4 Varies with specific order.



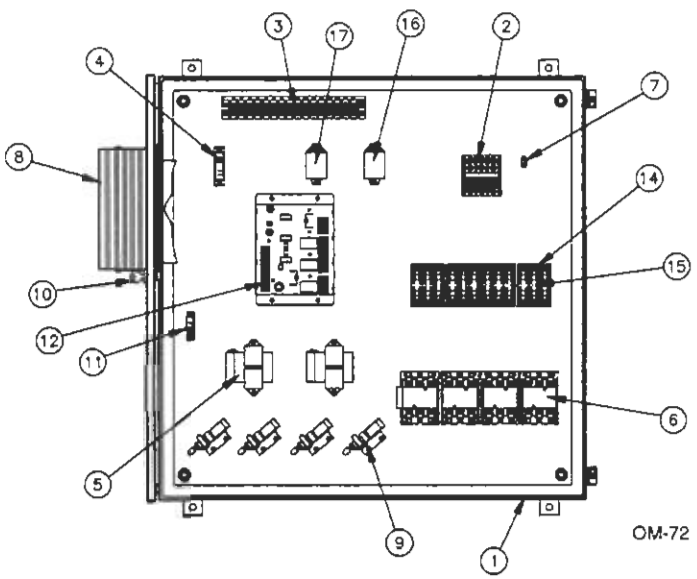
OM-70

VAPORSTREAM DI Multiple Heater Control Cabinet

No.	Description	Part No.
1	Control Cabinet	4
2	Power Block	4
3	Terminal Strip	408250
4	Time Delay Relay	408440
5	Transformer (7)	4
6	Contactor	407000
7	Ground Lug	409250
8	SCR Slave (2, 3)	4
9	P.E. Switch (3)	408100
10	Keylock (3)	407100-009
11	Door Interlock Switch (3)	408470
12	Sequencer (2, 3, 5)	4
13	Pneumatic Transducer (1, 3)	501490
14	Fuse Block	406750
15	Fuses	4
16	Relay (6)	407900
17	Relay	407900

Note: When ordering specify humidifier model and serial numbers.

1 Not Shown. Transducer is mounted on control cabinet door exterior at SCR location.
2 Specify component part number when ordering.
3 Optional
4 Varies with specific order.
5 Specify S-20, S-71, S-81 or CC-8104
6 Supplied with some options and high current output conditions.
7 Two supplied when control load exceeds rating of one transformer.



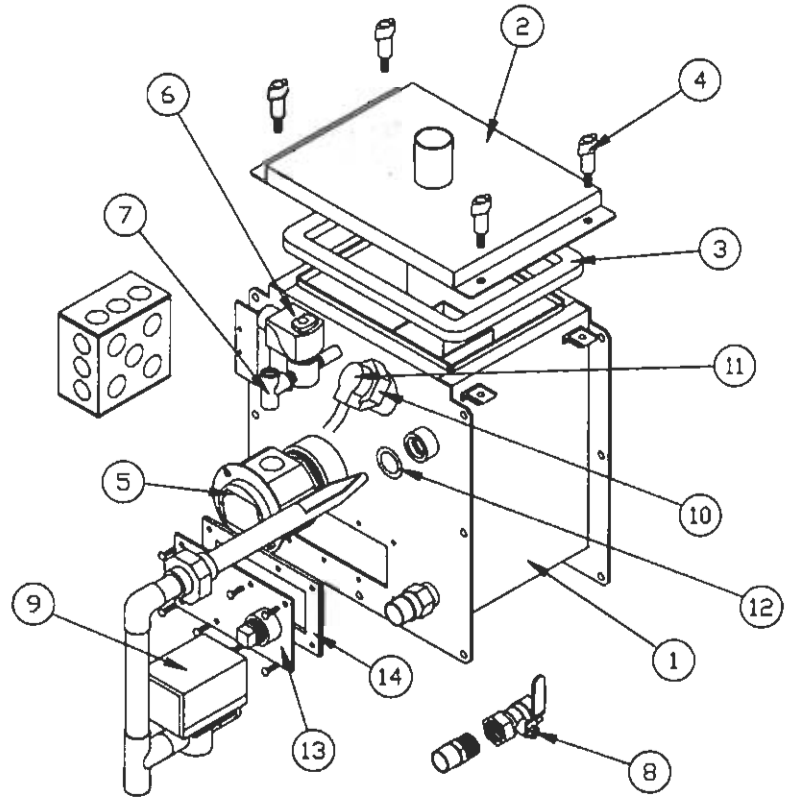
OM-72

VAPORSTREAM Humidifier

No.	Description	Part No.
1	Tank	(1)
2	Cover Gasket	(1)
3	Cover Gasket	308300 (1)
4	T-Handled Utility Knob	700725
5	Immersion Heater	(1)
6	1/4" NPT Fill Valve	505080 (1)
7	1/4" NPT Sediment Strainer	3000050
8	3/4" Ball Valve	505010 (2)
9	3/4" Electric Drain Valve	505400 (1, 3)
10	Probe Assembly	406060
11	Probe Plug	406050 (1)
12	O-Ring	300400-005
13	Clean-Out Plate	165470-001-004
14	Clean-Out Plate Gasket	308220

(1) Specify humidifier model and serial numbers when ordering.
(2) With manual drain only.
(3) With automatic timer drain down option only.

Notes:
1. For dispersion tube(s) specify type (U-tube, L-tube, straight tube) and humidifier model and serial numbers.
2. Parts not itemized are typical hardware stock items.



