ULTRASONIC NOZZLE SYSTEM

STAINLESS STEEL COMPRESSED AIR NOZZLE
ON-OFF OR PROPORTIONAL CONTROL

Ideal for storage rooms, walk-in coolers, produce storage areas, wine cellars, humidors, laboratories & testing rooms

Humidity Source, LLC
90 Dayton Ave. Suite 58, Passaic, New Jersey 07055
TEL 973-916-1001 FAX: 973-916-0770
The Ultrasonic Nozzle

The Ultrasonic Nozzle uses compressed air to atomize water by directing a high velocity stream of water particles at a target. The force of impact causes the target to resonate or vibrate at ultrasonic speeds, this action breaks up the water particles into an extremely fine fog-like mist. Water particle sizes down to 5 micron are created by this method. Because most of the forward water particle velocity energy is dissipated in generating the fog, this nozzle is best suited for air handling units, air ducts and cold storage rooms where there is ample air motion. An integral fail-safe valve shuts off the nozzle water if the compressed air should fail. When the nozzle is shut off under normal operations, the main water supply valve is closed, the integral valve is shut off, and air is allowed to flow for a short time to purge the nozzle of residual water. This sequence insures a "no-drip" shut down of the nozzle.

The Ultrasonic nozzle system is also available on a pre-assembled mounting bar. An aluminum bar complete with stainless steel brackets, nozzles, plastic tubing and assembled connectors makes air handling units and air duct installations quick and easy. Special stainless steel end brackets mount on the inside of duct walls and support the nozzle bar. Mounting bars can be sized to fit most air duct applications.

Options

✓ Proportional Control

The Fog System is available with proportional control that will modulate nozzle output proportional to room demand. The proportional control system responds to all standard proportional humidistat signals. The proportional control cabinet features a digital display showing set point, proportional band, and % RH at the sensor location.

✓ The Humidity Source Fog System of humidification control is a drip-less, safe, easy to install and economical way of maintaining any level of relative humidity. The pre-assembled nozzle bars offer additional benefits of quick and easy installation with minimum modifications to existing building structures.
BUS ULTRASONIC NOZZLE
CONTROL CABINETS

ON-OFF ONE ZONE
(AC BUS A1 1Z)

1-2-3 Electrical cable connections
4 Air inlet
5 Air outlet
   (Controls main air valve Zone 1)
6 Air outlet
   (Controls main air valve Zone 2)
7 ON/OFF switch
8 Humidification demand light
   1 Zone = 1 light
   2 Zones = 2 lights
9 Pressure gauge
   1 per Zone
10 Adjustable air valve
   1 per Zone

ON-OFF TWO ZONE
(AC BUS A1 2Z)

1 Main air inlet
2 Air regulator with gauge and filter
3 Air inlet port
4 Air outlet to main air valve
5 Humidistat port
6 Electrical power
7 Pressure control valve
8 ON/OFF switch
9 Digital display and set point buttons (Optional)

PROPORTIONAL ONE ZONE
NOTE:
1. Adjust water pressure to 15 psi. less than air pressure.
2. Tube dimensions are O.D.
3. Increase tubing size to nozzle bar to allow for distance from manifold to nozzles.
4. Optional Air & water filters should be used to keep the nozzles and control valves clean. Supplied by Humidity Source or by others.
FogSystem Ultrasonic Nozzle Humidifiers

Adjusting the Resonator

The resonator is adjusted at the factory for maximum atomization. However, the user (or the installer) can adjust the width of the fog pattern if desired.

- Moving the resonator closer to the sprayer will widen the pattern.
- Moving the resonator further from the sprayer will narrow the pattern.

