



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 for the use of "steam injection" type of humidifiers. The possible carry-over 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.

Humidifier Capacity in Pounds per Hour (kg/hr)†

Model Number	Steam Pressure in psig (Kpa) at the control valve			
	5 psig (34.5)	10 psig (69.0)	13 psig (89.6)	15 psig (103.4)
SXDDR-1R	32.0 (14.5)	76.0 (34.5)	100.0 (45.3)	122.0 (55.3)
SXDDR-2R	52.0 (23.6)	108.0 (48.9)	140.0 (63.5)	169.0 (76.7)
SXDDR-3R	102.0 (46.3)	228.0 (103.4)	292.0 (132.5)	348.0 (157.8)
SXDDR-4R	192.0 (87.1)	484.0 (219.5)	655.0 (297.1)	753.0 (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

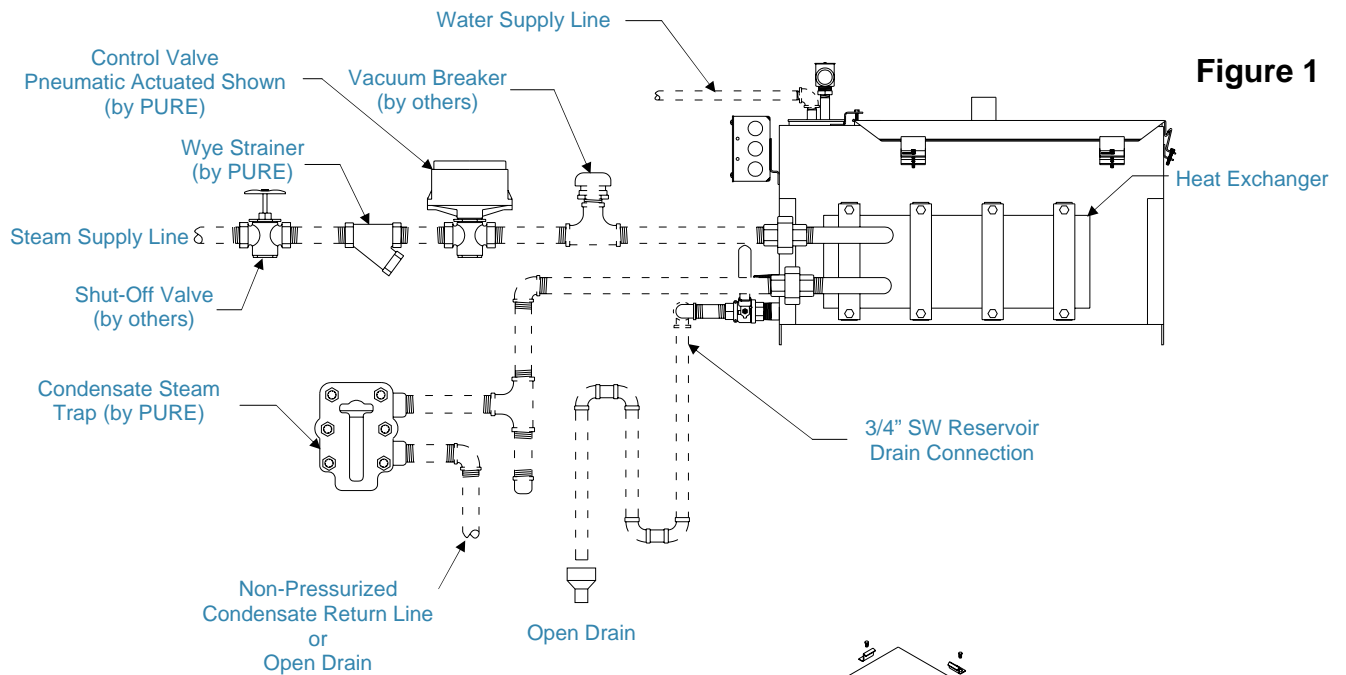


Figure 1

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.
5. Allow a minimum side clearance equal to the unit width dimension for removal of the heat exchanger (see page SXDDR-3 for unit dimensions). Reference Figure 2 for illustration of heat exchanger removal.

