BEST A/V SYSTEMS
HUMIDIFICATION
HUMIDIFIERS

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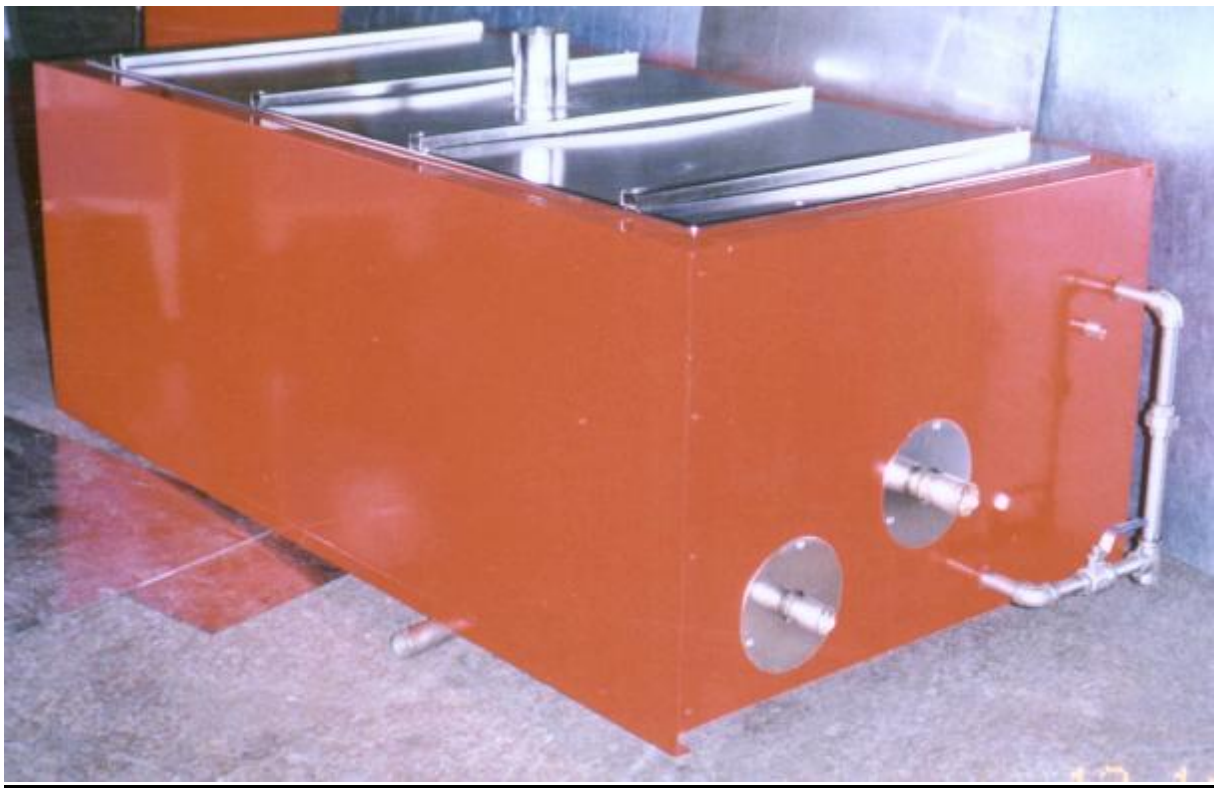
Steam to Pure Steam Humidifier

SPS



GENERAL DESCRIPTION

The BEST A/V Steam to Pure Steam Humidifier (SPS), is designed to provide clean, chemical-free steam and the most possible costs saving by utilizing the available boiler system heat as an energy source instead of health-threat boiler steam or relatively expensive electric or gas energy source.

A lots of studies and articles point out that boiler house steam previously used for humidification purposes, which contains chemicals and additives would be injurious to health and many jurisdictions now require and the public are also realizing the must of a clean steam humidification.

The SPS is the best solution for cost saving and clean steam output humidification by utilizing the available boiler steam as an energy source, which is relatively inexpensive as compared to electric or other methods. And by applying DI/RO make-up water and stainless steel constructed frame and fittings, which provides the least maintenance or no maintenance need and more important the cleanest steam output.

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KEY FEATURES

Material:
- The frame & fittings of SPS, is mainly made of stainless steel for a long-life span, weatherproof, corrosion-proof, attractive appearance, and of course worth of the investment.

Steam Output:
- Chemical-free steam
- Clean steam
- Consistent steam output

Heating Element:
- Made of seamless stainless steel, long life span.

Steam Outlet:
Steam generated from the humidifier rises and exits through the steam outlet and travels to the dispersion panel. Features are:
- Made of stainless steel
- With electrolytic protection

Steam Hose (optional):
- 17 bar (250psi) robust steam hose, high tensile steel cords
- EPDM cover, preventing loose of heat
- Rating: 17 bar / 236^{o}C

Supply of Water:
- RO/DI (above 18MΩ pure water)

Make-up water float valve:
- Easy to operate
- Adjustable water level
- Withstand high temperature
- TFE seat, 100% tight close and leaking-proof.
- Auto refill
- Made of stainless steel
- Patented.