In order to adjust the resonator:

1. Loosen screw “A”
2. Move the resonator a few millimeters in or out depending on the desired Pattern changing the distance “D” from the sprayer.
3. After making an adjustment be sure the resonator tip is inline with the hole in the sprayer by loosening screw “B” (see drawing “C” below).
Typical In-Duct & In-Air Handler Applications

Shown are the Main Components of a BUS Nozzle Humidifier System
ULTRASONIC NOZZLE (BUS) CAPACITY CHART

Water Flow As A Function Of Air Pressure With Constant Water Pressure

<table>
<thead>
<tr>
<th>Air Pressure (psi)</th>
<th>Water Pressure(psi)/Air Consumption (CFM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.5</td>
<td>29</td>
</tr>
<tr>
<td>29</td>
<td>2.4</td>
</tr>
<tr>
<td>43.5</td>
<td>29</td>
</tr>
<tr>
<td>43.5</td>
<td>2.75</td>
</tr>
<tr>
<td>58</td>
<td>2.8</td>
</tr>
<tr>
<td>72.5</td>
<td>3.1</td>
</tr>
<tr>
<td>87</td>
<td>3.5</td>
</tr>
</tbody>
</table>

Water Flow Lbs./Hour

Air Pressure (psi)

Water Pressure(psi)/Air Consumption (CFM)
The W351 Electronic Controller and Humidity Sensor is designed to be used where electronic sensitivity is desired, for close tolerance humidity control, or for installations where the display or set point adjustment must be remotely located.

**Features:**
- Humidification and/or dehumidification
- Adjustable differential and set point
- Surface or DIN rail mounting
- No wiring between modules

**Applications**
- Computer rooms
- Clean rooms
- Pharmaceutical manufacturing
- Staged cooling & humidification
- Schools
- Hospitals
- Laboratories
- Office buildings
- Photo processing
- Paper storage
- Printing plants
- Bakeries

**W351 Electronic Humidity Proportional Control**
The W351 is an electronic proportional plus integral humidity control with analog 0 to 10 VDC and 4 to 20 mA outputs. The W351 is also equipped with three user-selectable integration constants, as well as a wide set point range of 10 to 90% RH and an adjustable throttling range of 2 to 20%RH.

<table>
<thead>
<tr>
<th>Output</th>
<th>Set Point Range</th>
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<tr>
<td>0 to 10 VDC</td>
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<td>and 4 to 20 mA</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
FogSystem Ultrasonic Nozzle Humidifiers

W351P PROPORTIONAL CONTROLLER & ELECTRONIC SENSOR

Notes:
1. 0 to 10 Volt wiring shown
2. Controller also accepts 4-20mA
3. De-humidification stages available
4. Initial settings:
   Set point: 50%
   Minimum output: 0
   Throttling range: 10%
   Integration switches: #2 “on”
   Others “off”
   Operation mode: Reverse
5. Set S2, S3, and P-13 on Control Panel Prop. Board as sown here:

   S2     On        S3           P13
   1  2  3  4   Off  1  2  3  4

0 – 10 V Sensor

Air Flow Switch

208-240 VAC Power In

Model “BUS” Nozzle Control Cabinet

Ground
W351 Wiring Diagram – ON/OFF Control

**Sequence of Operation**

Humidity controller (W351) powered by transformer (Y350) senses space humidity via room the sensor. (Example: Set point of 45% RH and differential at 4%RH)

On drop in humidity to 41% RH W351 closes the contact between COM & NO to start the humidifier.

As the humidity increases to 45% W351 opens the circuit and stops the humidifier. The digital display module (D351) shows continuous readout of space humidity.

**Adjustments**

W351A
1. Remove the W351 cover by loosening the four captive cover screws.
2. Set the operation mode jumpers to the desired mode of operation (vertically for humidification).
3. Adjust the differential potentiometer to the desired setting. Clockwise increases differential.
4. Replace the cover and adjust the set point dial to the desired level.
5. If using the D351 display, press and hold the set point button while rotating the set point dial for most accurate settings.
SUGGESTED SPECIFICATIONS

Humidity Source  FOG-SYSTEM Humidifier

MODEL “BUS” ULTRASONIC HUMIDIFIERS

1.0 GENERAL.
Humidifiers shall be Humidity Source Fog-System Model “BUS” compressed air and water ultrasonic nozzle type humidifiers. Humidifiers shall be capable of producing extremely fine, micron sized water particle mist for humidification from ordinary tap water, softened or not softened, de-mineralized, de-ionized, or reverse osmosis water.

2.0 OPERATION.
The ultrasonic nozzle shall be able to accommodate water supplied under normal building water pressure and compressed air to atomize water by directing a high velocity stream of water at a tuned resonating target. The impact of this water stream causes the target to vibrate ultrasonically, breaking up the oncoming water stream into a fog like mist. The resulting partial size shall have arithmetical mean of 1.5 microns in diameter.

