



- Fan Based High Pressure (1000 psi) Misting/Fogging Atomizing System (Accelerated Moisture Evaporation)

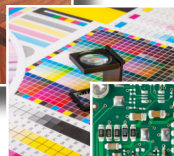


– Accelerated Evaporation –
– Automatic 24/7 Control of Relative Humidity –

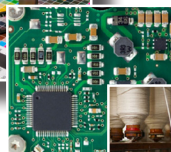
- Preserving the Equilibrium Moisture Content (EMC) for Hygroscopic Materials.
- Controlling Static Electricity.
- Assisting in Dust Control.



WOODWORKING



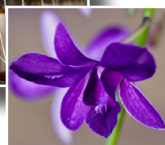
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ELECTRONICS



TEXTILES



OTHER

- Greenhouses
- Paint / Finish
- Cold Storage
- Food / Baking
- Labs / Pharma
- Leather



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How the FanMist System Works

The system is completely automated and integrated sequentially by the operation of the PLC controlling the on/off timing of both the pump and fan cycles of operation.

The zone "Neptronic" humidistat/sensor controller reads the real time humidity and compares that to your humidity set point and sends a call for humidity to the PLC which cycles on the entire system.

The pump pressurizes water to 1000 psi which flows to all nozzles in the zone through high pressure flexible tube.

Nozzles are located on the mist ring and mounted directly to the face of each fan. Atomizing nozzles open and close at 350 psi.

Moisture plumes are 4' diameter by 20' length and pointed out over obstacle free air spaces above equipment and work spaces for complete evaporation.

"Installer friendly" flexible 3/8" nylon high pressure tube with slip-lok fittings deliver 1000 psi water from the pump station to all fans in the system.



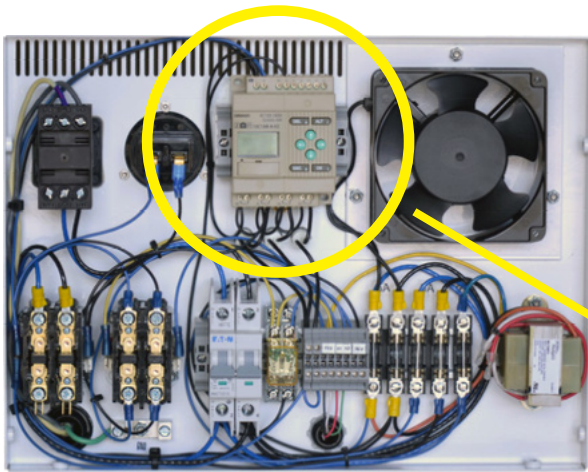


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Pump Station

Features:

- **Sizing:**
 - a. Power Supply: Choice of single or three phase power.
 - b. GPM's: From .12 gpm up to 10 gpm.
- **High / Low Pressure Switch:** set at 600 psi to shut off pump protecting against sudden loss of water pressure..
- **Filters:**
 - a. 5 micron pre-filter for incoming water supply to pump.
 - b. 100 micron post pump high pressure Hylok stainless steel "T" filter.

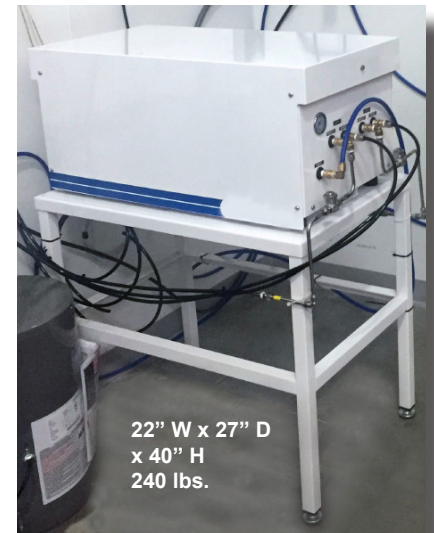


Internal Electrical:

- Electric Drain Valve (EDV) for single zone, 3/2 valves for multiple zones.
- Integrated Fan Control with separate switch for Fan Control only.
- Integrated zone Neptronic Humidistat Controller.
- Panel Mount Two Position Switch.
- Hour meter tracks total operating hours for the pump.
- **PLC** – Programmable Microprocessor: Accepts any incoming signal(s) as a means to operate the system – Provides 'ON' and 'OFF' sequencing for electrical components – Automatically disables the system with loss of water supply – Monitors and reports for when pump maintenance is required – Provides for indicator lights that display the pumps current status – Tracks hours of operation since the last maintenance.

