

LETTER OF TRANSMITTAL

Nordstrom Contracting
 Consulting Corp
 36 Thiells Mt. Ivy Rd.
 Pomona, NY 10970

JUNE 26, 2018
 Project: VA620A4-17-111
 Relocate SPS

To: Apogee Consulting Group, PA Attention: Cullen S. Keen AIA

1151 Kildaire Farm Road

Cary, NC 27511

**HVAC EQUIPMENT SUBMITTAL # 1
 (AS NOTED IN "Description" BELOW)**

Gentlemen;

We are sending you Herewith Delivered by Hand Under Separate Cover Via ELECTRONIC

Plans Prints Shop Dwgs Samples Specifications Other Product Documents

Copies	Item	# Pages	Description
1	1	57	TRANE AHU & AIR-COOLED CONDENSING UNITS
1	2	22	LG ELECTRONICS - SPLIT SYSTEM
1	3	18	PURE HUMIDIFIER CO. - STEAM HEAT HUMIDIFIER
1	4	6	LOREN COOK - CENTRIFRUGAL WALL FANS
1	5	9	NAILOR INDUSTRIES - SINGLE DUCT VAV UNITS
1	6	12	NAILOR INDUSTRIES - REGISTERS, GRILLS & DIFFUSERS
1	7	9	AIRFLOW DIRECTION INC. - VISUAL PRESSURE INDICATOR
			THIS ATTACHED IS APPROVED FOR SUBMITTAL BY NORDSTROM CONTRACTING

The Above Listed Items are transmitted as indicted below:

Return By Date: ASAP

Approval As Requested For Your Use For Construction

Approved As Noted Submit _____ Copies for Record Distribution

Returned for Correction, Revise & Resubmit Coordination (Should the attached be in conflict with your work, advise immediately)

For Your Files Other: _____

For Bids Due _____

Remarks: _____

Copies W () W/O()

Enclosures: Timothy Starks

NCC FIELD FILE

Oscar Nordstrom, President

Project: 15-004 - VA Castle Point Relocation of SPS NY
Submittal ID: 00003
Spec Section: 23 22 13

Furnish as Submitted

Review is for general conformance with plans and specifications given in the Contract Documents. Contractor is solely responsible for dimensions, quantities, performance, safety, coordination with other work, and all other requirements of the Contract Documents. Review does not authorize changes to the Contract unless stated specifically in a separate letter or Change Order.

Reviewed By: Bob Maxwell
Reviewed On: 7/5/2018
Apogee Consulting Group, P.A.

COMMENTS:



June 13, 2018

Mr. Michael Houghton
M. H. Heating & Cooling, LLC
Wallkill, New York

Re: **Submittal for Approval**
VA Hudson Valley Healthcare Systems
Relocate SPS
Castle Point, NY

Dear Mr. Houghton:

In reference to the above project, here is a set of submittal drawings for:

Pure Humidifier Co. – Steam Heat Humidifier – Spec 232213

The equipment in this submittal is being held for construction, pending your approval and release. Please return one set of submittal drawings to our office.

We thank you for your order and appreciate this opportunity to be of service.

Regards,

R.F. Peck Co., Inc.

A handwritten signature in black ink, appearing to read "Kyle Mead". The signature is fluid and cursive, written over a light blue horizontal line.

Kyle Mead
Enclosures



22 Computer Drive - West
Albany, NY 12205
Phone (518) 869-3541

Equipment Submittal

Project	VA Hudson Valley Healthcare Systems Relocate SPS Castle Point, NY
Engineer	RPA Design Charlotte, NC
Contractor	M. H. Heating & Cooling, LLC Wallkill, NY
Submitted by	Kyle Mead/dk R. F. Peck Co., Inc. Albany, New York Date: June 12, 2018

Manufacturer's Representatives for
Heating, Ventilating and
Air Conditioning Equipment

Contents: Pure Humidifier Co. – Steam Heat Humidifier – Spec 232213

Note: Based on Contract Drawings Dated 5.5.2017

PURE Humidifier Co. Steam Heat Exchanger Humidifier Schedule

The following PURE Humidifier Company Steam Heat Exchanger Humidifiers are proposed for the subject project:

<u>Tag</u>	<u>Qty</u>	<u>Model</u>	<u>Capacity (lbs./hr)</u>	<u>Injection Tube</u>
H-1	1	SXDDR-2R	150.0 lbs./hr @ 15 psig	3 Tube Insty Pac @ 42"

Humidifier Steam Control Valve Pressure: 15 PSI

The above Pure Humidifier Company SXDDR Steam Heat Exchanger Humidifiers are supplied with the following standard equipment:

1. Evaporating chamber and cover constructed of 14 gauge type 304 stainless steel and a 12 gauge type 304 stainless steel face plate (rated for 19" W.C. pressure).
2. Quick release cover clamps. Quarter turn cover clamps allow removal of the cover without removing the securing bolts.
3. 304 Stainless steel heat exchanger and condensate header.
4. Stainless steel float type water make-up valve (1/4"-NPT).
5. Over flow stand pipe with 3/4"-NPT stainless steel ball valve and drain connection.
6. Normally closed steam control valve with stainless steel parabolic plug, seat and stem. The control valve is supplied with an operator as indicated: **ELECTRIC modulating (0-10 VDC)**.
7. Float and Thermostatic steam trap with cleanable steam strainer.
8. NEMA 12 control enclosure (**factory mounted and wired**) containing:
 - a All interconnecting panel wiring.
 - b Numbered and labeled terminals.
 - c. Control transformer fuse and fuse holder.
 - d. Step down transformer.
 - e. ETL/Warnock Hersey Listed & Tested to UL#998 & CSA #C22.2-104 Humidifiers
9. The above humidifiers are designed to operate with reverse osmosis, deionized or demineralized water.

Optional equipment furnished:

10. INTAC® Microprocessor Logic Controller; controller performs self-diagnostics and safety circuit interlocks with fault indication. Also includes:
 - a) 16 character two line display.
 - b) Keypad user interface.
 - c) BAS communications.
 - d) Adjustable input signal filter
 - e) Flash memory
 - f) On-Screen alarm/fault messages.
 - g) Keypad lock-out system.
 - h) Fault alarm contacts.
 - i) Low/High humidity deviation alarm contacts.
 - j) Adjustable P.I.D. parameters.
 - k) Time-to-Service indication.
 - l) Adjustable display brightness

Factory mounted and wired control cabinet – control cabinet is mounted on the left side of the humidifier chamber (facing humidifier).

Factory insulation – consists of 3/4" thick semi-rigid foam duct insulation covered in aluminum foil. All surfaces except bulkhead side are insulated.

Support legs – legs sized to support humidifier 24" above the floor. Legs are constructed of 1 1/4" angle iron (painted aluminum) and include mounting hardware.

DCT-927 self actuated drain tempering kit – The drain tempering kit is designed to provide drain and condensate water at a temperature of less than 140°F.