3.0 COMPONENTS.
The main components of the humidifier system shall consist of ultrasonic (BUS) nozzles, pre-mounted nozzle bar, system control cabinet, air and water manifold and a relative humidity sensor. Optional components are modular humidity sensor, controller and digital display units. Air compressors, air and water mains, external tubing and fittings are to be supplied by others.

4.0 ULTRASONIC NOZZLES.
4.1 The nozzles shall be the Humidity source Fog-System Model “BUS” ultrasonic nozzle. Nozzles shall be constructed of all type 304 stainless steel body and stainless steel ultrasonic resonator. Nozzles shall be equipped with compressed air and water fittings and a separate connection port, with fitting, for the internal, fail-safe, water shut-off valve which shuts off water flow to the nozzle atomizer in the event of a compressed air failure. During normal nozzle shut down, the control cabinet will shut off water first, followed by short air purge time to clear the nozzle of residual water. This insures a “no drip” shut down.
4.2 All model “BUS” Fog-System ultrasonic nozzles shall be factory supplied on pre-mounted nozzle bars with all air and water tubing pre-installed for fast and easy installation.

5.0 AIR AND WATER MANIFOLD
5.1 The air and water manifold shall contain all valves, pressure regulators, pressure gauges, and a water check valve necessary for the proper operation of the system. The manifold shall receive air and water through respective filters and respond to control cabinet signals by regulating air and water flow to the
nozzles. Regulation will be either on and off or modulated depending on the type of controller employed.
5.2 All valves, regulators, check valves and gauges shall mounted and pre-piped on a stainless steel mounting plate, pre-punched for easy installation.
5.3 Air and water filtration shall be supplied by 10 micron filters with housing and mounting brackets supplied with manifold.

6.0 CONTROL CABINET.
6.1 The control cabinet shall contain a state of the art electronics control board, all control function regulators, gauges, electric solenoids valves, on/off switches, and a terminal strip for electrical power and control connections. Air tubing connections shall be chrome plated brass push-in type fittings. The control cabinet shall be splash proof and rust proof with a rubber gasketed lockable access door, and be UL and CSA listed.
6.2 Control cabinets shall accept on-off or proportional control signals as specified in the controls section.

7.0 CONTROLS.
The proper W351P modular type proportional + integral controller and sensor shall be supplied by the humidifier manufacturer. The controller module shall provide a 0-10 volt DC or 4-20 mA proportional control signal to the humidifier control cabinet. The controller, sensor and digital display modules can be mounted in the same location or remote from each other as indicated. Air flow switch model PC-301 and duct high humidity limit control model HC-201 shall be supply as required.
P-825 WALL MOUNTED HUMIDISTAT
Line voltage, on/off, wall mounted Humidstat with human hair element. The best sensing element available at a low cost and a good selection for most applications. Humidstats with electronic sensors should be used for applications where R.H. is above 65%.

W351 ELECTRONIC HUMIDISTAT
With a polymer sensor for high humidity, high sensitivity applications. The W351 features fast response time and close tolerance (+/- 2%). Available in on/off or proportional control, wall or duct mounted, and with or without digital display. Display shows set point and actual R.H. at sensor. Sensor may be remote from controller and display.

Water Filters WF-100 & WF-200
High quality filters which remove small particles from the water. The 5 micron cartridges will stop particles as small as yeast, fungi, pollen, flour, etc. By comparison, a human hair is about 100 microns in diameter. These filters are used to prevent the internal parts of the system from clogging, but do not remove dissolved minerals which may contaminate the air in the humidifier area. For this reverse osmosis is required.

Commercial Reverse Osmosis
Reverse osmosis (RO) uses semi-permeable membrane technology to remove and reject impurities in the water far beyond the capabilities of normal filtration. Unlike ordinary filters, RO removes even dissolved minerals and produces water quality equal to distilled water.
ALL STAINLESS STEEL
COMPRESSED AIR NOZZLE HUMIDIFIERS

For in-duct or open air applications, walk-in coolers, paint spray booths, printing shops and other applications where an extremely fine mist is required.

**Models**

FS-1  17.6 lbs/hr.

Through

FS-15  264 lbs/hr.

