



Standard Water

"SX" Series

Steam Heat Exchanger Humidifiers

Looking for an alternative to electrically generated humidification? Concerned about using chemically treated boiler steam for direct humidification? If so, PURE's "SX" Series Steam Heat Exchanger Humidifiers are exactly what you're 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 humidifiers. The possible carry-over of chemical additives and odor created within some boiler systems are 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 "SX" Series Steam Exchanger Humidifier.

The "SX" Series Humidifiers utilize a stainless steel heat exchanger, which allows for 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 by the boiler is completely eliminated. The steam produced by the "SX" Series Humidifier is free from chemical or mineral carry-over, thus providing humidification for 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 tube, as well as providing simplified maintenance. The unique side entry heat exchanger can be removed without removing the cover and injection tube system and provides a large clean-out opening which extends the full length of the humidifier. Furthermore, the heat exchanger incorporates easy-to-clean rectangular transfer tubes which are simpler to maintain than round tube designs.

PURE's commitment to quality and ease of maintenance is further illustrated by the use of pressure clamps that secure the heat exchanger to the reservoir and eliminate the need for through-the-wall threaded fasteners. The humidifiers utilize a Tri-Probe electronic water level control system, and a flusher. The Flusher removes water mineral build-up during each fill cycle, and doubles as a water overflow safety pipe. A standard accumulative timed drain cycle performs automatic draining and flushing, further reducing mineral build-up within the reservoir. Precise 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, as well as providing 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 "SX" 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 "SX" Series will allow you to design them into any system simply, efficiently and reliably.

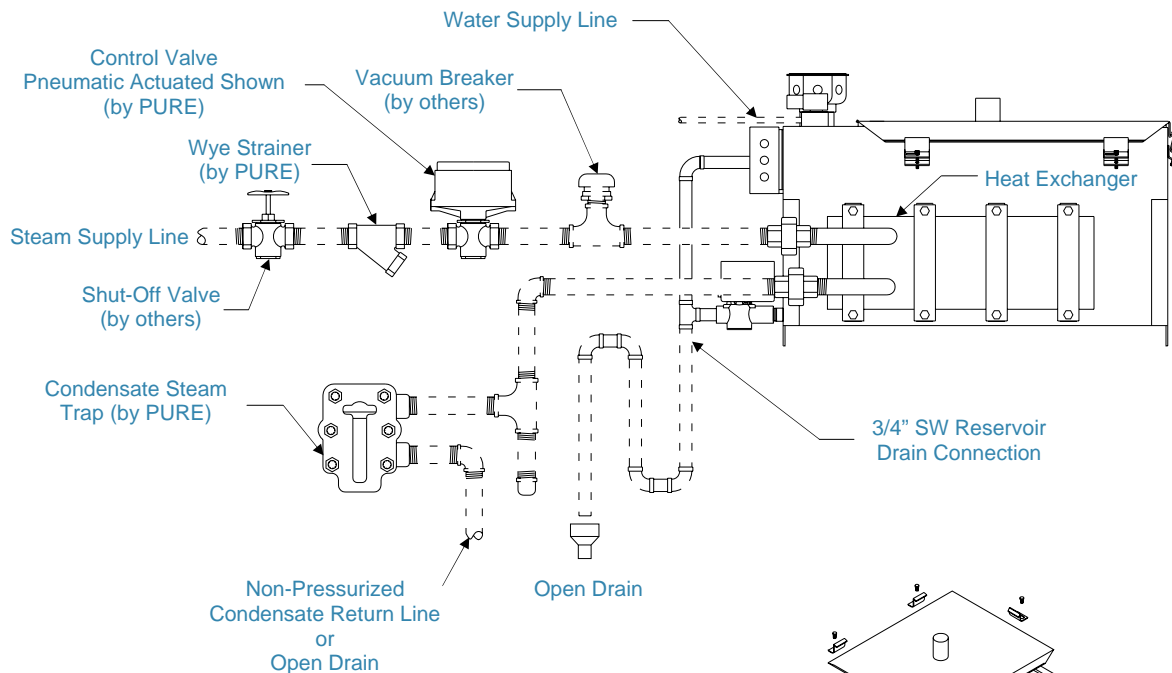
Humidifier Capacity in Pounds per Hour (kg/hr)†

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)
SX-1R	32.0 (14.5)	76.0 (34.5)	100.0 (45.3)	122.0 (55.3)
SX-2R	52.0 (23.6)	108.0 (48.9)	140.0 (63.5)	169.0 (76.7)
SX-3R	102.0 (46.3)	228.0 (103.4)	292.0 (132.5)	348.0 (157.8)
SX-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.