– Tracks the number of pressure loss faults – Indicator Lights – Panel mounted for visual indication of the current status of the pump – a. Green (pump or individual zone 'ON') – Red (loss of sufficient water supply) – Amber (maintenance required).

- Exhaust Fan – Provides air movement and cooling within the enclosure.
- Contactors – Provides power to the pump motor or to Fans upon receiving a start signal from the PLC.
- Circuit Breaker – Protects the pump from thermal overload conditions and the end user from a short circuit in the pump's electrical system.
- Cube Relay – Provides the necessary bridge between the controller's incoming signal and input to the PLC - used when the controller's incoming signal and the required PLC voltage input are different.
- Terminal Blocks – Used to make the necessary connections between the pump, the external controller, and Fans (when the pump is providing the fans power supply).
- Fuses – Included in the pump design to provide additional thermal and short circuit protection for individual components within each of the electrical circuits for the pump.
- Transformer – Provides 34VAC voltage for the Neptronic humidistat controller.





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Neptronic Zone Humidistat / Sensor Controller

The Neptronic Zone Humidistat & Sensor (combined):

One Humidistat/Sensor is provided for each zone of system operation and is generally positioned at eye level where real time monitoring represents a realistic reading of the larger zone area.

The Sensor reads real time relative humidity levels and signals a "call for humidity" when the percentage of relative humidity decreases from "set point" which then sequentially energizes the on cycle of both the pump station and the fans (ten seconds prior to pump) sending 1000 psi water flow to all fans in a zone.

Upon reaching relative humidity "set point" the humidistat signals the cycling off of the pump station and fans cycle off ten seconds later (auto mode).

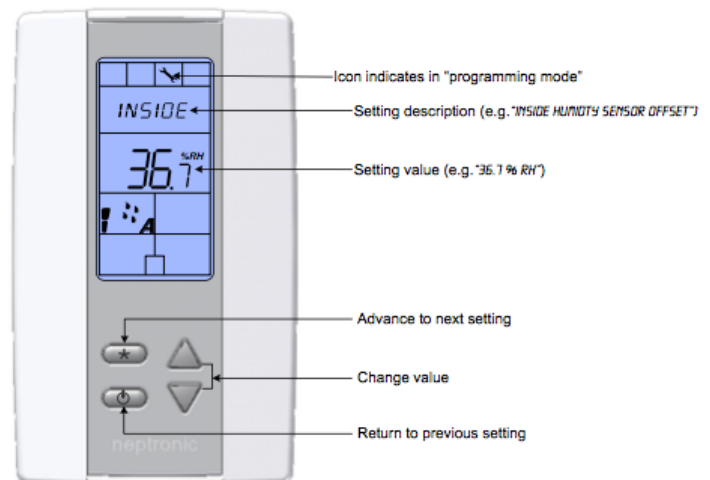
Humidistat connects in at the designated terminal contacts at the back of the pump enclosure.

Locate the Humidistat where that location represents the reasonable reading for the entire zone area. Located at eye level with easy access for monitoring as needed.



Features

- Built in Sensor – precision $\pm 3\%$
- Electronic LCD & Backlight
- External Humidity Sensor Input
- Set Point Range: 10-90% (in 1% increments)
- Lockable Set Point
- Real-Time Humidity displayed
- Dimensions: 2.85" wide x 4.85" high x 1" deep
- Weight: 0.3 lbs
- Power supply: 22 - 26 Vac 50/60 Hz





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30" Diameter 1/4 hp Fans with 24" Mist Ring

Robust 5010 cfm air velocity at highest speed to accelerate atomized moisture for complete evaporation above your equipment and work-space.

- Fan Part # POW30OSC.
- Oscillation Capable @ 93° rotation.
- White powder coated (including wall bracket).
- Completely water proof.
- Quiet operation (62 dB at 15'ft).
- 3 speed pull chain.
- Attached 10' cord with 3 prong plug.
- Pre-wired for 115V / 2.65 amps / 60 Hz / 1 Ph.
- UL507 certified for indoor/outdoor use.
- Aluminum blades.
- Minimal assembly required.
- Motors direct drive fully enclosed, maintenance free with completely sealed ball bearings; UL certification – one year warranty.