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The Ultrasonic Nozzle

The Ultrasonic Nozzle uses compressed air to atomize water by directing a high velocity stream of water particles at a target. The force of impact causes the target to resonate or vibrate at a high frequency, this action breaks up the water particles into an extremely fine fog-like mist. Water particles in the range of 5 to 12 microns are created by this method.

Ultrasonic nozzles may be used in open areas such as factories, print shops, walk-in coolers, warehouses, etc. where there is ample space to absorb and dissipate the moisture produced.

Nozzles are constructed on stainless steel, and have no moving parts. No routine or scheduled maintenance is required but a 10 micron water filter is recommended as a precaution against particles of sand or rust in the water.

Particles So Fine They Stay Suspended

An air operated, internal fail-safe valve cuts the flow of water to prevent dripping upon shutdown or in the event of loss of air pressure.

Nozzle resonators are adjusted at the factory for optimum operation, however, field adjustment may be necessary due to movement during shipping or to adjust spray pattern to varying applications.

The nozzles may be used with ordinary municipal tap water, soft water, well water, or de-ionized (DI), de-mineralized water or water produced by reverse osmosis (RO).

See the Accessories page for information on humidistats, electronic controllers, digital displays, water filters, de-mineralizers, reverse osmosis units, and air compressors.

The FS System

The FS nozzle humidifier system consists of an integrated Air and Water Manifold (see Fig. 1) designed to feed up to 15 ultrasonic nozzles.

Nozzles are supplied individually with a stainless steel mounting bracket or may be pre-mounted on a distribution bar complete with integral air and water lines. Only one air and one water connection is necessary when installing a nozzle bar.

The FS manifold operates with a simple on-off type control, using a line voltage humidistat such as our P-825 or the more sensitive W351 electronic control humidistat with optional digital display.

Fig. 1

Nozzles On Mounting Bar
FogSystem Ultrasonic Nozzle Humidifiers

Adjusting the Resonator

The resonator is adjusted at the factory for maximum atomization. However, the user (or the installer) can adjust the width of the fog pattern if desired.

- Moving the resonator closer to the sprayer will widen the pattern.
- Moving the resonator further from the sprayer will narrow the pattern.

In order to adjust the resonator;

4. Loosen screw “A”
5. Move the resonator a few millimeters in or out depending on the desired Pattern changing the distance “D” from the sprayer.
6. After making an adjustment be sure the resonator tip is inline with the hole in the sprayer by loosening screw “B” (see drawing “C” below).
FogSystem Ultrasonic Nozzle Humidifiers

Models FS-1 Thru FS-15

System Diagram-Including Air, Water, & Electrical Connections
Typical Installation Diagram
Models FS-1 To FS-15
Open Space Applications – On-Off Operation

1. Mount Air & Water Manifold in a convenient but protected location.
2. Mount the nozzle bar (or individual nozzles) on wall or suspended from ceiling.
3. Nozzles should be positioned so that they will not interfere with people or objects when in operation. Usually high over head but not near ceiling.
4. The mist generated may project out 6 to 10 feet from nozzles. There should be no obstacle (beams, pipes, ducts, etc.) within this area.
5. Connect ½” air and water lines to the input side of the manifold (air and water filters are recommended). Push-in fittings for 10mm (3/8”) OD plastic tubing are supplied with manifold.
6. Connect 10mm (3/8) OD tubing from manifold outlet to nozzles. If more than 50 ft., be sure to increase the air line size to compensate for pressure drop.
7. Pressure regulators are preset at 75 psig for air and 60 psig for water. Higher or lower pressures are OK, however, lower pressures result in lower output. Air pressure should be 15 psig higher than water pressure to start but may be changed if needed to adjust nozzle output.
8. Connect two wire, line volt, on-off humidistat to terminals 1 & 2 of electrical junction box on the manifold. Humidistat may be on any interior wall not subject to drafts or in the direct path of the mist. The optional electronic controller and digital display may be located outside the humidified room if desired.
9. Connect 120 VAC power and set the circuit breaker to the "on" position.
10. Raise humidistat set point to start the FS system.

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The W351 Electronic Controller and Humidity Sensor is designed to be used where electronic sensitivity is desired, for close tolerance humidity control, or for installations where the display or set point adjustment must be remotely located.