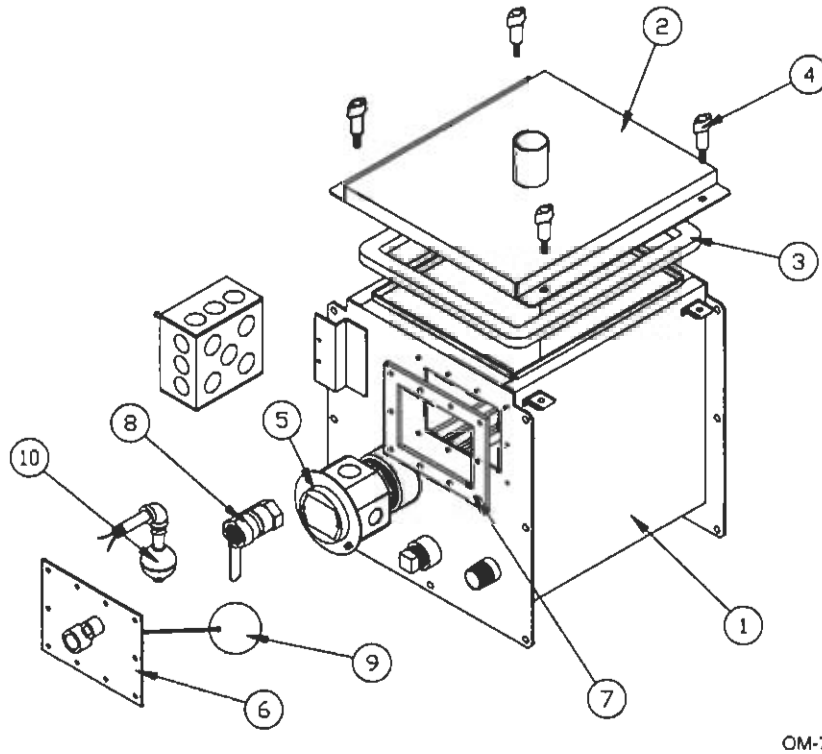
OM-73

VAPORSTREAM VSDI Humidifier

No.	Description	Part No.
1	Tank	(1)
2	Cover	(1)
3	Cover Gasket	308300 (1)
4	T-Handled Utility Knob	700725
5	Immersion Heater	(1)
6	Float Plate	165700
7	Float Plate Gasket	308260
8	3/4" NPT SST Ball Valve	505000
9	Float Cut-Out Switch	408420
10	Float Valve	505210

(1) Specify humidifier model and serial numbers when ordering.

Notes:
1. For dispersion tube(s) specify type (U-tube, L-tube, straight tube) and humidifier model and serial numbers.
2. Parts not itemized are typical hardware stock items.



OM-74

MAINTENANCE SERVICE RECORD

DATE INSPECTED	PERSONNEL	OBSERVATION	ACTION PERFORMED

TWO YEAR LIMITED WARRANTY

DRI-STEEM Humidifier Company ("DRI-STEEM") warrants to the original user that its products will be free from defects in materials and workmanship for a period of two (2) years after installation or twenty-seven (27) months from the date DRI-STEEM ships such product, whichever date is the earlier.

If any DRI-STEEM product is found to be defective in material or workmanship during the applicable warranty period, DRI-STEEM's entire liability, and the purchaser's sole and exclusive remedy, shall be the repair or replacement of the defective product, or the refund of the purchase price, at DRI-STEEM's election. DRI-STEEM shall not be liable for any costs or expenses, whether direct or indirect, associated with the installation, removal or re-installation of any defective product.

DRI-STEEM's limited warranty shall not be effective or actionable unless there is compliance with all installation and operating instructions furnished by DRI-STEEM, or if the products have been modified or altered without the written consent of DRI-STEEM, or if such products have been subject to accident, misuse, mishandling, tampering, negligence or improper maintenance. Any warranty claim must be submitted to DRI-STEEM in writing within the stated warranty period.

DRI-STEEM's limited warranty is made in lieu of, and DRI-STEEM disclaims all other warranties, whether express or implied, including but not limited to any IMPLIED WARRANTY OF MERCHANTABILITY, ANY IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, any implied warranty arising out of a course of dealing or of performance, custom or usage of trade.

DRI-STEEM SHALL NOT, UNDER ANY CIRCUMSTANCES BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, LOSS OF PROFITS, REVENUE OR BUSINESS) OR DAMAGE OR INJURY TO PERSONS OR PROPERTY IN ANY WAY RELATED TO THE MANUFACTURE OR THE USE OF ITS PRODUCTS. The exclusion applies regardless of whether such damages are sought based on breach of warranty, breach of contract, negligence, strict liability in tort, or any other legal theory, even if DRI-STEEM has notice of the possibility of such damages.

By purchasing DRI-STEEM's products, the purchaser agrees to the terms and conditions of this limited warranty.

DRI-STEEM® HUMIDIFIER COMPANY
A SUBSIDIARY OF RESEARCH PRODUCTS CORPORATION

ISO 9001
DNV
DNV Certification, Inc.
Certificated Firm

14949 Technology Drive • Eden Prairie, MN 55344
Telephone: 1-800-328-4447• In MN: (612) 949-2415
Fax: (612) 949-2933

Printed with agribased inks on recycled paper
Contains minimum 50% preconsumer waste

AGRIBASED INKS • 100 • CORN, VEGETABLE AND SOYBEAN OILS • 50

Form No. VS/DIOM-R7-0794

Printed in U.S.A.