Schneider Electric HC-201 duct mount high-limit humidistat.

Cleveland Controls AFS-262-112 air flow switch – pressure differential type.

Invensys MS51 series electric modulating valve actuator - primary voltage to be 24 volts ac with a control input signal of

Insty-Pac multiple tube assembly; steam supply/condensate header constructed of 304 stainless steel with steam inlet, condensate drain outlet and steam injection tubes welded to header. Steam jacketed injection tube(s) constructed of 304 stainless steel with punched steam ports of the proper size and spacing to deliver the maximum specified capacity.

PURE Humidifier Company
Sample Specification
“SXDDR” Series

Humidifier

The humidifier shall be steam heated heat exchanger type as manufactured by PURE Humidifier Company of Chaska, Minnesota.

The humidifier shall be tested and approved by ETL/ETL-C Testing Laboratories, Inc (ETL #472940).

The humidifier shall have an evaporating reservoir with a gasket sealed cover which is capable of operating at pressures of at least 19”-48 cm (W.C.) without steam or water leaks. The reservoir shall be made of type 304 stainless steel with welded joints.

The humidifier shall be designed to facilitate easy removal of the heat exchanger for periodic scale removal and inspection. The cover and heat exchanger shall be secured to the unit by the use of quick release clamps. The heat exchanger shall be removable from the side of the humidifier without disturbing the cover or injection tube system’s steam supply piping.

A stainless steel float operated low water cut-off switch shall be provided. The float switch shall provide positive low water cut-out of the humidifier steam supply valve.

A stainless steel float operated water fill valve mounted on the top of the reservoir near the front shall be provided. The fill valve shall provide automatic refilling of the humidifier reservoir. The water inlet shall be located to allow a minimum water gap of 1 ½” (3.81 cm).

The humidifier shall have a ¾” (1.9 cm) over-flow pipe to prevent overfilling of the humidifier reservoir.

A ¾” stainless steel ball valve shall allow for manual draining of the humidifier reservoir.

The heat exchanger shall be constructed of type 304 stainless steel with rectangular heat transfer tubes and headers for improved scale removal and cleaning. Tubes shall be self-cleaning via expansion and contraction of tube. Coating of tubes is not required.

A normally closed steam control valve with equal percentage flow characteristics, and which provides sufficient capacity as required, shall be provided. The valve operator, pneumatic modulating (standard) or electric modulating (optional) shall be supplied by PURE Humidifier Company.

The humidifier shall be supplied with a float and thermostatic condensate trap and a pipe line wye strainer.

The humidifier shall be provided with an ETL listed JIC NEMA 12 control cabinet, shipped loose (reference factory mounting option). The control cabinet shall be made of 14 gauge steel with ANSI 61 gray polyester powder coating, continuous hinge and oil-resistant gasket. The panel shall include a factory wired sub-panel with magnetic contactor(s), time delay relay, fused control circuit transformer, numbered terminal block and heater fuse(s).

The control system shall maintain humidification during the fill cycle to maintain a consistent relative humidity.

Injection tube(s) shall be 1 ½" (3.81 cm) O.D. type 304 stainless steel, .049" wall, and shall be as long as required by the humidifier model and duct size. For each "Angle Tube" or "Universal Tube", the unit cover shall have a matching connection so that the tube can be connected by using a 8" (20.32 cm) flexible connector with stainless steel hose clamps. Two piece duct plate shall be included for sealing the duct opening.



Deionized, Demineralized, or Reverse Osmosis Water

“SXDDR” Series Steam Heat Exchanger Humidifiers

Looking for an alternative to electrically generated humidification? Concerned about using chemically treated boiler steam for direct humidification? PURE Humidifier’s “SXDDR” Series Steam Heat Exchanger humidifiers are exactly what you are looking for.

Indoor air quality issues concerning the use of boiler steam for direct humidification have resulted in a growing apprehension toward the use of steam injection type humidifiers. The possible carryover of chemical additives and odor created within some boiler systems is being addressed in an effort to improve the indoor air quality for new and existing buildings. The alternative, electric humidifiers, can be prohibitive due to the higher energy costs associated with electrically generated steam versus the typically lower energy cost of boiler steam. For these reasons, PURE has developed the “SXDDR” Series Steam Heat Exchanger humidifier.

The “SXDDR” Series humidifiers utilize a stainless steel heat exchanger that allows boiler steam to be used as the heat source for producing steam from tap water. By isolating the boiler steam from the clean tap water, contamination from the boiler is completely eliminated. The steam produced by the “SXDDR” Series humidifier is free from chemical or mineral carry-over, thus providing humidification to meet today’s stringent indoor air quality requirements. PURE’s highly efficient heat exchanger produces a greater capacity per unit size than competing designs due to the rectangular transfer tubes, as well as providing simplified maintenance.

The “SXDDR” Series humidifier is designed to operate on absolutely pure water, such as deionized, demineralized, or reverse osmosis water.

Since water mineral build-up does not occur with pure water, there is no need for an automatic drain system or cleaning. These units are practically maintenance-free.

The water level is maintained with a special float valve (in lieu of the Tri-Probe electronic water controller which is used on the standard water “SX” Series) and a low water float switch is incorporated to provide a low water interlock with the steam control valve. Both floats are protected from water turbulence by an internal baffle.

Modulation of the humidifier output is maintained by a high quality control valve, which modulates the steam flow into the heat exchanger.

Each humidifier is supplied with a control system mounted in a NEMA-12 enclosure. The control system provides constant monitoring of the water level and safety systems. It also provides a control valve interlock which prevents operation should any of the safety circuits open.

When it comes to installation, you have a choice with the “SXDDR” Series Steam Heat Exchanger. The humidifier can be free-standing with a simple (optional) flexible hose connecting the unit to the stainless steel injection tube inserted through the duct wall. You can also mount the unit on the wall with wall brackets, or floor-mounted with support legs (both optional). For mounting under a duct you simply need hangers and support brackets.

The versatility of the “SXDDR” Series will allow you to design them into any system simply, efficiently, and reliably.

Our results are comforting

Humidifier Capacity †								
Model	Steam pressure at the humidifier control valve							
	5 psig	34.5 kPa	10 psig	69 kPa	13 psig	90 kPa	15 psig	103 kPa
	lbs/hr	kg/hr	lbs/hr	kg/hr	lbs/hr	kg/hr	lbs/hr	kg/hr
SXDDR-1R	32	14.5	76	34.5	100	45.3	122	55.3
SXDDR-2R	52	23.6	108	48.9	140	63.5	169	76.7
SXDDR-3R	102	46.3	228	103.4	292	132.5	348	157.8
SXDDR-4R	192	87.1	484	219.5	655	297.1	753	341.7

†Actual humidifier capacity may vary due to the heat loss from the humidifier reservoir. The ambient air temperature, air velocity and injection tube system will affect the rate of heat loss from the reservoir.