**Features:**
- humidification and/or dehumidification
- adjustable differential and set point
- surface or DIN rail mounting
- no wiring between modules

**Applications**
- computer rooms
- clean rooms
- pharmaceutical manufacturing
- staged cooling & humidification
- schools
- hospitals
- laboratories
- office buildings
- photo processing
- paper storage
- printing plants
- bakeries

### W351 Electronic Humidity Proportional Control
The W351 is an electronic proportional plus integral humidity control with analog 0 to 10 VDC and 4 to 20 mA outputs. The W351 is also equipped with three user-selectable integration constants, as well as a wide set point range of 10 to 90% RH and an adjustable throttling range of 2 to 20%RH.

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Adjustments to W351A

6. Remove the W351 cover by loosening the four captive cover screws.
7. Set the operation mode jumpers to the desired mode of operation (vertically for humidification).
8. Adjust the differential potentiometer to the desired setting. Clockwise increases differential.
9. Replace the cover and adjust the set point dial to the desired level.

Note: Use the D351 Digital Display Module for the most accurate set point setting.

If using the D351 display, press and hold the set point button while rotating the set point dial.

Sequence of Operation

Humidity controller (W351A) powered by transformer (Y350) senses space humidity via room the sensor. (For example, set point of 45% RH and differential at 4%RH)

On drop in humidity to 41% RH W351A closes the contact between COM & NO to start the humidifier.

As the humidity increases to 45% W351 opens the circuit and stops the humidifier. The digital display module (D351) shows continuous readout of space humidity.
P-825 WALL MOUNTED HUMIDISTAT
Line voltage, on/off, wall mounted Humidstat with human hair element. The best sensing element available at a low cost and a good selection for most applications. Humidstats with electronic sensors should be used for applications where R.H. is above 65%.

W351 ELECTRONIC HUMIDISTAT
With a polymer sensor for high humidity, high sensitivity applications. The W351 features fast response time and close tolerance (+/- 2%). Available in on/off or proportional control, wall or duct mounted, and with or without digital display. Display shows set point and actual R.H. at sensor. Sensor may be remote from controller and display.

Water Filters WF-100 & WF-200
High quality filters which remove small particles from the water. The 5 micron cartridges will stop particles as small as yeast, fungi, pollen, flour, etc. By comparison, a human hair is about 100 microns in diameter. These filters are used to prevent the internal parts of the system from clogging, but do not remove dissolved minerals which may contaminate the air in the humidifier area. For this reverse osmosis is required.

Commercial Reverse Osmosis
Reverse osmosis (RO) uses semi-permeable membrane technology to remove and reject impurities in the water far beyond the capabilities of normal filtration. Unlike ordinary filters, RO removes even dissolved minerals and produces water quality equal to distilled water.
VENTURI NOZZLE SYSTEM

ALL STAINLESS STEEL COMPRESSED AIR NOZZLE
ON-OFF OR PROPORTIONAL CONTROL

“VENTURI!” ACTION DESIGN ELIMINATES WATER DROPS
IN-SPACE APPLICATIONS INCLUDE:

✓ Factories
✓ Warehouses
✓ Greenhouses
✓ Food Storage

Humidity Source, LLC
90 Dayton Ave. BLDG 1-D, Passaic, New Jersey 07055
TEL 973-916-1001 FAX: 973-916-0770
Fog System Nozzle Atomizer

The Fog System of humidification uses low maintenance, self cleaning stainless steel nozzles to dispense a very fine mist produced by a combination of compressed air and water.

The Venturi Nozzle

The Venturi Nozzle uses compressed air to atomize water into a fine stream of particles which are quickly absorbed by the air. As the compressed air is ejected through the nozzle venturi, a vacuum is created which constantly draws water up from a reservoir located below the nozzle level. This design offers the added security in that if the compressed air fails water cannot be drawn from the reservoir making the nozzle truly drip less. Each nozzle will produce up to 20 pounds of water mist per hour and can be installed in multiples for high humidity demand situations.

Quick Pack System

Pre-assembled for quick installation, the Quick Pack consists of up to 25 Venturi Nozzles, air and water valves and a constant level water reservoir all pre-mounted on a single bar. The bar is designed to be suspended from a ceiling and needs only to be connected with plastic air and water lines from the control cabinet to be operational.