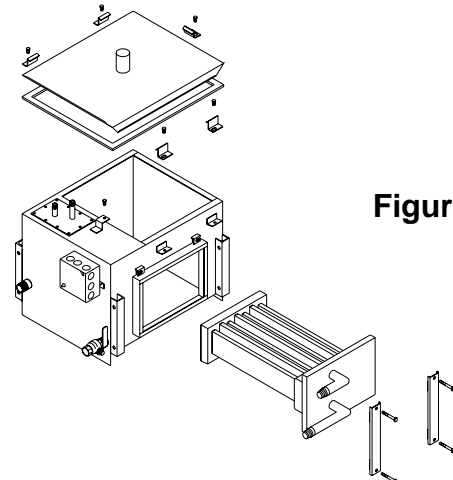
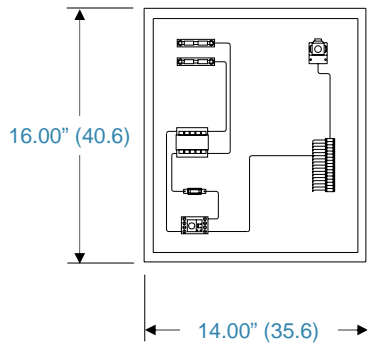


Figure 2

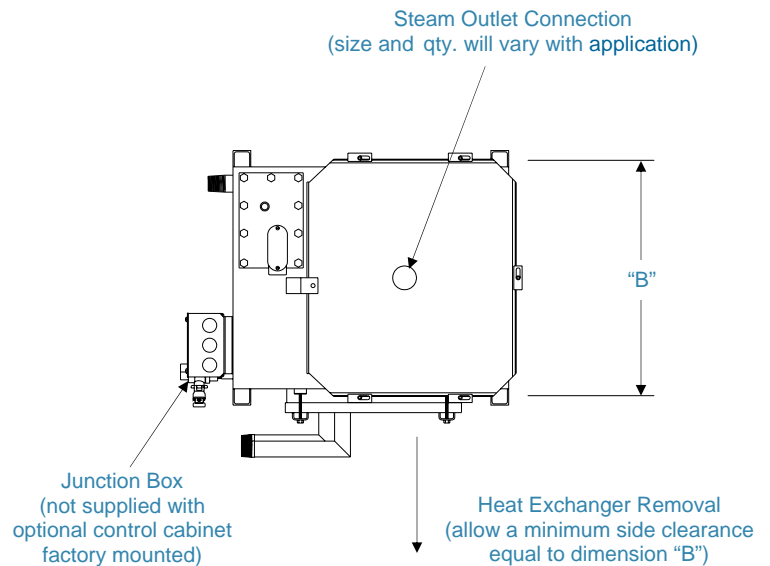
NEMA-12 Humidifier Control Cabinet

(reference control cabinet notes)

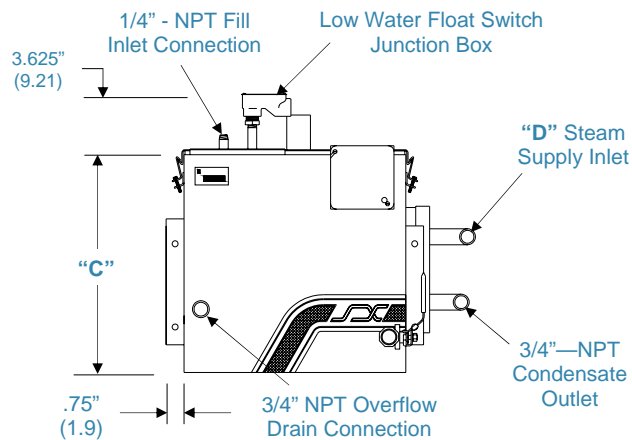


Cabinet Depth: 6.00" (15.2)