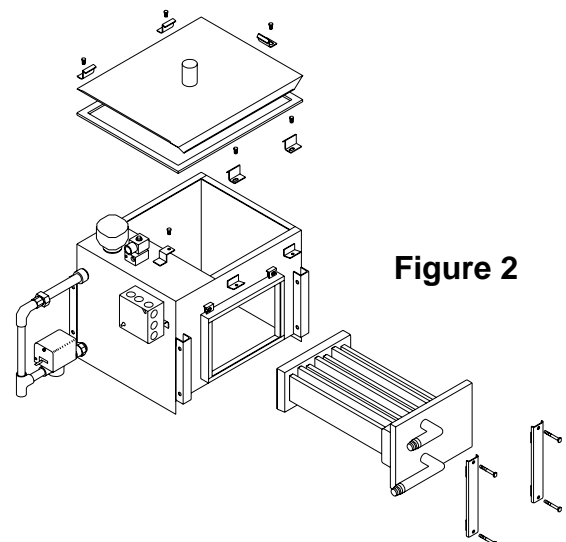
The capacities shown are based on a non-insulated humidifier reservoir tested in a 70°F environment.

Humidifier Piping


Figure 1

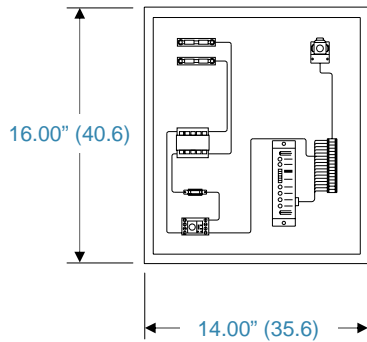
PIPING NOTES:

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


Figure 2

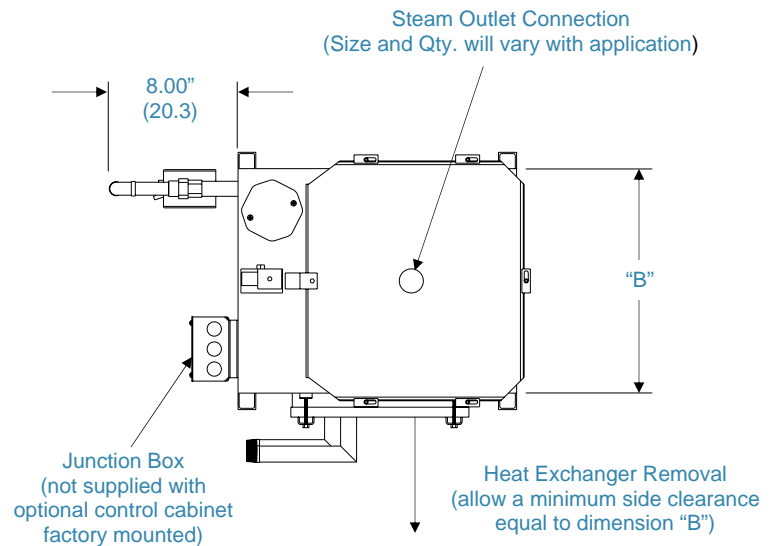
NEMA-12 Humidifier Control Cabinet

(reference control cabinet notes)

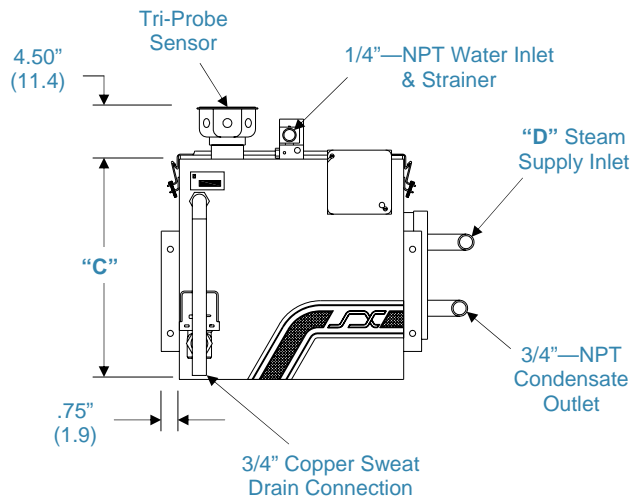


Cabinet Depth: 6.00" (15.2)