Control Cabinet

The Fog System control cabinet regulates air and water pressure to the nozzles, turns the nozzles on or off in response to the humidistat and actuates the adjustable automatic cleaning cycle. Since nozzle water flow is regulated through air actuated valves, no water is present in the cabinet for electrical safety. Proportional control is also available.
VENTURI NOZZLES - MODEL “BV”

1. MAIN AIR INLET. Main atomizing air supply to nozzle.
2. CLEANING AIR. Air connection to power cleaning needle.
3. MAIN WATER INLET. Main water supply for atomizing.
4. CLEANING NEEDLE. Cleans the nozzle atomizing orifice.

OPERATION

The model “BV” nozzle draws water by venturi action from the constant level water reservoir. This nozzle is also equipped with an automatic nozzle orifice cleaning needle, which is controlled by a timer in the control cabinet. During the cleaning cycle a piston is advanced and retracted positively by air pressure. This is unique in that there are no springs, which can weaken over time, to operate the cleaning mechanism. Piston driven air pressure powers the cleaning needle in both directions.

Because of the venturi action, with no water pressure applied to the nozzle, the BV is essentially drip less. This feature makes it ideal for use in printing plants, photo processing, electronics fabrication, and many other applications where water drops are not tolerable.

The BV nozzles are available with wall mounting brackets as shown, or pre-mounted nozzle bars with all air and water tubing lines in place for easy installation.
FogSystem Humidifiers

Venturi Nozzle System Diagram

Model “BV” Venturi Nozzle

Air

Cleaning Air

Water

Constant Level Water Supply Reservoir

Overflow

Water out 3/8”

Air to Nozzle 3/8”

Air In ½”

Air to Control Cabinet

Humidistat

Constant Level Water Supply Reservoir

Water In ½”

Air In ½”

Air to Control Cabinet

Control Cabinet

Power

To Main Air Valve ¼”

Cleaning Air
The Venturi FogSystem
Control Cabinets

CONTROL CABINET TYPES:
✓ Proportional
✓ ON/OFF - One Zone
✓ ON/OFF – Two Zone
✓ ON/OFF – Three Zone

Typical Connections
1. Power
2. Humidistat
3. Air In
4. Cleaning Air Out
5. Air to Main Air Valve
6. ON/OFF Switch
7. Green Light
   ON when humidifying
8. Pressure Gauge
9. Adjustment Valve

Air & Water Manifold

Water
- To Constant Level Water Tank
- Main Air Control From Cabinet

Air
- Air To Nozzles
VENTURI NOZZLE

CONSTANT LEVEL WATER RESERVOIR

1. Over Flow
2. Water Outlet (male 3/8")
3. Main Water Supply (male 3/8")
4. Constant Level Water Tank
5. Stainless Steel Mounting Bracket
6. Main Air Supply
7. Water Regulator & Gauge
8. Air Regulator & Gauge
FogSystem Humidifiers
Venturi Nozzles (BV)

Quick Pack Connection Diagram

Nozzles Pre-Mounted On Nozzle Bar

Constant Level Water Tank

Water In 1/2"

Air In 1/2"

Air & Water Manifold

Humidistat

Control Cabinet

Power
INSTALLATION
1. Place system components in their approximate positions.
2. Install nozzles bars as high as possible by suspending from ceiling or wall mounting. Position so mist cannot strike beams, pipes, light fixtures, conduits, etc.
3. Install constant level water tank high on wall eight to sixteen inches below the nozzle bar. See capacity chart for placement details.
4. Install air and water filters and connect compressed air and water service.
5. Install nozzle air and water manifold and connect to filters.
6. Mount control cabinet on wall and connect 230 volt, 100VA electrical power.
7. Run two 1/4" plastic tubes from control cabinet to manifold (air in & air out).
8. Run one 1/4" plastic tube from control cabinet to nozzle bar (cleaning cycle air).
9. Run one 3/8" plastic tube from manifold to nozzle bar air fitting (main air).
10. Run one 3/8" plastic tube from manifold to constant level water tank inlet fitting (main water).
11. Connect constant water tank outlet to water fitting on nozzle bar.
12. Mount humidistat & connect to control cabinet.
VENTURI NOZZLE (BV) CAPACITY CHART

BV NOZZLE OUTPUT VS. AIR PRESSURE AND HEIGHT ABOVE CONSTANT LEVEL WATER TANK

Output lbs/hr. Water Vapor

Height “H” Inches

Air Pressure
90 PSI
75 PSI
60 PSI
45 PSI
The W351A Electronic Controller and Humidity Sensor is designed to be used where electronic sensitivity is desired, for close tolerance humidity control, or for installations where the display or set point adjustment must be remotely located.