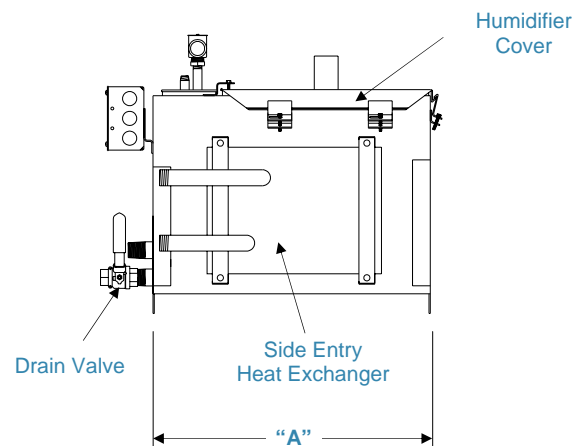
- 1) Door has been removed from the drawing for clarity
- 2) Control cabinet is shipped loose for field mounting unless optional factory mounting is specified
- 3) Control cabinet weight: 28 lbs (12.7 kg)



Top View



Front View



Right Side View

Unit Dimensions in Inches (cm) and Weight in Pounds (kg)*

Model Number	Dim. "A"	Dim. "B"	Dim. "C"	Dim. "D"	Shipping Weight (kg)	Operating Weight (kg)
SXDDR-1R	17.50" (44.5)	14.00" (35.6)	13.75" (34.9)	3/4" (NPT)	70 lbs (31.8)	155 lbs (70.4)
SXDDR-2R	25.50" (64.8)	14.00" (35.6)	13.75" (34.9)	3/4" (NPT)	95 lbs (43.1)	210 lbs (95.3)
SXDDR-3R	34.00" (86.4)	18.25" (46.4)	13.75" (34.9)	1-1/2" (NPT)	155 lbs (70.4)	360 lbs (163.4)
SXDDR-4R	54.00" (137.2)	27.50" (69.9)	13.75" (34.9)	2" (NPT)	285 lbs (129.4)	700 lbs (318.7)

*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 in Pounds per Hour (kg/hr) †

Model Number	Steam Pressure in psig (Kpa) at the valve			
	5 psig (34.5)	10 psig (69.0)	13 psig (89.6)	15 psig (103.4)
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.

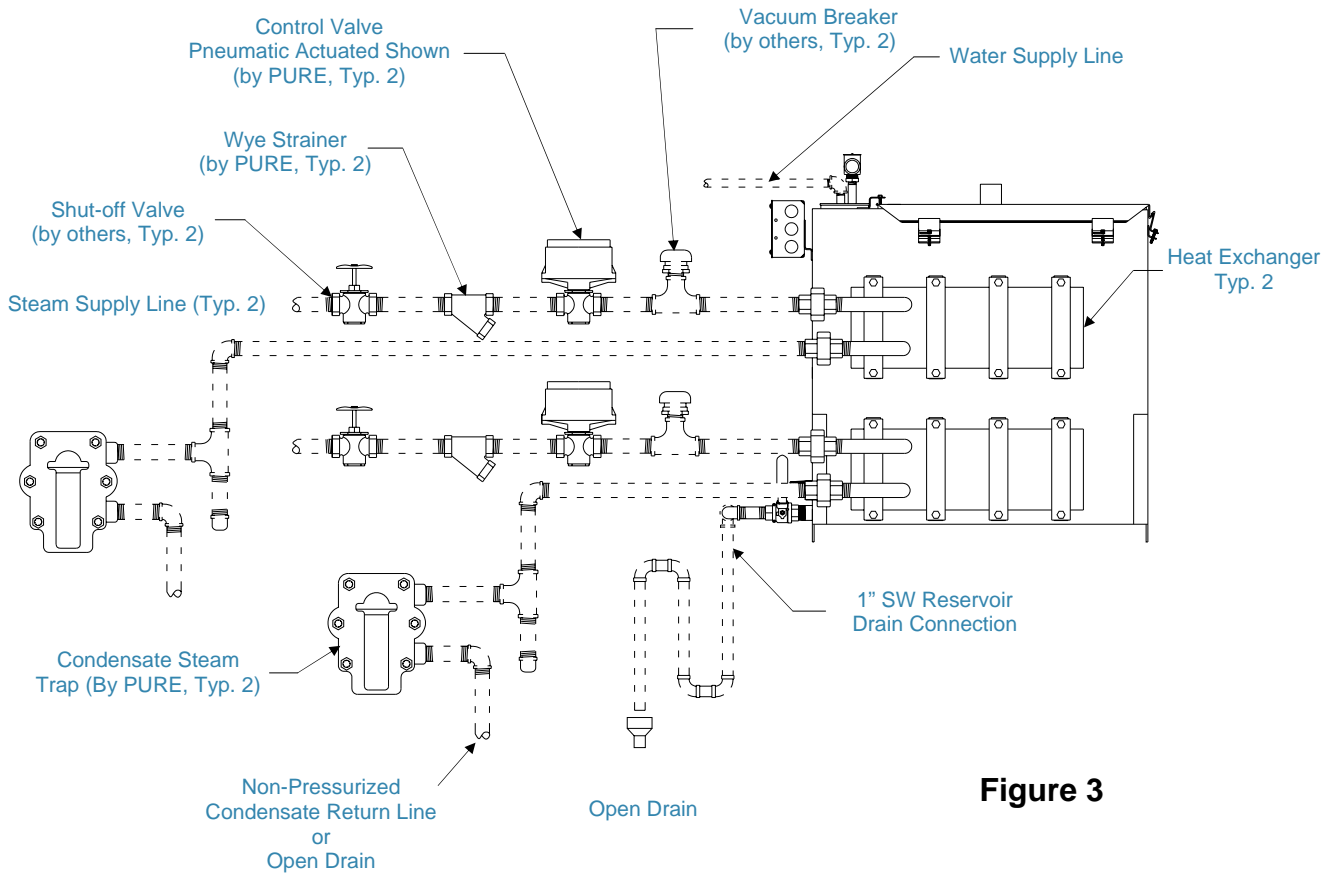
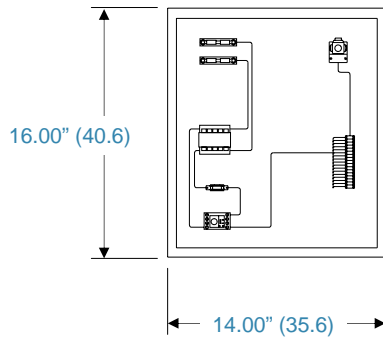