The capacities shown are based on a non-insulated humidifier reservoir tested in a 70°F environment.

Humidifier Piping

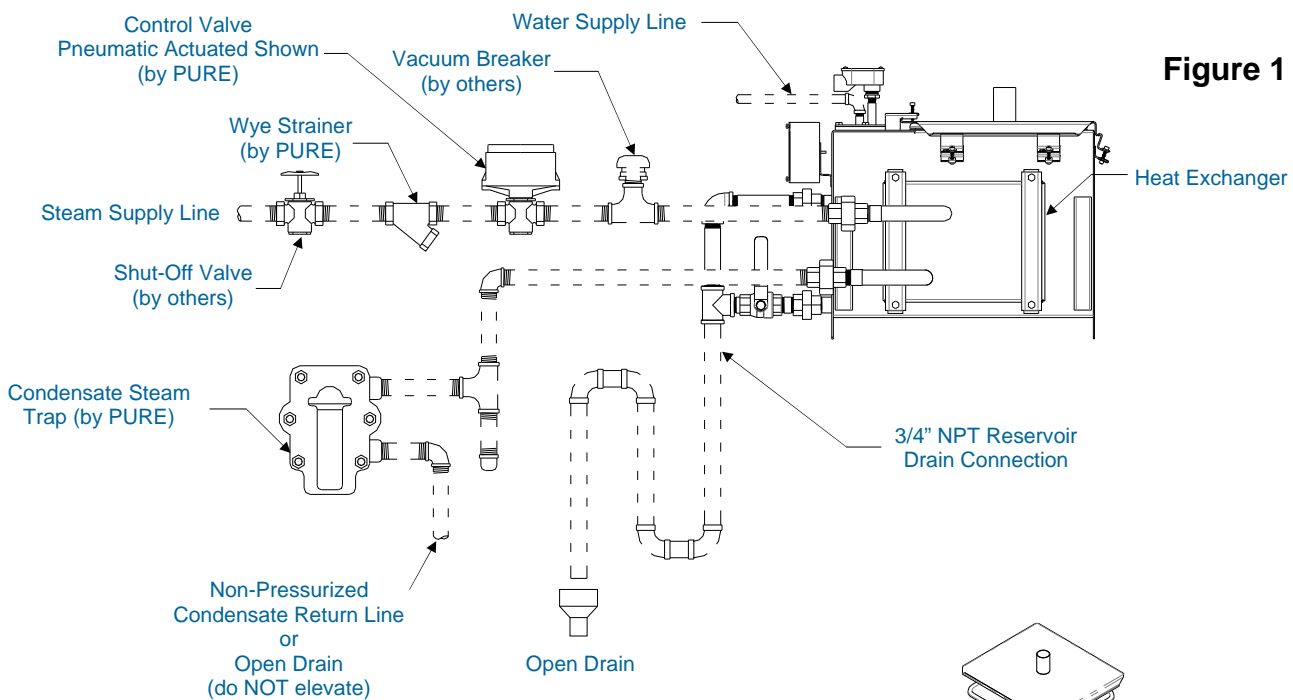


Figure 1

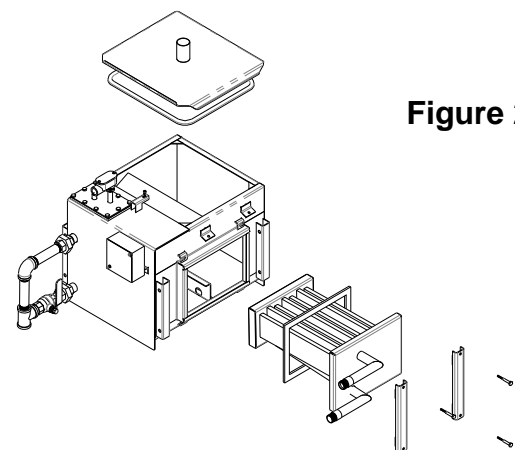


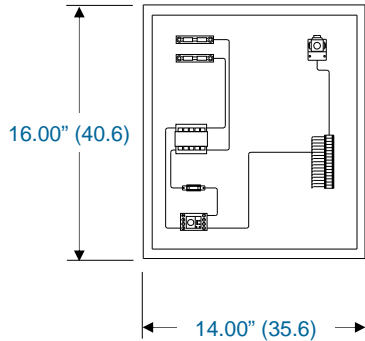
Figure 2

PIPING NOTES:

1. Do not install piping across the front of the heat exchanger.
2. Dashed line piping is by others.
3. Do not use PVC or plastic for any of the piping connections to the humidifier.
4. A shut-off valve must be installed in the steam supply line prior to the wye strainer (valve by others). Reference Figure 1.

NEMA-12 Humidifier Control Cabinet

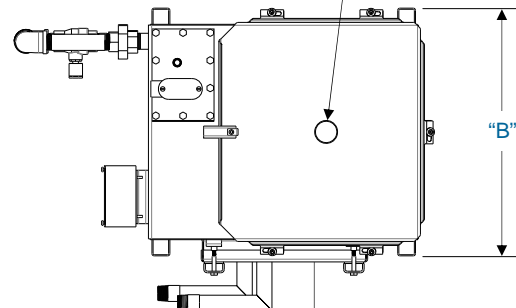
(reference control cabinet notes)



Cabinet Depth: 6.00" (15.2)

- 1) Door has been removed from the drawing for clarity
- 2) Control cabinet is shipped loose for field mounting unless optional factory mounting is specified
- 3) Control cabinet weight: 28 lbs (12.7 kg)
- 4) 1 Amp @ 120VAC Control circuit: 24 VAC

Steam Outlet Connection
(size and qty. will vary with application)

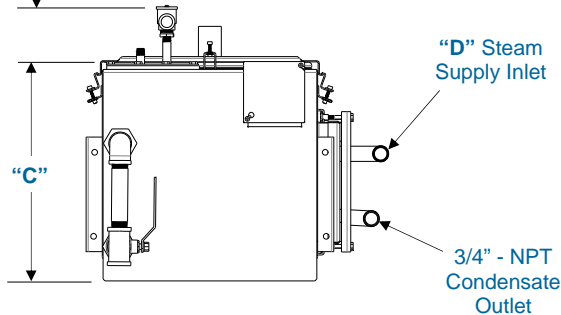


Heat Exchanger Removal
(see page SXDDR-9 for clearance dimension)