► **Misting Rings:** Each stainless steel misting ring (attached to face of each fan with 5 zip ties (zip ties not included)). Each fan mounted misting ring includes a 3/8" Slip-Lok ball valve assembly connection to receive the 1000 psi high pressure flexible 3/8" water tube line which enters the stainless steel ball valve for manual on/off water supply to each fan.

► **Fan Output Data:** 12 Nozzle Mist Ring with 8 lbs/hr nozzles = 96 lbs/hr (.19 gpm). *Note: Moisture plume size of 4' diameter x 20' long for complete evaporation within an obstacle free airspace.*

► **Operation:** This fan operates on/off with the pump on/off cycle as an integrated part of the entire system. Fans are programed in the PLC to turn on 10 seconds before the pump on cycle and turn off 10 seconds after the pump off cycle.

► **Fan Locations:** Fans are typically located on walls or columns mounted at 10 - 12' from the floor level and pointed out over obstacle free spaces. Fans are also hung from ceilings with outsourced and locally fabricated bracketing. Fans should be located where easy access allows for both installation and fan access.



FanMist
shown as
Column
Mounted

(can also be wall
mount or ceiling
hung)



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3/8" Nylon Flexible High Pressure Tube and Slip-Lok Fittings

The "Installer Friendly" 3/8" Nylon Flexible High Pressure Tube (rated for 3550 burst pressure) combined with the supplied Slip-Lok fittings, completes the delivery system providing for the supply of high pressure (1000 psi) water from the pump to all fans in the system.

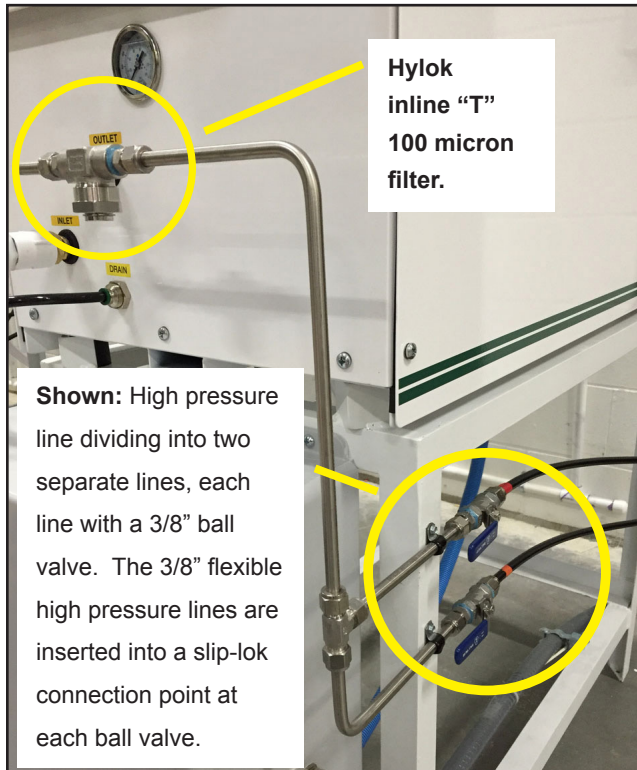
Tubing is shipped in 500' coils (available also in 50' and 100' coils) along with a tube cutting tool included in the spare parts for each project.

Screw type wall clamps included in the parts kit are used to fasten the tube to wall surfaces every ten feet.

However, most tube runs are simply zip tied every ten feet to available ceiling truss or other available objects to secure the line to completion to the last fan in the line.

Each high pressure line originates from the stainless steel line exiting the pump station which includes a Hylok inline stainless steel "T" 100 micron filter to protect against any particle fines created during pump operation. The line extends to either a single or divided lines to the ball valve where the 3/8" flexible tube begins its run to all fans on that line.

"Push-to-Connect" 3/8" Slip-Lok Nickel Plated Fittings use an internal locking ferrule with over sized O-ring to complete a leak proof seal for high pressure systems.



Hylok inline "T" 100 micron filter.

Shown: High pressure line dividing into two separate lines, each line with a 3/8" ball valve. The 3/8" flexible high pressure lines are inserted into a slip-lok connection point at each ball valve.