Figure 3

PIPING NOTES:

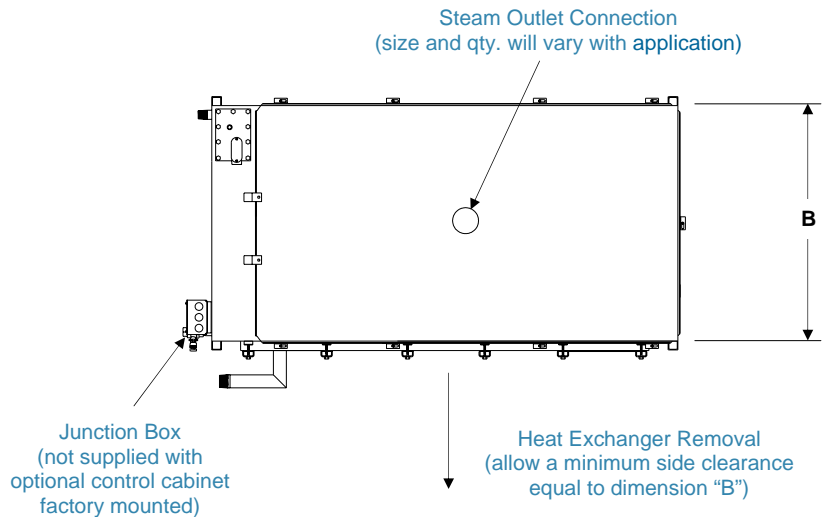
1. Do not install piping across the front of the heat exchanger.
2. Dashed line piping is by others.
3. Do not use PVC or plastic piping for any of the piping connections to the humidifier.
4. A shut-off valve must be installed in the steam supply line prior to the wye strainer (valve by others). Reference Figure 3.
5. Allow a minimum side clearance equal to the unit width dimension for removal of the heat exchanger (see page SXDDR-5 for unit dimensions).