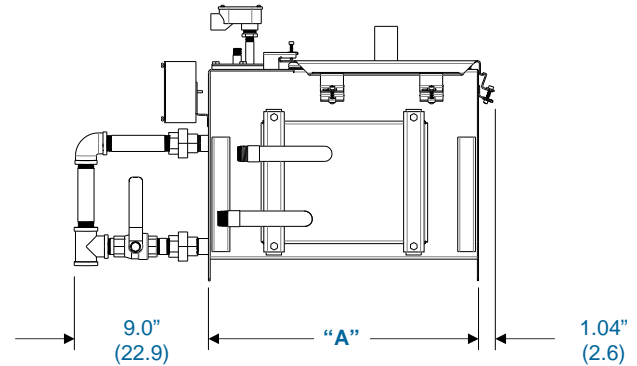
SXDDR-1R: 3.53" (8.9)
SXDDR-2R: 3.53" (8.9)
SXDDR-3R: 3.56" (9.0)
SXDDR-4R: 5.44" (13.8)

Top View

3.625"
(9.21)



Front View



Right Side View

Unit Dimensions								
Model	Dim. "A"		Dim. "B"		Dim. "C"		Dim. "D"	Strainer
	inches	cm	inches	cm	inches	cm		
SXDDR-1R	17.68"	44.9	16.21"	41.2	13.84"	35.2	3/4" NPT	3/4" NPT
SXDDR-2R	25.68"	65.2	16.21"	41.2	13.84"	35.2	3/4" NPT	3/4" NPT
SXDDR-3R	34.18"	86.8	20.46"	52.0	13.84"	35.2	1-1/2" NPT	1-1/2" NPT
SXDDR-4R	54.12"	137.5	29.46"	74.8	13.84"	35.2	2" NPT	2" NPT

*When calculating the total dry weight of the humidifier, the control cabinet weight must be added to the reservoir weight.
Due to product improvement, catalog dimensions and specifications are subject to change without notice.

Humidifier Capacity †								
Model	Steam pressure at the humidifier control valve							
	5 psig	34.5 kPa	10 psig	69 kPa	13 psig	90 kPa	15 psig	103 kPa
	lbs/hr	kg/hr	lbs/hr	kg/hr	lbs/hr	kg/hr	lbs/hr	kg/hr
SXDDR-8R	370	167.8	840	381.0	1200	544.3	1350	612.4

†Actual humidifier capacity may vary due to the heat loss from the humidifier reservoir. The ambient air temperature, air velocity and injection tube system will affect the rate of heat loss from the reservoir.

The capacities shown are based on a non-insulated humidifier reservoir tested in a 70°F environment.

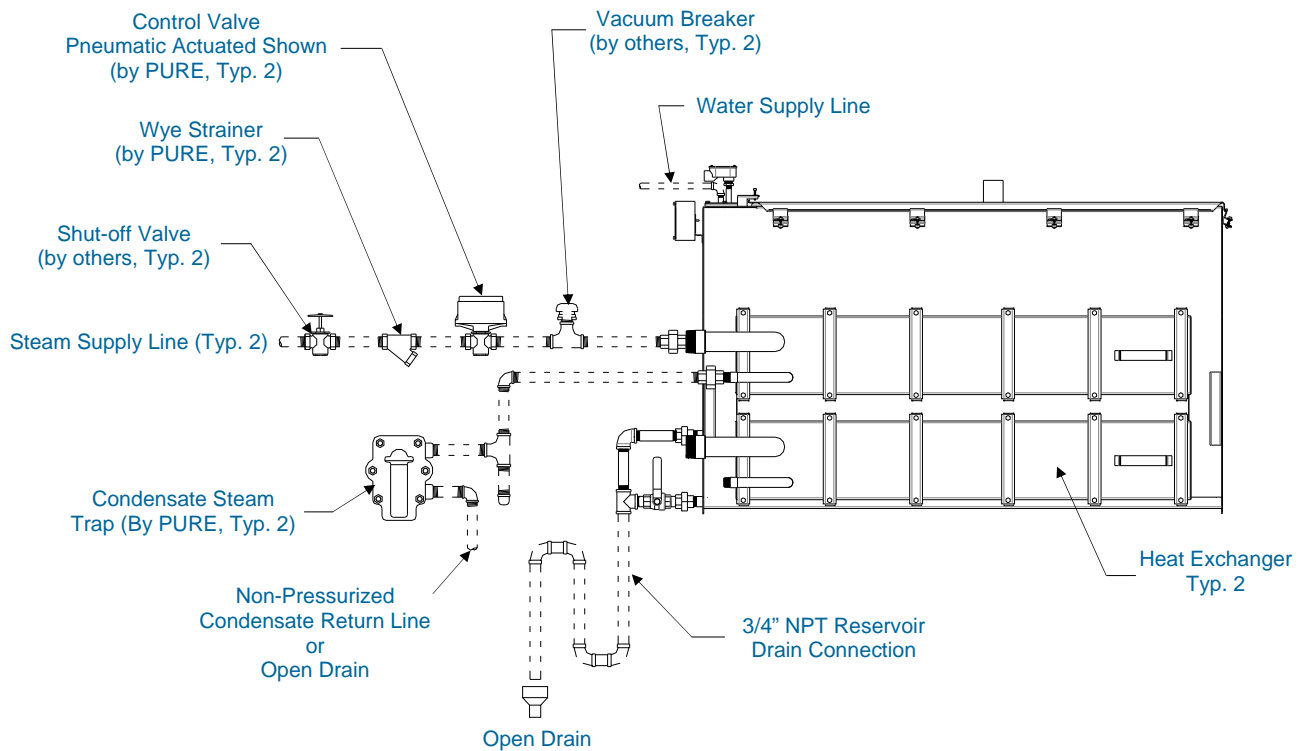


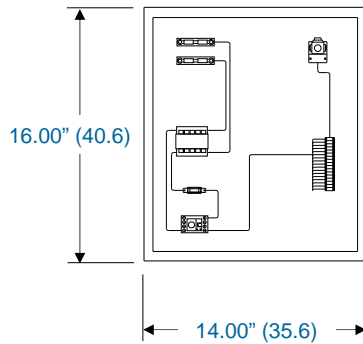
Figure 3

PIPING NOTES:

1. Do not install piping across the front of the heat exchanger.
2. Dashed line piping is by others.
3. Do not use PVC or plastic piping for any of the piping connections to the humidifier.
4. A shut-off valve must be installed in the steam supply line prior to the wye strainer (valve by others). Reference Figure 3.