Key Notes:

- Insert high pressure tube into Slip-Loks by pushing the end of tubing into the fitting AND then pull back on tubing to insure it has locked in place.
- Tube can easily be removed from slip-lok by pushing in slip end of fitting with an open end wrench.
- All lines should be purged (cleaned) before system startup (prevents installation from fines or debris during installation from fouling the atomization in nozzle orifices).



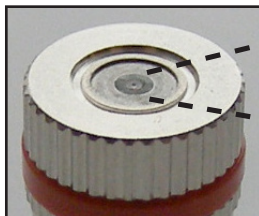
Slip-Lok Fittings:

- Tee Fittings – used where lines need to separate into an added line (allow for one per fan). Last fan in the line does not require a Tee fitting.
- Couplers (Union) – used to join two lines (plan your lines to use the fewest unions possible).
- Elbows (90°) – Use infrequently as flexible lines can easily make turns without need for elbows.





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(Accelerated Moisture Evaporation)



Ruby Orifice Insert (Inner Core)
Glass (Outer Lining)



NOZZLE CAP
Synthetic Mineral Orifice Insert w/ Viton O-ring



SPRING ASSEMBLY
Impeller insert in 350 psi spring with Viton seat



ANTI-DRIP BODY
Bottom Housing with Viton O-Ring
Thread (male)
Standard - 10/24
Optional - 12/24



SS High Pressure Nozzle
Part # IHC-2.64
Black Band
0.085 mm / .0033" orifice
0.0059 gpm / **2.64 lbs/hr**



SS High Pressure Nozzle
Part # IHC-3.97
White Band
0.1 mm / .004" orifice
0.0079 gpm / **3.97 lbs/hr**



SS High Pressure Nozzle
Part # IHC-5.29
Red Band
0.15 mm / .006" orifice
0.01 gpm / **5.29 lbs/hr**



SS High Pressure Nozzle
Part # IHC-7.94
Blue Band
0.2 mm / .008" orifice
0.016 gpm / **7.94 lbs/hr**



SS High Pressure Nozzle
Part # IHC-10.58
Gray Band
0.3 mm / .012" orifice
0.021 gpm / **10.58 lbs/hr**

High Pressure Stainless Steel Nozzles with "Ruby Orifice" Inserts (Also referred as Ceramic Insert / Synthetic Mineral Insert)

The Ruby Orifice Insert – Stainless Steel – High Pressure Nozzle atomizes water to an ultra fine – micron sized water particle for quick and complete evaporation above your workspace.

• **Stainless Steel Construction:** for corrosion resistant long term performance using Viton O-rings & seat allows all parts to be **finger tightened only** with uniform 20% compression for high wear resistance – preventing leaking.

• **Ruby Orifice Inserts's** inner surface is laser bored so smooth that nothing can stick to the surface. Compared with the microscopic surface of an all metal inner orifice surface reveals fine etchings or scratch marks made by the drilling which provide nucleation (attaching) points where dissolved minerals turn to crystal formations thereby interfering with normal atomization.

• **350 PSI Spring Assembly** controls the pressure "cracking" point which activates the nozzle to open and shut - the key to precision atomization at both start up and shut off. 350 psi is the critical pressure point to allow for a very clean initial burst of moisture with the finest micron sized particles for complete and quick evaporation.

• **The Anti-Drip Body Housing** composes the body of the nozzle and functions to interface between the water supply source and the nozzle cap. When all three parts of the nozzle are attached together, the nozzle is then threaded into the supply source as the Viton O-ring is the final seal which prevents moisture leaks even at very high pressure. All attachments and adjustments are finger tight only.



• **New in 2018: 5 Micron filter** included with each nozzle located within the 10/24 threaded end of the anti-drip body. Filters can be ordered separately in quantities of 100.