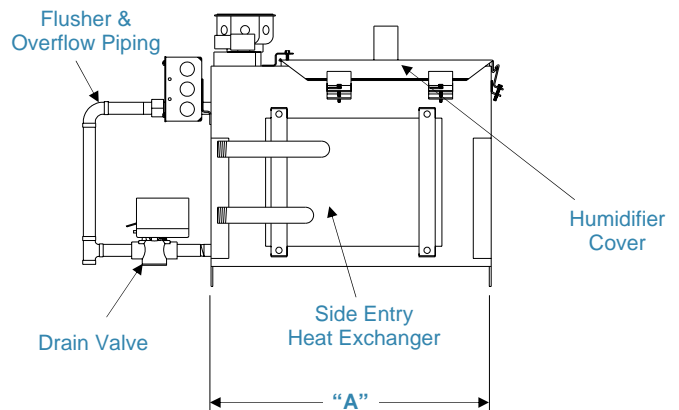
- 1) Door has been removed from the drawing for clarity
- 2) Control cabinet is shipped loose for field mounting unless optional factory mounting is specified
- 3) Control cabinet weight: 28 lbs (12.7 kg)



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)
SX-1R	17.50" (44.5)	14.00" (35.6)	13.75" (34.9)	3/4" (NPT)	62 lbs (28.2)	139 lbs (63.2)
SX-2R	25.50" (64.8)	14.00" (35.6)	13.75" (34.9)	3/4" (NPT)	85 lbs (38.6)	203 lbs (92.2)
SX-3R	34.00" (86.4)	18.25" (46.4)	13.75" (34.9)	1-1/2" (NPT)	139 lbs (63.1)	272 lbs (123.4)
SX-4R	54.00" (137.2)	27.50" (69.9)	13.75" (34.9)	2" (NPT)	269 lbs (122.1)	742 lbs (336.9)

*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)
SX-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.