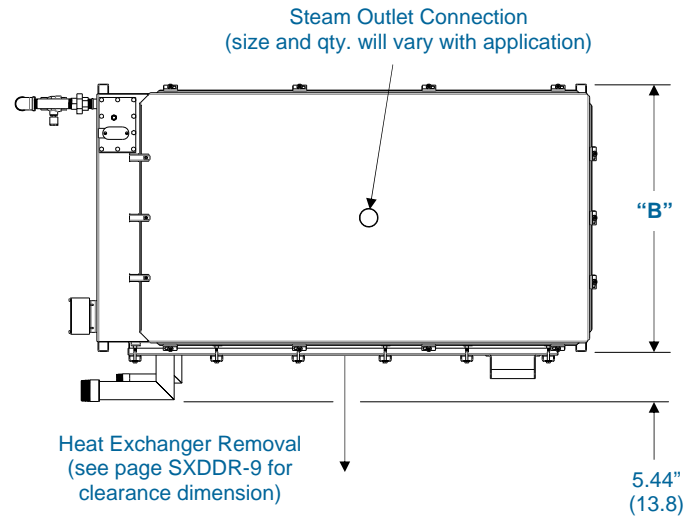
NEMA-12 Humidifier Control Cabinet

(reference control cabinet notes)

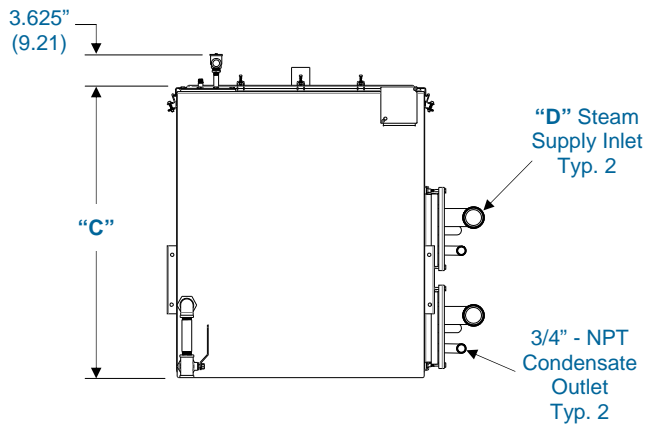


Cabinet Depth: 6.00" (15.2)

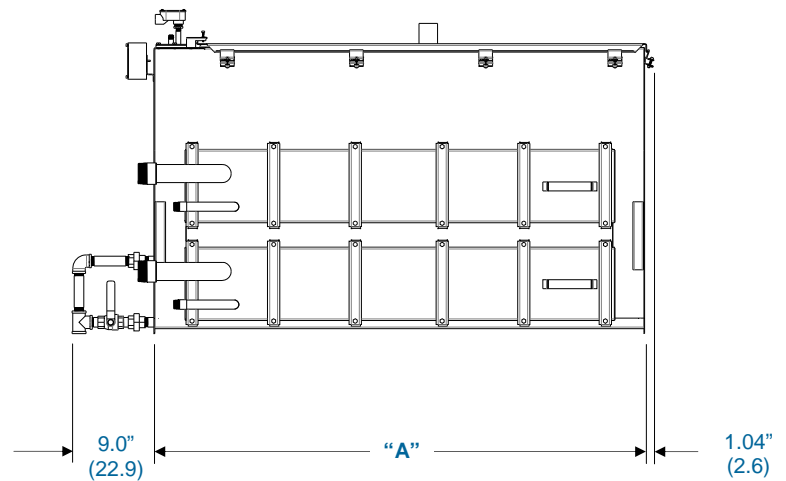
- 1) Door has been removed from the drawing for clarity
- 2) Control cabinet is shipped loose for field mounting unless optional factory mounting is specified
- 3) Control cabinet weight: 28 lbs (12.7 kg)
- 4) 1 Amp @ 120VAC Control circuit: 24 VAC



Top View



Front View



Right Side View

Unit Dimensions								
Model	Dim. "A"		Dim. "B"		Dim. "C"		Dim. "D"	Strainer
	inches	cm	inches	cm	inches	cm		
SXDDR-8R	54.12"	137.5	29.46"	74.8	31.53"	80.1	2" NPT	2" NPT

*When calculating the total dry weight of the humidifier, the control cabinet weight must be added to the reservoir weight.
Due to product improvement, catalog dimensions and specifications are subject to change without notice.

Humidifier Capacity †								
Model	Steam pressure at the humidifier control valve							
	5 psig	34.5 kPa	10 psig	69 kPa	13 psig	90 kPa	15 psig	103 kPa
	lbs/hr	kg/hr	lbs/hr	kg/hr	lbs/hr	kg/hr	lbs/hr	kg/hr
SXDDR-12R	560	254.0	1265	573.8	1810	821.0	2035	923.1

†Actual humidifier capacity may vary due to the heat loss from the humidifier reservoir. The ambient air temperature, air velocity and injection tube system will affect the rate of heat loss from the reservoir.

The capacities shown are based on a non-insulated humidifier reservoir tested in a 70°F environment.

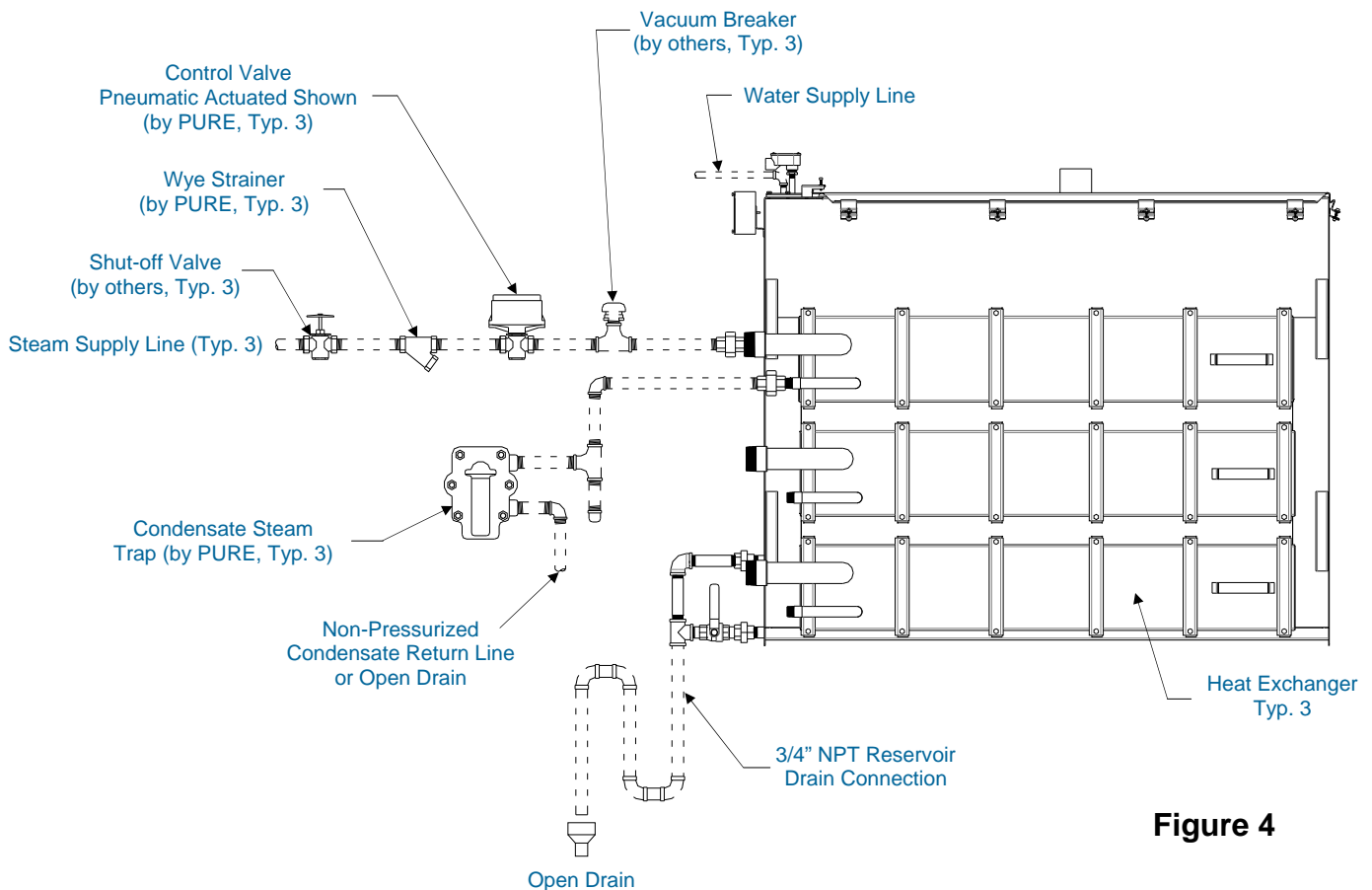
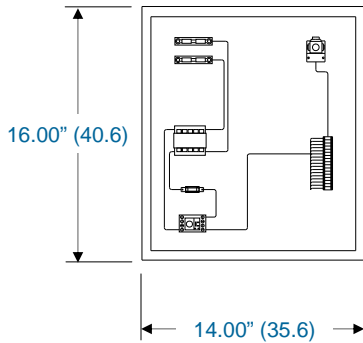