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

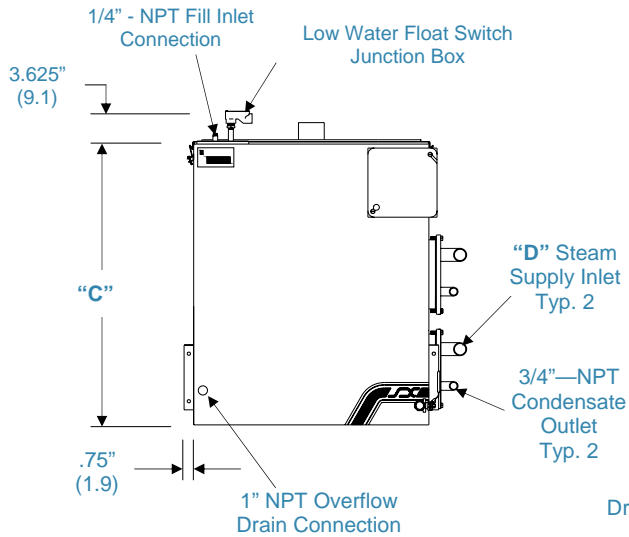


Cabinet Depth: 6.00" (15.2)

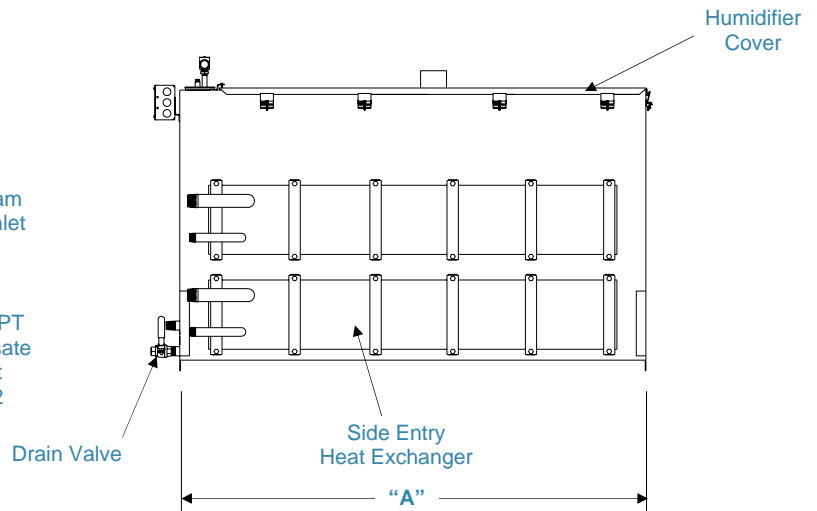
- 1) Door has been removed from the drawing for clarity
- 2) Control cabinet is shipped loose for field mounting unless optional factory mounting is specified
- 3) Control cabinet weight: 28 lbs (12.7 kg)



Top View



Front View



Right Side View

Unit Dimensions in Inches (cm) and Weight in lbs (kg)*

Model Number	Dim. "A"	Dim. "B"	Dim. "C"	Dim. "D"	Shipping Weight (kg)	Operating Weight (kg)
SXDDR-8R	54" (137.2)	27.25" (69.2)	32.5" (82.6)	2" (NPT)	465 lbs (316.2)	1480 lbs (671.3)