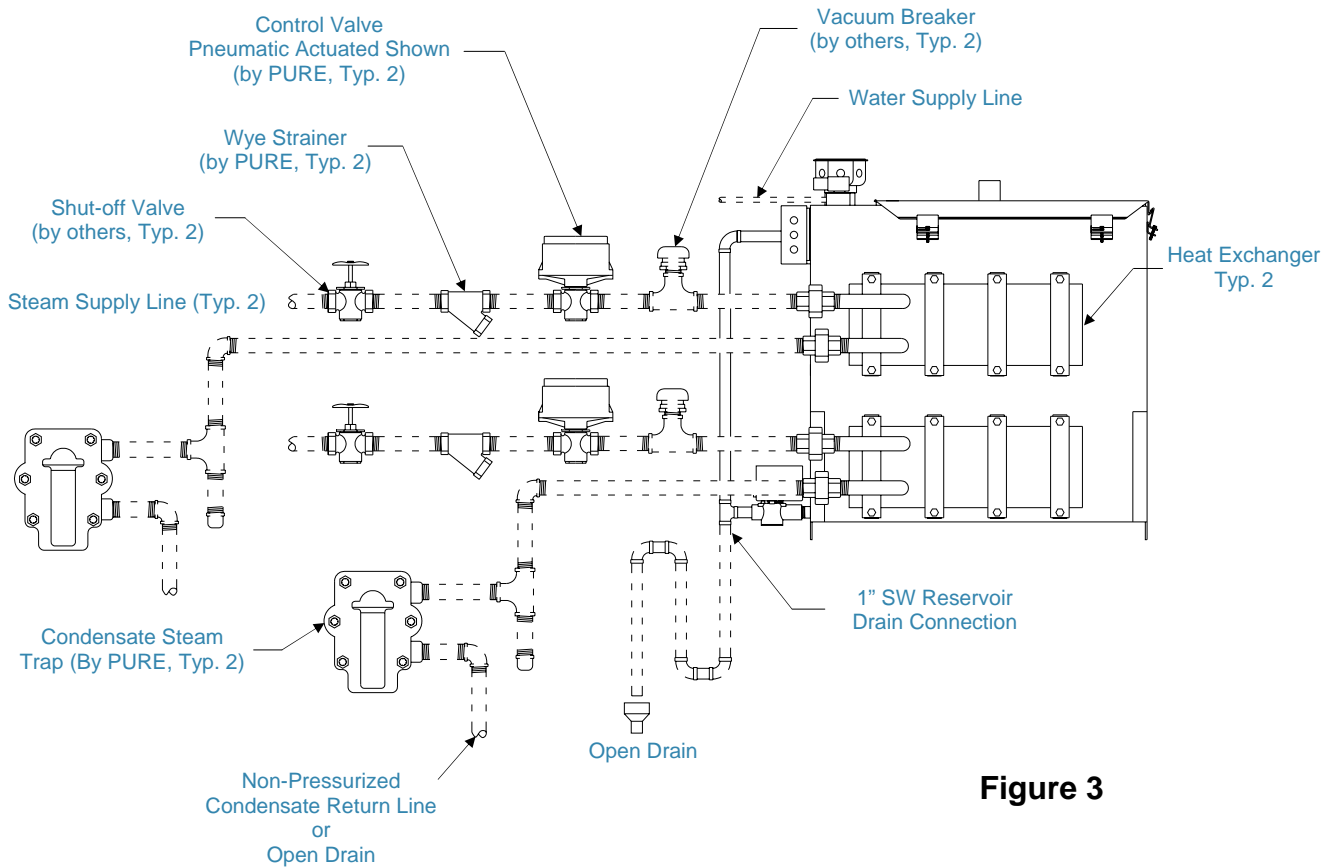


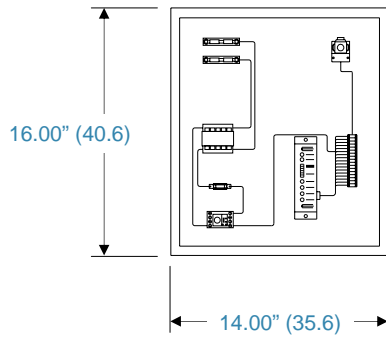
Figure 3

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 SX-5 for unit dimensions).

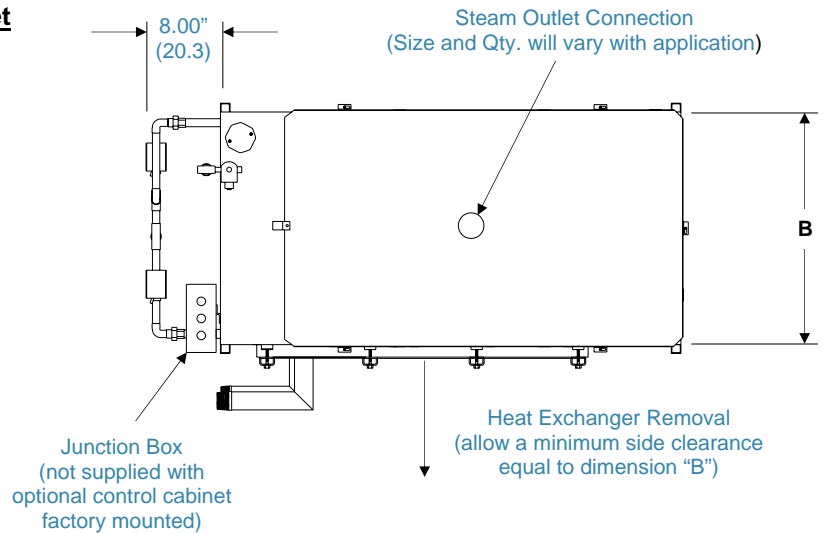
NEMA-12 Humidifier Control Cabinet

(reference control cabinet notes)