Figure 4

PIPING NOTES:

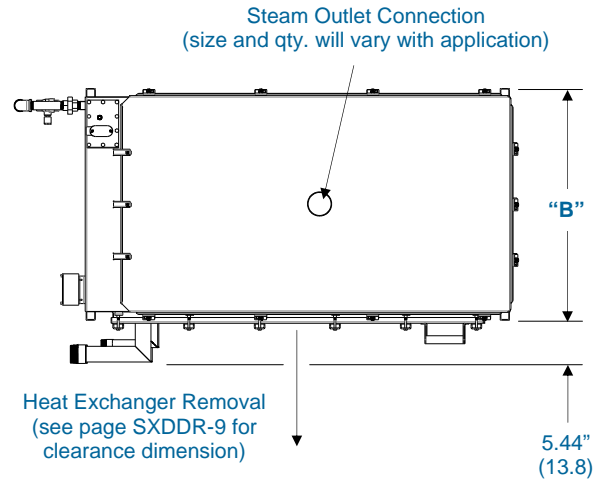
1. Do not install piping across the front of the heat exchanger.
2. Dashed line piping is by others.
3. Do not use PVC or plastic piping for any of the piping connections to the humidifier.
4. A shut-off valve must be installed in the steam supply line prior to the wye strainer (valve by others). Reference Figure 4.

NEMA-12 Humidifier Control Cabinet
 (reference control cabinet notes)

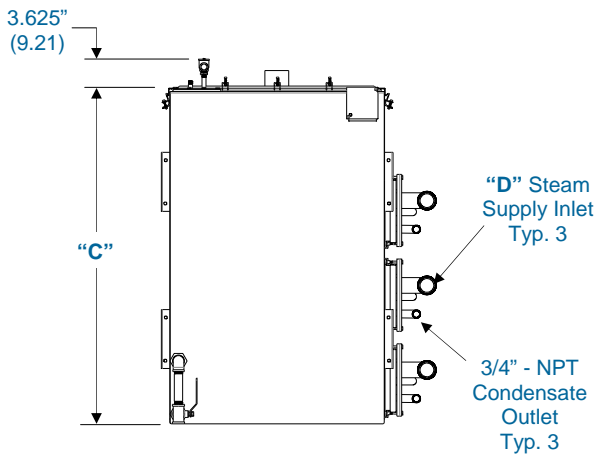


Cabinet Depth: 6.00" (15.2)

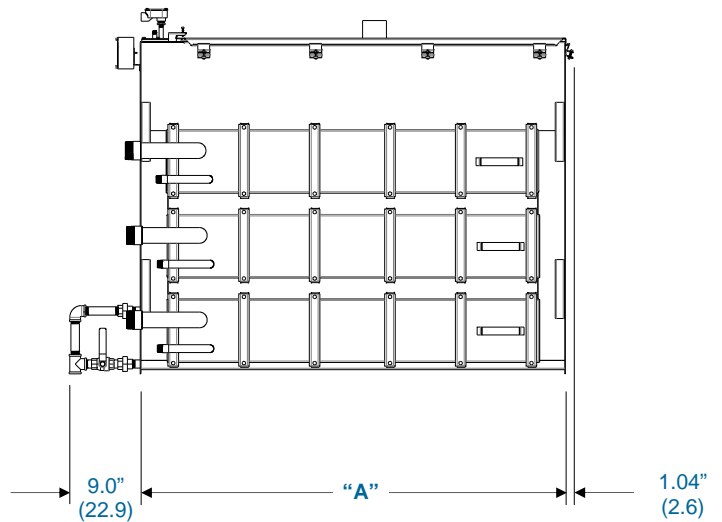
- 1) Door has been removed from the drawing for clarity
- 2) Control cabinet is shipped loose for field mounting unless optional factory mounting is specified
- 3) Control cabinet weight: 28 lbs (12.7 kg)
- 4) 1 Amp @ 120VAC Control circuit: 24 VAC