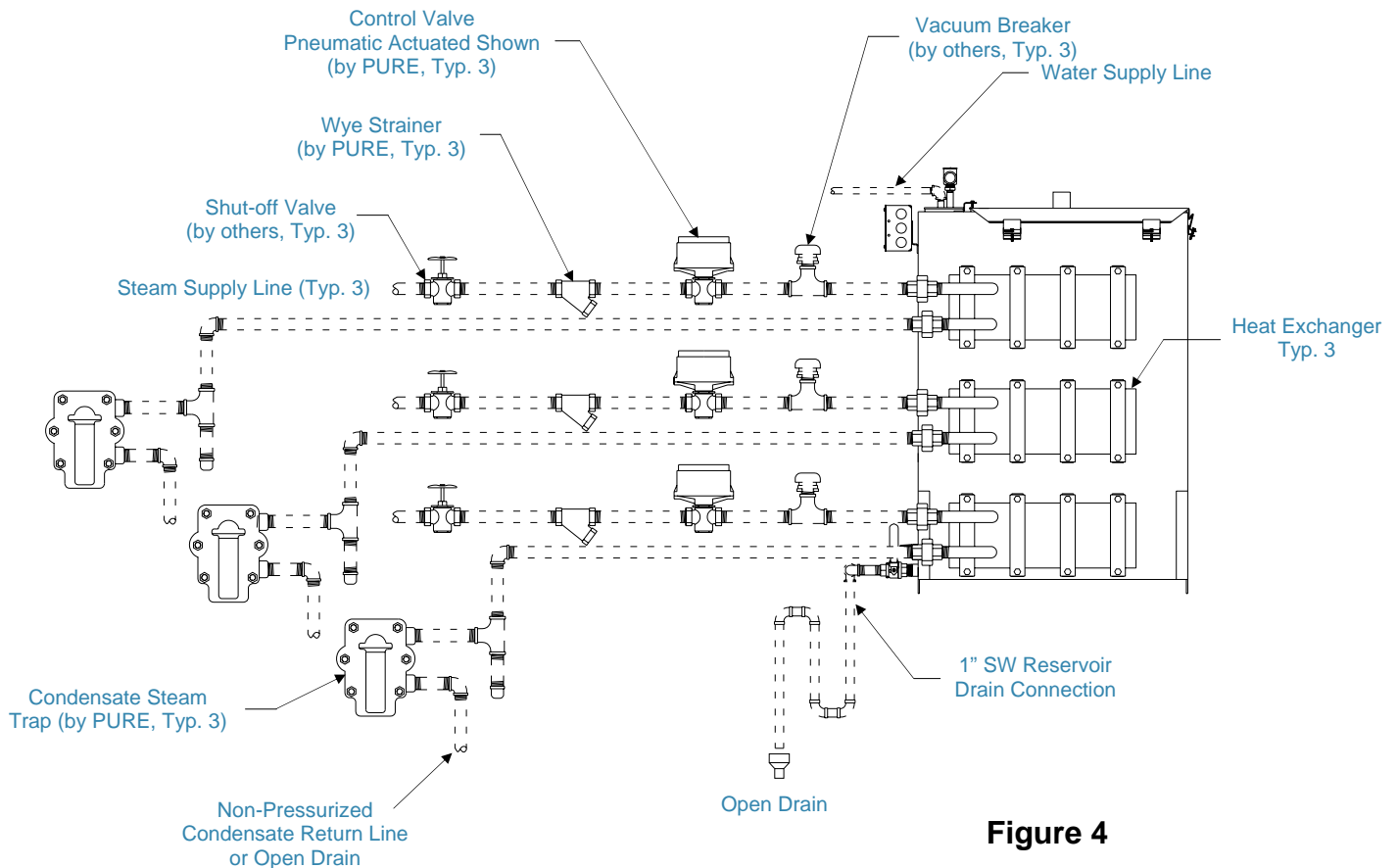
*When calculating the total dry weight of the humidifier, the control cabinet weight must be added to the reservoir weight. Due to product improvement, catalog dimensions and specifications are subject to change without notice.

Humidifier Capacity in Pounds per Hour (kg/hr) †

Model Number	Steam Pressure in psig (Kpa) at the control valve			
	5 psig (34.5)	10 psig (69.0)	13 psig (89.6)	15 psig (103.4)
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.

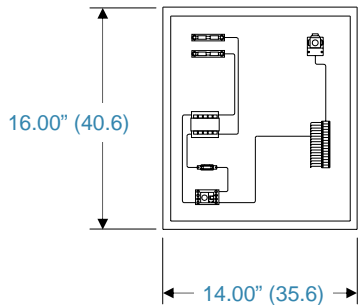


PIPING NOTES:

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.
5. Allow a minimum side clearance equal to the unit width dimension for removal of the heat exchanger (see page SXDDR-7 for unit dimensions).