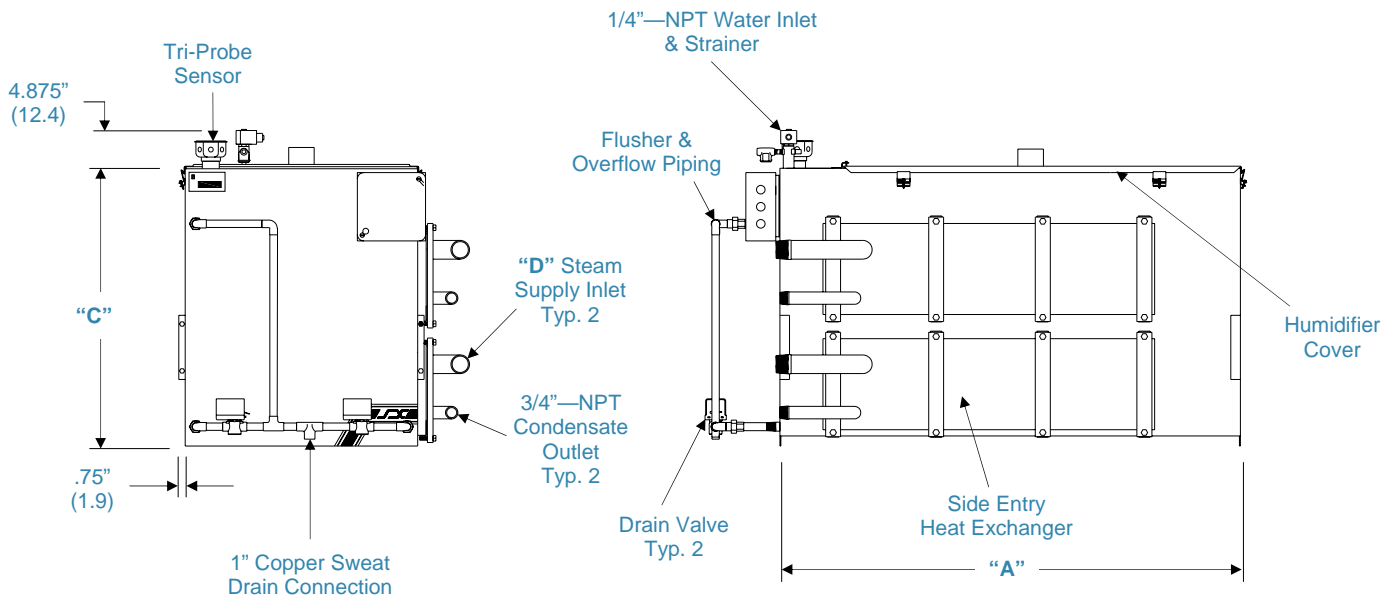


Cabinet Depth: 6.00" (15.2)

- 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)
SX-8R	54" (137.2)	27.25" (69.2)	32.5" (82.6)	2" (NPT)	697 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)
SX-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.

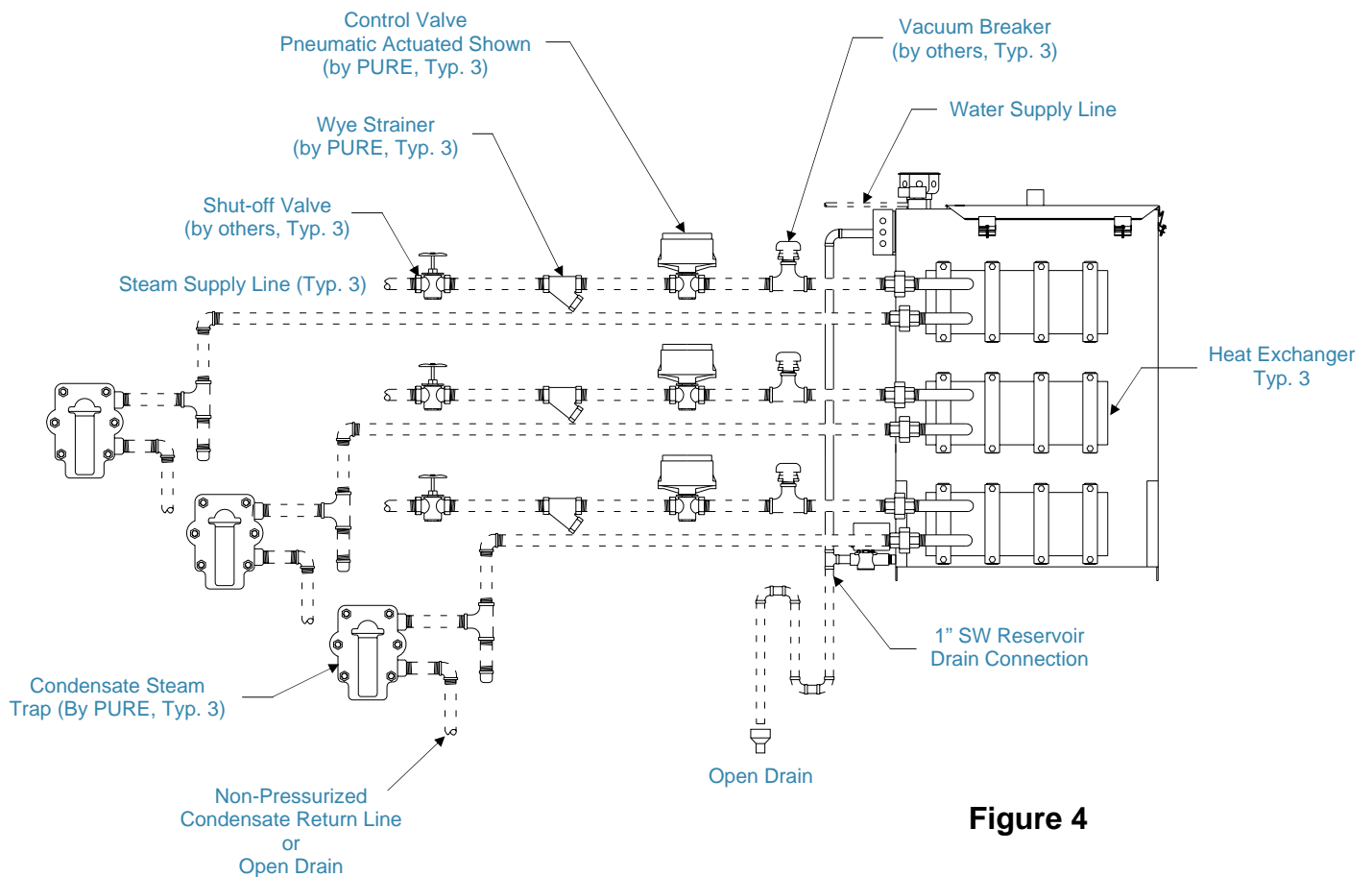
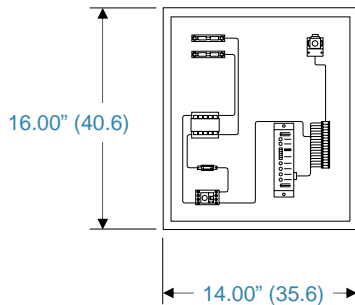