****Note: Each nozzle as listed by size of output in "lbs/hr" is the newly tested flow rate as tested "with filters" @ 1000 psi operating pressure. Part numbers reflect new flow rate ratings.**



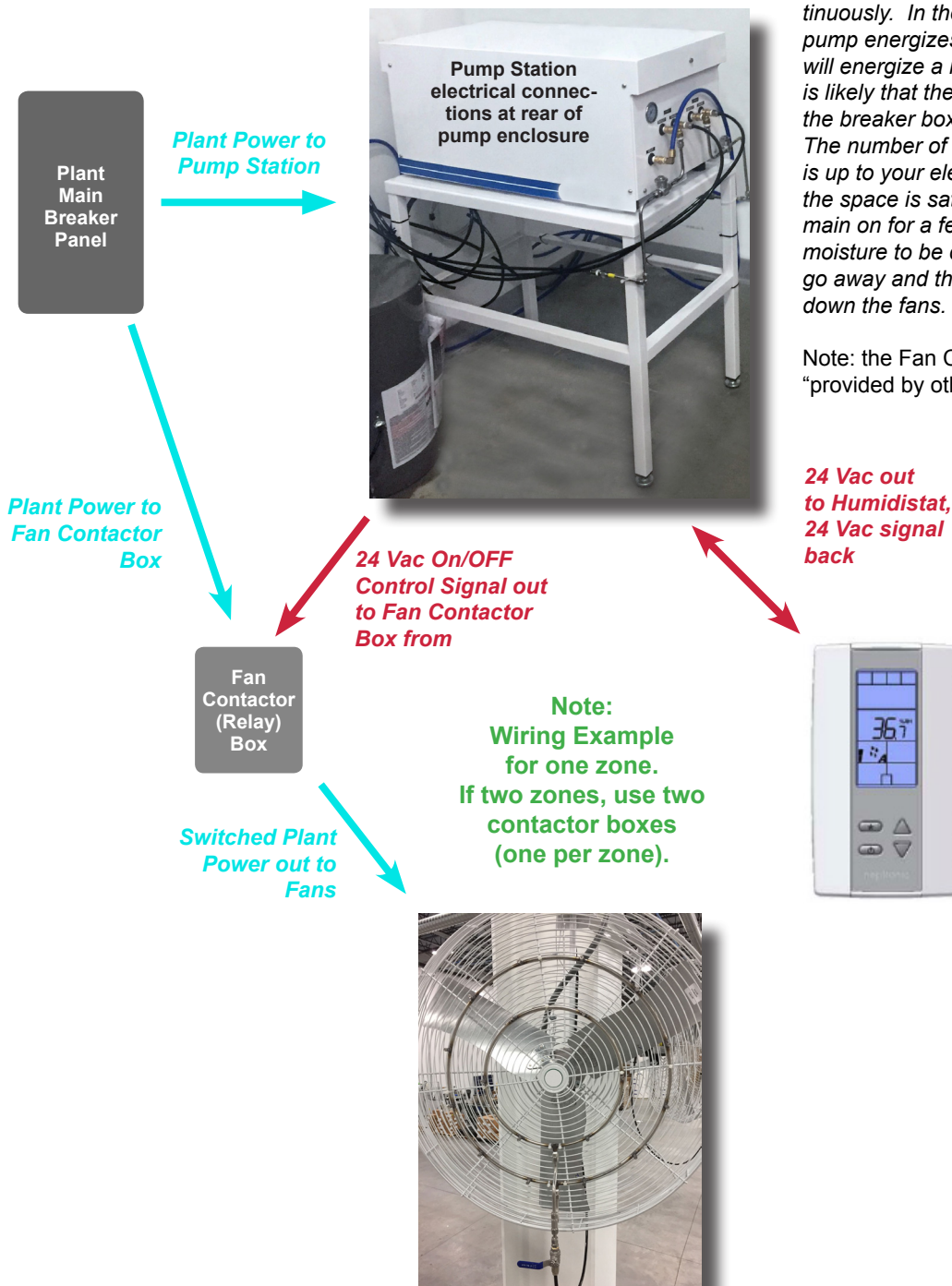
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System Electrical Overview

Wiring for Fan Operation – The Pump Control Panel includes a 24 VAC control signal via a relay (and with dry contacts if preferred). Your electrician can utilize this to control the power to fan outlets so they are energized only when activated by the pump PLC controller. Pump PLC fan control has “auto” & “on” settings for seasonal control patterns.