Application Flexibility-Capacity Range:
- From 20 to 560 kg/hr for each unit.

Minimal Maintenance:
- Nearly no cleaning is needed, since no mineral build-up when vapor chamber and its fittings are all stainless steel and combine with DI/RO water supply.
- Environmental friendly, since heater elements made of stainless steel so no plastic cylinders to discard.

Vapor Chamber:
- Inner cabinet is made of stainless steel and seamed with same quality welding.
- Outer cabinet is made of zinc plate and with high temperature sponge insulation, preventing from possible heat loss and condensation.

Two-Year Limited Warranty:
Best A/V SPS humidifier warrants to the original user that its products will be free from defects in materials and workmanship for a period of two years after delivery.

Dispersion Panel (Optional):
- In order to obtain high efficiency dispersing of steam, equip the unique Best A/V Final-Absorb or Quick-Absorb dispersion tube panel is highly recommended.
- Final-Absorb is a rapid and drip-free, capable of installed within few inches upstream of fans, coils and similar devices, requiring short distance of steam absorption - less than 70mm, and made of stainless steel steam dispersion panel. It's a total solution for all steam absorption problems and especially suitable for tight space humidification applications. See detailed description on final-absorb section of this catalog.
- Quick absorb is an economic and ideal steam dispersion tube panel for limited absorption distance and middle capacity system. It is also made of stainless steel, a rapid and drip-free steam dispersion panel. Refer to the details described in quick-absorb section of this catalog.

Note: can not install Stop Valve or Control Valve on the section of vapor chamber's clean steam output hose/pipe.

Optional Features:
- Control valve: electric or pneumatic
- Gasket
- Thermostat switch
- Heat exchanger

Limited Conditions:
- Shell & head: 10 kg/cm^2
- Maximum operated temperature / pressure: 159^{o}C / 5 bar
- Maximum cold hydraulic test: 10 bar

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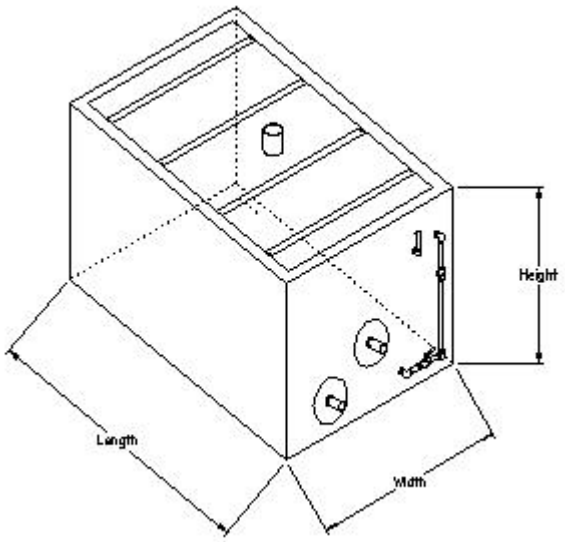
CAPACITY and DIMENSIONS



MODEL	Capacity	Length	Width	Height
SPS-50	50 kg/hr	1160mm	380mm	470mm
SPS-100	100 kg/hr	1460mm	560mm	550mm
SPS-150	150 kg/hr	1460mm	720mm	550mm
SPS-200	200 kg/hr	1460mm	770mm	550mm
SPS-300	300 kg/hr	1460mm	770mm	670mm
SPS-400	400 kg/hr	1460mm	770mm	800mm
SPS-500	500 kg/hr	1460mm	770mm	800mm

SIZE and PIPE CONNECTION (NPT)

MODEL	Source – Steam	Condensate
SPS-50	3/4”	3/4”
SPS-100	1”	3/4”
SPS-150	1”	3/4”
SPS-200	1”	3/4”
SPS-300	1-1/2”	1-1/2”
SPS-400	1-1/2”	1-1/2”
SPS-500	1-1/2”	1-1/2”

Note: Drain 3/4”.