NEMA-12 Humidifier Control Cabinet

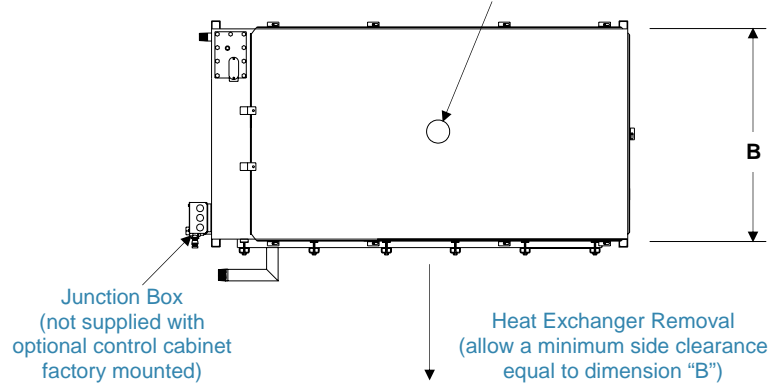
(reference control cabinet notes)



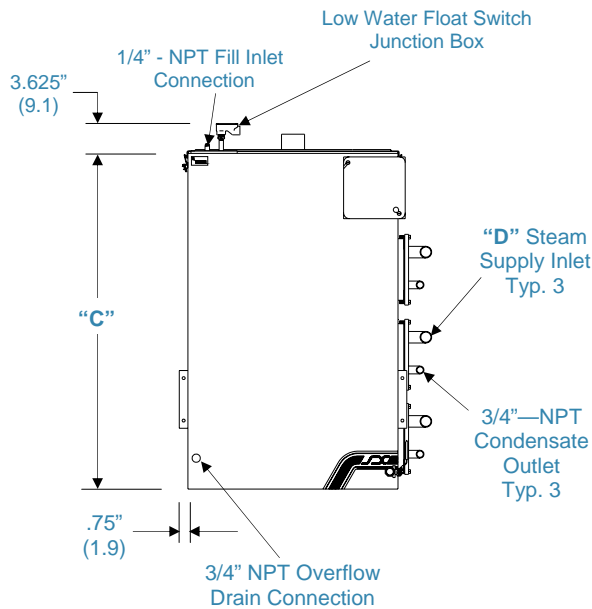
Cabinet Depth: 6.00" (15.2)

- 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

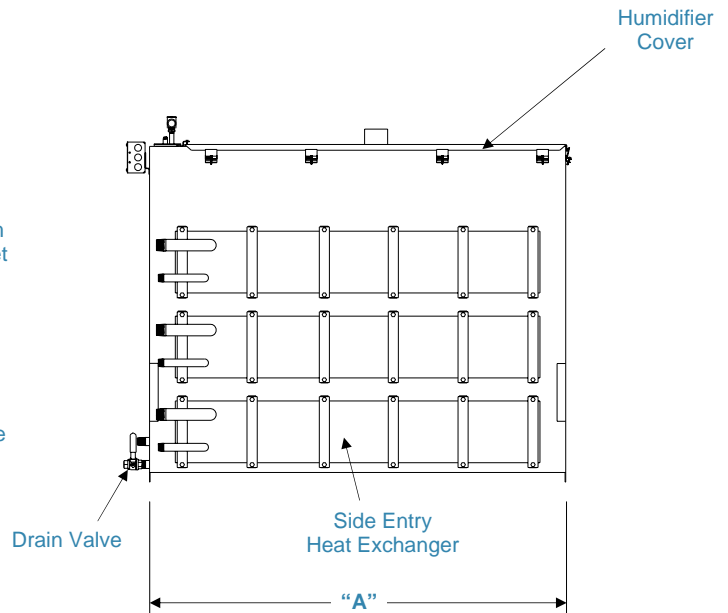
Steam Outlet Connection
(size and qty. will vary with application)



Top View



Front View



Right Side View

Unit Dimensions in Inches (cm) and Weight in Pounds (kg)*

Model Number	Dim. "A"	Dim. "B"	Dim. "C"	Dim. "D"	Shipping Weight (kg)	Operating Weight (kg)
SXDDR-12R	54" (137.2)	27.25" (69.2)	43.5" (110.5)	2" (NPT)	845 lbs (383.3)	1628 lbs (738.4)

*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.



Specification Sample
"SXDDR" Series

Sheet No.
SXDDR-8

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. (ETL# 472940).
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) over-flow 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.