24 VAC Control Signal to Fan Control Contactor keeps the contactor closed to allow the fan(s) to operate continuously. In the case of 24 V control signal, when our pump energizes, the 24 V control signal will be on and will energize a remote contactor provided by others. It is likely that the remote contactor will be located near the breaker box supplying the plant power to the fans. The number of contactors used and number of circuits is up to your electrical contractor. When the humidity in the space is satisfied, our 24 V signal to the fans will remain on for a few seconds longer to allow the remaining moisture to be distributed – then the control signal will go away and the contactors will open, thusly shutting down the fans.

Note: the Fan Control Contactor and all field wiring is “provided by others”.



Humidistat (wall mount / one per zone) requires 24 Vac supply included at pump station. Wiring: 18 AWG – 3 conductor cable (two conductors for the power supply to the controller and the third for the return 24vac signal to pump PLC) – Wiring:

- From Pump terminal contact to #1 terminal on humidistat, connect common.
- From Pump terminal contact to #2 terminal on humidistat, 24vac input.
- From Pump terminal contact to #8 terminal on humidistat, 24vac output (return hot leg sends signal to humidify which initiates pump and fans for startup).



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Typical Water Treatment Options

Control of Water Hardness Due to Calcium Carbonate (CaCO_3) Scale Build Up

• ScaleX2 (SX)

- Chemical-Free Scale Prevention. An alternative to water softening for the control of water hardness due to CaCO_3 . Requires no salt, chemicals or electricity.
- Template induced crystallization (TIC) – Converts dissolved hardness ions into harmless, inactive microscopic crystals.
- An alternative to water softening – to be used on city water only.



• Water Softening (WS)

- Using a locally sourced water softening company.
- The design should be a twin alternating tank ion exchange system – to *eliminate water hardness / features should include auto backwash, regeneration, & rinse cycles.*



Control of Water Hardness AND Avoiding Air Dusting Due to TDS Content of Water

• DIBS (Delonized Blending System)

- Used with locally sourced Delonizing (DI) Tanks.
- Blends raw water with DI water to produce a precise parts per million (ppm) range of total dissolved solids (e.g. Set at 50 ppm tds).



• Reverse Osmosis (RO)

- A Membrane Filtration System producing the ideal water purity – maintaining water quality in a range of 10-40 ppm tds.
- All RO Systems are designed and engineered for exact water treatment requirements.





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Additional System Info – Installation – Warranty – Maintenance – Operation



Detailed Installation Instructions

- Provided with each project prior to equipment delivery and installation for all electrical and plumbing connections. Prior to install, customer is responsible for completing required plumbing & electrical services. All plumbing and electrical connection points must be within 6' of equipment locations.



User Manual

- Provided for all system equipment.



Warranty for Workmanship and Materials

- Five years pump – Two years fan, humidistat/controller, tube, fittings and nozzles – IHC does not warranty components due to normal wear such as pump seals, belts and nozzle viton/o-rings, OR component misuse and/or abuse.



Standard Spares and Maintenance Kit (Per Project)

- Includes 1 ea 5 micron pre-filter and pre-filter wrench, 1 nozzle per 10 nozzles/project, extra nozzle plugs, pump valve kit #123, pump seal kit #167, pump plunger kit #159, & 2 each 16 oz pump oil for 2 oil changes.



Routine Maintenance

- Pump (normal pump life 7-10 yrs with routine maintenance):
 1. Change pump oil every 500 hours.
 2. Change seals and valves as needed. Note: belt driven pumps spin at lower rpm's dramatically improving maintenance intervals.
- Water Filters:
 1. Change Pre-Pump 5 Micron Filters once per season (Oct 15 - Apr 15);
 2. Clean / change post pump 100 micron filter yearly.



Spring Seasonal Shut Down

- Generally in mid April – shut down the system until September Startup. All pressurized water lines should be drained (see manual – detailed instruction).



Fall Seasonal Startup

- Flush water lines before season startup (generally in late September).

Year Round Operation

- If the system is left in operation all year, run system once every 2 weeks for ten minutes to maintain pressurized water lines free of stagnant water.



Recommended Water Treatment

- Use only recommended water treatment to insure optimum performance within your specific facility and production quality control requirements.



Supplier Contact Info

- Industrial Humidity Control LLC – Gaston IN – 765-702-4083 – *Industrial High Pressure (Water Atomizing Type) Humidity Control Systems.*
Ray Reiff Project Director – rreiff@industrialhumiditycontrol.com – 765-702-4083.