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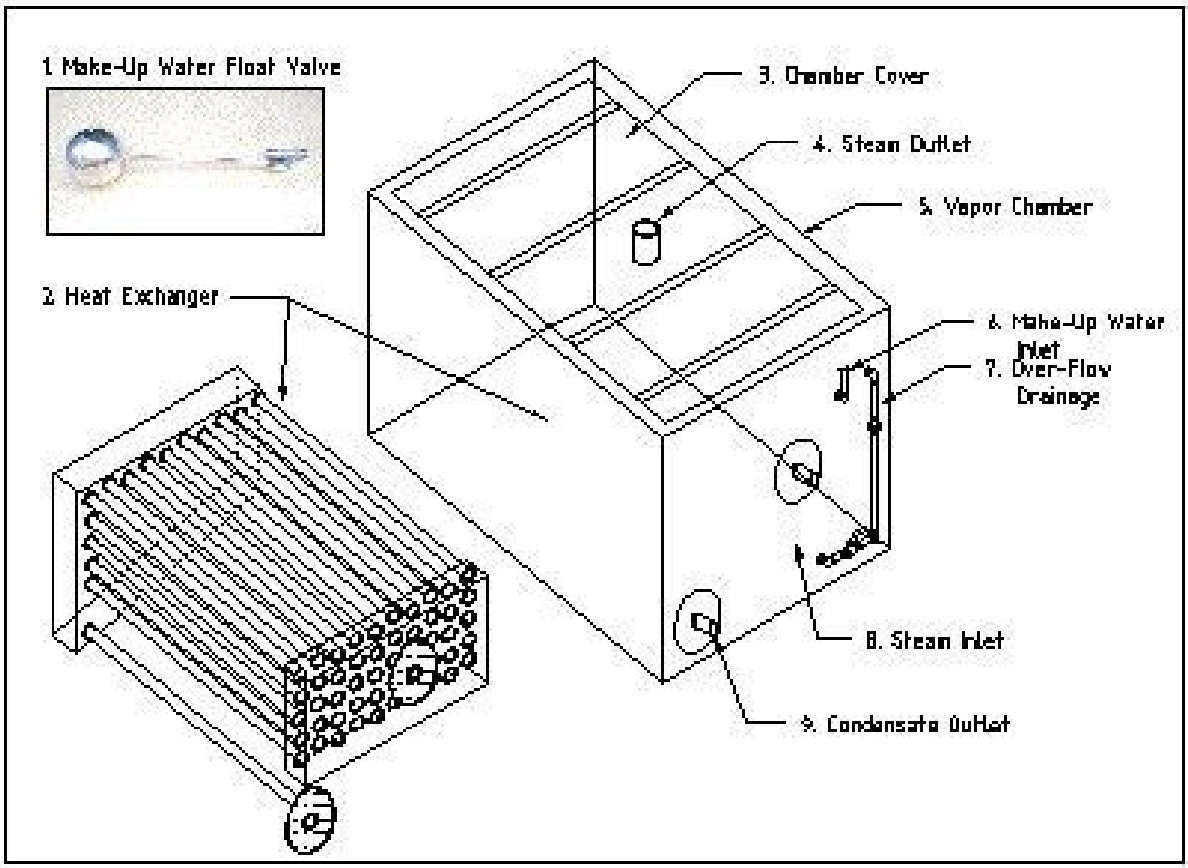
COMPONENTS AND MATERIALS:

Materials

No.	PART	MATERIAL
1	Make-Up Water Float Valve	Stainless Steel 304 & high temperature PFE
2	Heat Exchanger	Stainless Steel 316
3	Chamber Cover	Stainless Steel 316L
4	Steam Outlet	Stainless Steel 316
5	Vapor Chamber	Inner cover - Stainless Steel 316 Outer cover - Steel with red painting
6	Make-Up Water Inlet	Stainless Steel 316
7	Over-Flow Drainage	Stainless Steel 316
8	Steam Inlet	Stainless Steel 316
9	Condensate Outlet	Stainless Steel 316

Components:



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OPERATION

The following are the principles of SPS operation:

- DI/RO make-up water enters the stainless steel evaporating chamber via the automatically fill and close make-up water float valve.
- Regular boiler steam, the main energy source, passes through the modulating steam control valve to the heat exchanger and causes the DI/RO make-up water in the evaporating chamber to boil, and then creating secondary clean steam for humidification.
- The steam trap catches the condensation from the heat exchanger and returns to the boiler house.
- The clean steam travel through the vapor hose (S.S. soft pipe or S.S. hard pipe) into the air handler or duct tubes, and then dispersed into the space/air stream.

INSTALLATION

Followings are some principles of installing the SPS unit:

- Only qualified personnel should perform all installation procedures.
- Should provide enough space for safety installing, repairing and maintaining operation.
- Locate the unit at the most active part of the air stream to providing rapid, thorough absorption of the steam; and keeping away from dead spots such as the elbow and baffle plate area.
- Locate the unit where the vapor being discharged will be carried off along with the air stream and will not result condensation or dripping from the duct.
- Access to make-up water, and sanitary waster for drainage.
- Avoid placing the unit near a split in the duct to preventing uneven moisture between branch ducts.
- Avoid places like the water vapor will impinge on a metal surface or high efficiency filter.
- In the event of saturation may occur (revealed from the Psychrometric Chart), should equip with a high limit humidistat or a thermostat and set to cut off the humidifier at a safe temperature.
- Drainage piping material: must use metal piping to withstand the high temperature of condensate.
- Make-Up water pressure: must between 2.5 ~ 3.5 Kg/cm^2G.
- Make-Up water inlet: must have at least 30cm stainless steel piping or high temperature (at least should stand 100^OC) piping connected into vapor chamber's make-up water inlet. Do not use PVC piping at this section, since the vapor chamber generates high heat that can damage the PVC piping and cause water leakage.