Top View



Front View

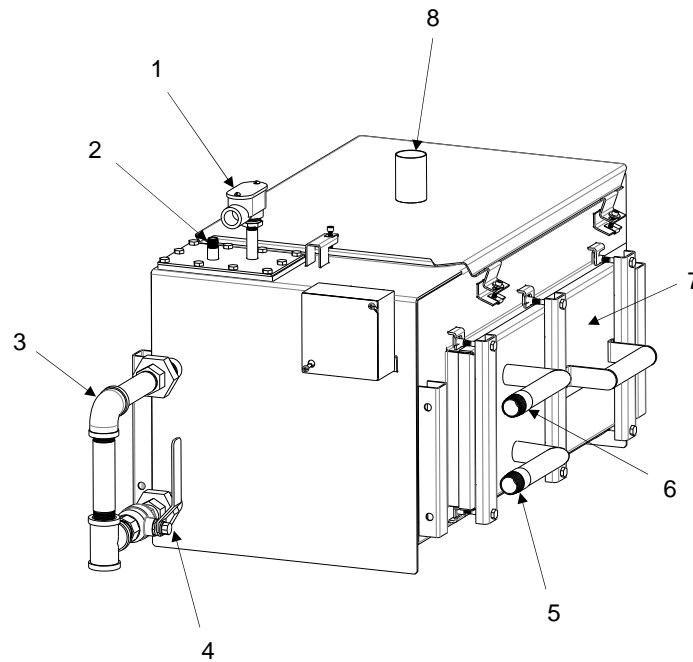


Right Side View

Unit Dimensions

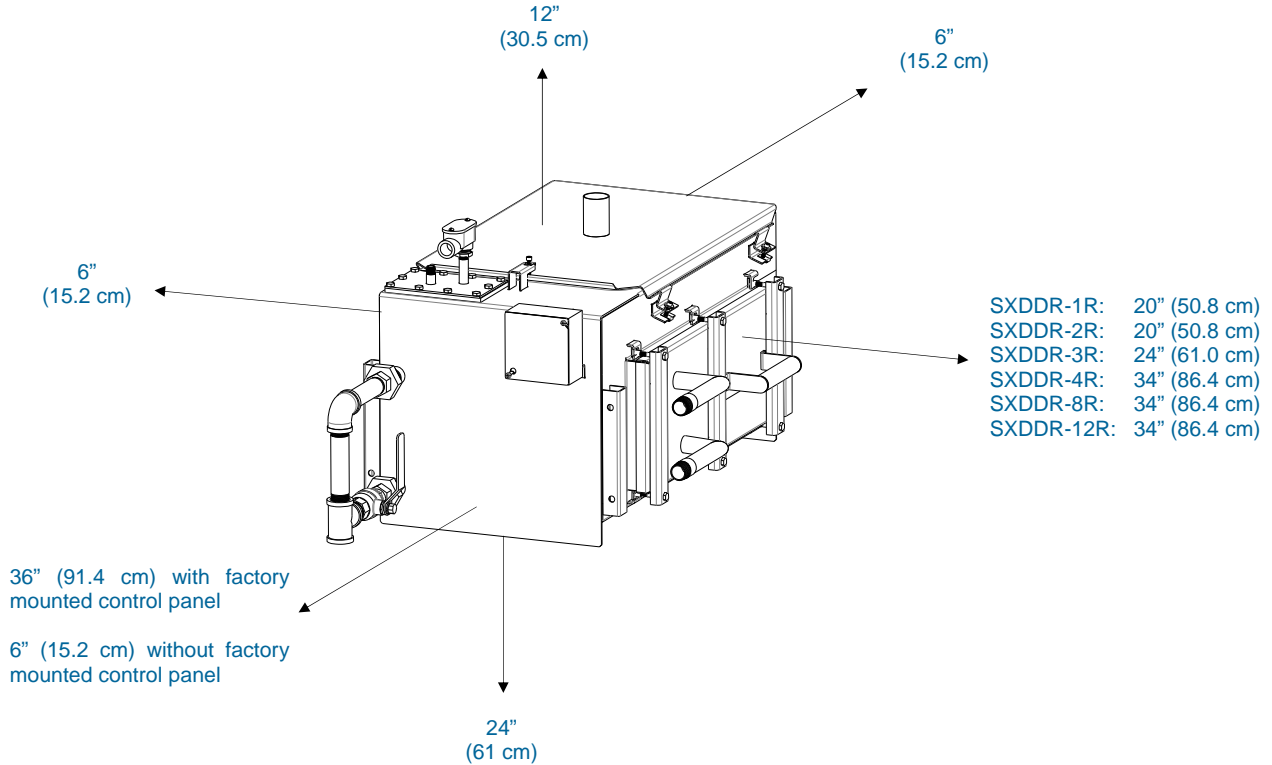
Model	Dim. "A"		Dim. "B"		Dim. "C"		Dim. "D"	Strainer
	inches	cm	inches	cm	inches	cm		
SXDDR-12R	54.12"	137.5	29.46"	74.8	42.28"	107.4	2" NPT	2" NPT

*When calculating the total dry weight of the humidifier, the control cabinet weight must be added to the reservoir weight. Due to product improvement, catalog dimensions and specifications are subject to change without notice.



Features

- | | |
|--|---|
| 1. Low Water Float Switch Junction Box | 5. Heat Exchanger/Plant Steam Condensate Outlet |
| 2. 1/4" NPT Fill Inlet Connection | 6. Pressurized Boiler Steam Inlet |
| 3. Overflow Piping | 7. Heat Exchanger |
| 4. 3/4" NPT Ball Valve | 8. Humidifier Steam Outlet Connection |



Mounting Location Considerations

Install in a location where the ambient air temperature is between 40 - 100°F (4.4 - 37.8°C) and relative humidity between 0 - 90% and non-condensing.

Install in a location where there is easy access to a water supply, electrical supply, boiler steam and open sanitary drain.

Install as close as possible to the steam distribution grid.

Clearances shown are minimum recommendations only. Please consult local and national codes for final installation location.

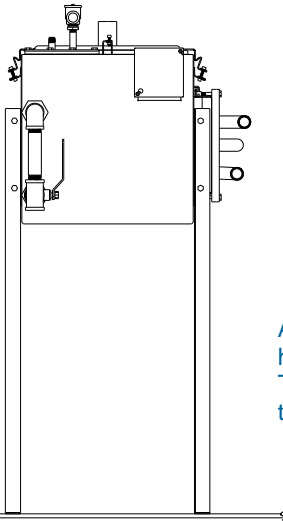
Do not install where humidifier operational noise will be a nuisance.

Allow enough room for proper water seals depths.

Do not install above any critical processes, equipment or locations in case of a water leak.

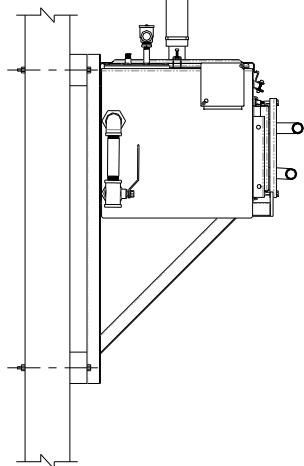
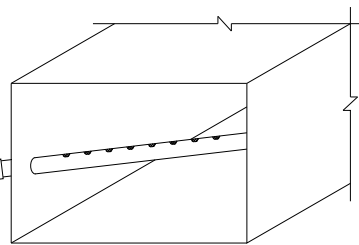
Do not install near variable frequency drives, electromagnetic equipment or motors.

The "SXDDR" Series Electric Humidifier offers a wide variety of mounting applications. If the duct is remote from the humidifier reservoir, free-standing floor support legs or wall brackets (both optional) are available. The humidifier can even be mounted directly within an air handling unit (local codes may require moisture proof construction of certain components). Single or multiple injection tubes can be used to custom fit any duct or air handler size.



**Free Standing Support Legs
(optional)**

Allows remote mounting of the humidifier reservoir from the duct. The humidifier is supported 24" from the floor.