### W351 Series Electronic Controllers

**Applications**
- computer rooms
- clean rooms
- pharmaceutical manufacturing
- staged cooling & humidification
- schools
- hospitals
- laboratories
- office buildings
- photo processing
- paper storage
- food storage
- printing plants
- bakeries
- humidors

### W351A Electronic Humidity Control – On/Off

The W351A Electronic Control is an electronic on/off humidity control. The control output is a Single-Pole, Double-Throw (SPDT) relay with LED indication. It features humidification and dehumidification modes of operation and an adjustable differential.

<table>
<thead>
<tr>
<th>Set Point Range</th>
<th>Differential</th>
</tr>
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<tbody>
<tr>
<td>10 to 90% RH</td>
<td>2 to 10% RH</td>
</tr>
</tbody>
</table>

**Features:**
- humidification and/or dehumidification
- adjustable differential and set point
- surface or DIN rail mounting
- no wiring between modules
Adaptations

W351A
10. Remove the W351 cover by loosening the four captive cover screws.
11. Set the operation mode jumpers to the desired mode of operation (vertically for humidification).
12. Adjust the differential potentiometer to the desired setting. Clockwise increases differential.
13. Replace the cover and adjust the set point dial to the desired level.
14. If using the D351 display, press and hold the set point button while rotating the set point dial for most accurate settings.

Sequence of Operation
Humidity controller (W351A) powered by transformer (Y350) senses space humidity via room the sensor. (Example: Set point of 45% RH and differential at 4%RH)

On drop in humidity to 41% RH W351A closes the contact between COM & NO to start the humidifier.

As the humidity increases to 45% W351 opens the circuit and stops the humidifier. The digital display module (D351) shows continuous readout of space humidity.
FogSystem Ultrasonic Nozzle Humidifiers

W351P PROPORTIONAL CONTROLLER & ELECTRONIC SENSOR

Controller W351P

Power Module Y350R

Digital Display D351

Notes:

5. 0 to 10 Volt wiring shown
6. Controller also accepts 4-20mA
7. De-humidification stages available
8. Initial settings:
   Set point: 50%
   Minimum output: 0
   Throttling range: 10%
   Integration switches: #2 “on”
   Others “off”
   Operation mode: Reverse
5. Set S2, S3, and P-13 on Control Panel Prop. Board as shown here:

   S2    On        S3           P13
   1  2  3  4   Off  1  2  3  4

208-240 VAC
Power In

Air Flow Switch

0 – 10 V Sensor

PWR
OUT
COM

Ground
P-825 WALL MOUNTED HUMIDISTAT
Line voltage, on/off, wall mounted Humidstat with human hair element. The best sensing element available at a low cost and a good selection for most applications. Humidstats with electronic sensors should be used for applications where R.H. is above 65%.

W351 ELECTRONIC HUMIDISTAT
With a polymer sensor for high humidity, high sensitivity applications. The W351 features fast response time and close tolerance (+/- 2%). Available in on/off or proportional control, wall or duct mounted, and with or without digital display. Display shows set point and actual R.H. at sensor. Sensor may be remote from controller and display.

Water Filters WF-100 & WF-200
High quality filters which remove small particles from the water. The 5 micron cartridges will stop particles as small as yeast, fungi, pollen, flour, etc. By comparison, a human hair is about 100 microns in diameter. These filters are used to prevent the internal parts of the system from clogging, but do not remove dissolved minerals which may contaminate the air in the humidifier area. For this reverse osmosis is required.

Commercial Reverse Osmosis
Reverse osmosis (RO) uses semi-permeable membrane technology to remove and reject impurities in the water far beyond the capabilities of normal filtration. Unlike ordinary filters, RO removes even dissolved minerals and produces water quality equal to distilled water.