Figure 4

PIPING NOTES:

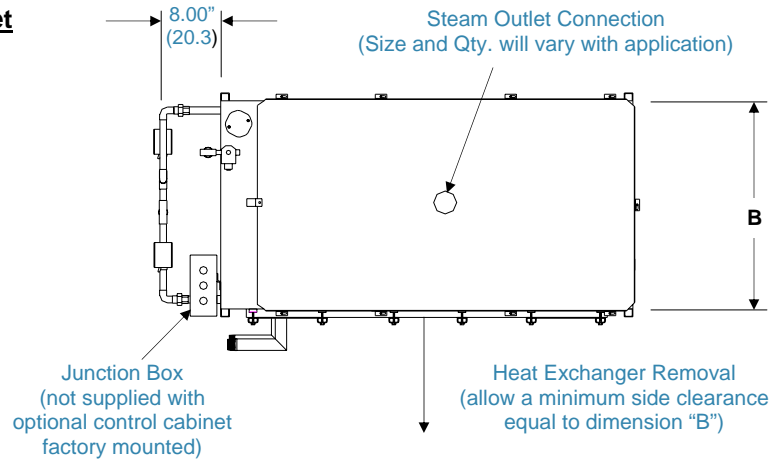
1. Do not install piping across the front of the heat exchanger.
2. Dashed line piping is by others.
3. Do not use PVC or plastic piping for any of the piping connections to the humidifier.
4. A shut-off valve must be installed in the steam supply line prior to the wye strainer (valve by others). Reference Figure 4.
5. Allow a minimum side clearance equal to the unit width dimension for removal of the heat exchanger (see page SX-7 for unit dimensions).

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

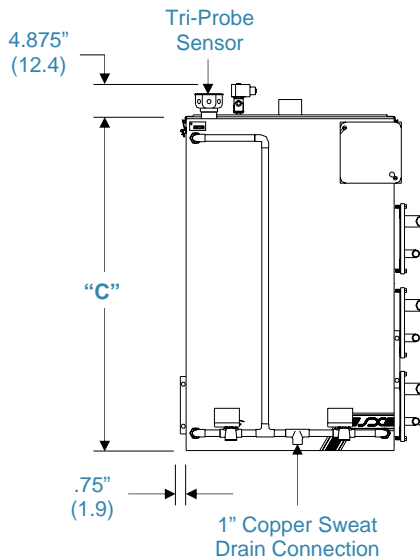


Cabinet Depth: 6.00" (15.2)