**Wall Mounting Brackets
(optional)**

Allows remote mounting of the humidifier reservoir from the duct, or it can be used to mount the humidifier beneath a wall mounted duct.



Specification Sample
"SXDDR" Series

Sheet No.
SXDDR-11

Humidifier

1. The humidifier shall be steam-heated heat exchanger type as manufactured by PURE Humidifier Co. of Chaska, Minnesota.
2. The humidifier shall be tested and approved by ETL/ETL-C Testing Laboratories, Inc. to UL 998 standard.
3. The humidifier shall have an evaporating reservoir with a gasket sealed cover which is capable of operating at pressures of at least 19" (48 cm W.C.) without steam or water leaks. The reservoir shall be made of type 304 stainless steel with welded joints.
4. The humidifier shall be designed to facilitate easy removal of the heat exchanger for periodic scale removal and inspection. The cover and heat exchanger shall be secured to the unit by the use of quick release clamps. The heat exchanger shall be removable from the side of the humidifier without disturbing the cover or injection tube system.
5. Humidifier shall be field convertible from a steam heat exchanger style "SXDDR" humidifier to an electric immersion heater style "ESDDR" humidifier with a simple change of the side entry assembly.
6. A stainless steel float operated low water cut-off switch shall be provided. The float switch shall provide positive low water cut-off of the humidifier steam supply control valve.
7. A stainless steel float operated water fill valve mounted on the top near the front shall be provided. The fill valve shall provide automatic refilling of the humidifier reservoir. The water inlet shall be located to allow a minimum water gap of 1-1/2" (3.81 cm).
8. The humidifier shall have a 3/4" (1.9 cm) overflow pipe to prevent overflowing of the humidifier reservoir.
9. The heat exchanger shall be constructed of type 304 stainless steel rectangular transfer tubes and headers for improved scale removal and cleaning.
10. A normally closed steam control valve with equal percentage flow characteristics that provides sufficient capacity as required shall be provided. The valve operator (pneumatic modulating standard) or electric modulating (optional) shall be supplied by PURE Humidifier Co..
11. The humidifier shall be supplied with a float and thermostatic condensate trap and a pipe line wye strainer.
12. The humidifier shall be provided with an ETL/ETL-C listed JIC NEMA 12 control cabinet, shipped loose (optional factory mounting available). The control cabinet shall be made of 14-gauge steel with ANSI 61 gray polyester powder coating, continuous hinge and oil-resistant gasket. The panel shall include a factory wired sub-panel with control valve interlock, time delay relay, fused control circuit transformer, numbered terminal block, and main power fusing.
13. The control panel shall have a factory wired time delay relay circuit. The delay circuit shall prevent cycling of the low water interlock circuit due to water fluctuations within the humidifier reservoir.
14. The control system shall maintain humidification during the fill cycle to maintain a consistent relative humidity.



Options "SXDDR" Series

Sheet No.
SXDDR-12

Humidifier

Insulation. Unit shall be covered (except top cover) with 3/4" (1.9 cm) thick fiberglass duct insulation. Insulation material shall have aluminum foil facing.

Mounting

Support Legs. Provide support legs made of 1-1/4" x 1-1/4" x 1-1/4" (3.2 cm) angle iron and painted with enamel gray paint. Distance from humidifier bottom to floor shall be 24" (61 cm).

Wall Brackets. Provide two wall brackets made of 1-1/4" x 1-1/4" x 1-1/4" (3.2 cm) angle iron and painted with enamel gray paint.

Injection Tubes

Injection Tube(s) and Flexible Hose. Each unit shall include one or more 10-foot (305 cm) sections of 1-1/2" (3.8 cm) I.D. flexible hose and a 1-1/2" (3.8 cm) O.D. stainless steel injection tube long enough to extend across the duct. Steam ports shall direct steam upward into the airflow. The reservoir cover shall have a matching connection so the flexible hose can be connected with two stainless steel hose clamps. A two-piece duct plate shall be provided to seal the duct opening.

Fast-Pac Multiple Tube Assembly. Tube assembly consists of a stainless steel supply/condensate header with a 3/4"-NPT drain connection and horizontal 1-1/2"Ø stainless steel injection tubes.

Insty-Pac Tube Assembly. Tube assembly consists of a steam supply/separator header constructed of stainless steel with steam inlet, condensate drain outlet, and steam jacketed injection tubes welded to header. Steam jacketed injection tubes constructed of stainless steel with punched steam ports of the proper size and spacing to deliver the maximum specified capacity.

High Efficiency Insulated Tubes. Thermoplastic wrap reduces condensate loss and unwanted heat gain during cooling mode.

To Control Cabinet

Control Cabinet Factory Mounting. Humidifier control cabinet shall be factory-mounted and wired to the left side of the humidifier.

NEMA 4 Control Cabinet. A NEMA 4 weather tight control cabinet shall be substituted for the standard NEMA 12 cabinet.

Control Panel Door Lock. Control cabinet shall be provided with a factory-installed key lock on the cabinet door.

Controls and Safety Devices

VAV Control. A dual input, single output humidistat shall be supplied to provide a single modulating output signal to the humidifier control cabinet. The humidistat shall allow the use of a modulating wall mount sensor and modulating duct high-limit sensor (optional) to control critical variable air volume (VAV) air handling systems. The system shall automatically determine which of the two modulating signals is dominant and slowly reduces the humidifier output capacity, thus preventing over-saturation of the VAV system.

Outdoor Air Temperature Setback. Provides automatic reduction of RH set point to prevent condensation on windows during extreme cold weather.

Seasonal "End of Use" Humidifier Drain. The humidifier will automatically drain the reservoir after a non-use time period which is field adjustable. Upon receiving a call for humidity, the system automatically refills the reservoir and allows the humidifier to operate in "Normal Mode".

INTAC[®] Microprocessor Controller. The controller shall be factory-mounted and wired on the electrical compartment door. The INTAC[®] shall provide 16 character vacuum fluorescent digital display of all functions, high/low humidity deviation alarms, time to service shall be capable of *flash memory upgrades* through EIA-485 terminal connections. Software updates shall be capable of being provided to customer via e-mail or Internet.

Air Flow Proving Switch. A diaphragm operated air flow proving switch with adjustable control range of .05" W.C. to 12.0" W.C. shall be provided for field installation. Switch rating shall be 2.5 amps at 120V.

Duct High-Limit. A high-limit humidistat shall be provided for duct installation. The high-limit shall be field set to prevent over saturation within the supply duct.

Miscellaneous Accessories

DCT-927 Drain Tempering Kit. Provides cold water mixing of the 212°F drain water.

Condensate Pump. Used to lift condensate from the humidifier or tube assembly.

Outdoor Enclosure. Galvanized steel enclosure with tank freeze protection, control panel mounted, support legs, insulated tank, enclosure heater and hinged access doors. Enclosure is ready to be curb-mounted with the humidifier pre-installed. Ships as one piece. Roof curb is not included.