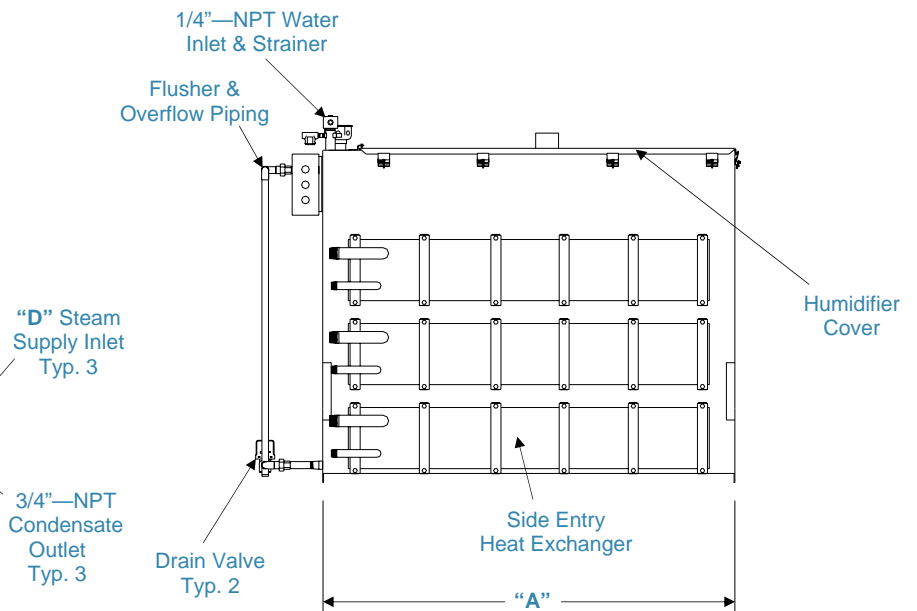
- 1) Door has been removed from the drawing for clarity
- 2) Control cabinet is shipped loose for field mounting unless optional factory mounting is specified
- 3) Control cabinet weight: 28 lbs (12.7 kg)



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)
SX-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
"SX" Series

Sheet No.
SX-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 "SX" humidifier to an electric immersion heater style "ES" humidifier with a simple change of the side entry assembly.
6. The heat exchanger shall be constructed of type 304 stainless steel rectangular transfer tubes and headers for improved scale removal and cleaning.
7. An adjustable surface water flusher shall be included to drain away a portion of the water upon each refill cycle. This is to allow mineral deposits produced by earlier evaporation cycles to be removed. Flusher height should be adjustable for minimal water waste and efficient flushing.
8. A brass body, solenoid operated block style water fill valve with internal strainer shall be factory mounted on the top near the front of the humidifier reservoir. A bottom fill system shall be utilized to prevent any collapse of the steam head during the fill cycle. The fill valve shall be located to allow a minimum water gap of 1-1/2" (3.81 cm). The internal strainer shall remove any water born particulate matter before the humidifier fill valve. The water strainer shall have a removable screen to permit periodic inspection and cleaning.
9. 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, Tri-Probe sensor, fused control circuit transformer, numbered terminal block, and main power fuse(s).
10. A solid state, plug-in type control module shall be factory mounted within the control panel and shall electronically control the automatic refilling, low water cut-off, high water cut-off, manual surface water flushing, and safety switch interlock functions. The module shall include automatic drain functions to drain the reservoir. The drain period will be field adjustable in 10 hour increments from 10 to 150 hours with the drain duration adjustable in 2 minute increments between 2 and 30 minutes. During the drain period, the humidifier chamber will drain and the fill valve will be energized to provide a thorough rinsing action. After the drain period is completed, the drain valve will close and the humidifier will refill to provide humidity on demand.

The control module shall incorporate LED lights to indicate safety switch interruption, power, fill, heat ready, and drain. The control module shall control all water level control functions through a tri-probe sensor mounted on the top-front of the humidifier reservoir. The Tri-Probe sensor with stainless steel shield shall electrically sense the water level within the reservoir.
11. The control system shall maintain humidification during the fill cycle to maintain a consistent relative humidity.
12. Injection tube(s) shall be 1-1/2" (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 cover shall have a matching connection so the tube can be connected by using an 8" (20.32 cm) flexible connector with stainless steel hose clamps. Two piece duct plates shall be included for sealing the duct opening.