



AIR CLEANING EQUIPMENT INC
303 N Main St • Broadway NC 27505 • 800-962-0650

WWW.INDUSTRIALAIRTREATMENT.COM

HydroStream Model HC-250

Evaporative Humidification (264 lbs/hr)
Produces “Already Humidified Air”

Information – Specifications pg 1

HydroStream Humidifier Model HC-250 (250 lbs/hr)



Low energy production of “already humidified air” within a completely packaged “All in One” system.

- **A Dual Function Humidity Control System:**
 - *Maintains Your Desired Winter Humidity Setpoint (e.g. 45% RH @ 72°F)*
 - *Optional Summer Evaporative Cooling*
- **Independent temperature & humidity control**
- **Uses Low Energy**
- **Easy to Operate Intelligent LCD Controller**
- **Engineered in Upflow OR Downflow Design**
- **Installation: floor, wall or ceiling hung**
- **Requires water supply – 115V electrical – access to a drain**

HydroStream Model HC-250

Specifications

- **Humidification Capacity:**
 - 264 lbs/hr @ 70°F/40%RH.
- **Units located on the floor or attached to wall shelf (by others). Includes ceiling hung frame as standard on all HC-250 units).**
- **Unit has automatic float/valve assembly providing automatic fill from permanent inlet water connection.**
- **Configurations:**
 - 1) HC-250UP: 4 side inlet & top discharge
 - 2) HC-250DN: 4 side inlet & down discharge
- **CFM Airflow: 16,243 CFM**
- **Output: 3.0 kw**
- **Voltage choices for 3Ph / 60Hz:**
 - 1) 208-240V 12.45A/10.8A
 - 2) 460V 5.4A
- **Fan Type: Axial**
- **Vent Size: 25.5” x 25.5”**
- **Fan Speeds: 3 ph, 2 spd • Noise: 78 dBA**
- **Dimensions:**
 - 48.75” x 48.75” x 55.6”
- **Net Weight: 325 lbs • Op Wt: 445 lbs**
- **Pads: replace every 3-5 years**
- **Pad size: 38”L x 34.5”W x 3.9”H**
- **8 gallon water reservoir**
- **4 each air pre-filters included**
- **Optional Proportional Control interface allows for control of unit with 4-20 mADC input**
- **Water Treatment: Only use clean water / steady pressure between 20-50 psig at the unit. Advised to use water treatment to control water hardness in excess of 8 grains – simplifies the cleaning cycle maintaining output performance & maximizes pad life. Recommended water treatment types:**
 - a. Water Softening (locally sourced).
 - b. Alternative to softening is ScaleX2 Water Treatment to control calcium scale buildup (provided in all quotes from ACE).



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• Operational Overview

The HC-250 produces an “already humidified air stream” of 264 lbs/hr directed into your plant air space. No steam or visible moisture exits the unit AND no evaporative distance is required – just a humidified airstream migrating quickly and equalizing throughout your entire plant air space via Dalton’s Law of Partial Pressure



The HC-250 Humidifier is the Largest (48.75”w x 48.75”d x 55.6”h) base size unit within the HydroStream sizes designed for large space areas to maintain your required humidity set point (e.g. 45%RH @ 72°F) during the dry air periods of manufacturing operations. Each unit is configured either in upflow or downflow air flow design with air flow exiting into a transition housing for balanced air flow into one of three diffuser attachments: through either a one way horizontal diffuser, a 4 way quad diffuser or a 6 way mushroom diffuser (each with adjustable louvers).

HydroStream is an adiabatic type humidifier fabricated of a durable high strength UV resistant, corrosion resistant polymer compound for long term industrial use featuring low energy consumption.

The intelligent LCD controller is easy to understand and regulates continuous flowing water from the 8 gallon water reservoir through four water saturated pads (one on each side of the unit) while dry filtered air passes through creating a steady stream of evaporated moisture.

As the unit receives a call for humidity from the humidistat sensor, the circulating pump begins to pass water down through the evaporative pad media. Air passing through the pad media evaporates the water off of the pad media surfaces and the cooler and more humid air is introduced into the room. Water is introduced into the humidifier via the float and valve assembly. The reservoir should be drained once per day to keep the water fresh and clean. This function alone is your most important automatic operation feature which allows the unit to produce daily and continuous humidified air with the least amount of any ongoing maintenance.

The auto drain function will periodically drain the unit to insure daily fresh water and can be set to empty and fill on any empty fill cycle you may choose. In the Auto Mode, the water management system automatically swirl drains the reservoir based on the TDS (Total Dissolved Solids) level which accumulates as water evaporates and TDS dissolved solids accumulate. In addition, the reservoir automatically drains during periods of non-use.

The process of evaporation provides a natural “crossover” for seasonal use application featuring independent control of temperature and humidity:

1. Winter Humidification: the humidity setpoint becomes the control (typically 45-50%) and the temperature control provides a limit (typically 60°F).
2. Summer Evaporative Cooling: the temperature becomes the control point (75°F for example) and the humidity would be the limit control (65% for example).



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• HC-250 Design Options & Install Info

8-Way Air Flow Mushroom Diffuser (Now Standard on all HC-250 Units):



8-Way Mushroom Diffuser

Attaches to transition housing which is located at top of unit for an Upflow design OR attached to the base of the unit for a Downflow design (79” total unit height)

Louvers are adjustable for desired direction of air flow. Louvers can be open or completely shut depending upon location requirements.

Diffuser/air distribution system designed and priced per application or provided in end-use. Works with various diffuser and ducting options for efficient air distribution. Diffuser supplied with each unit or may be ducted by others

Installation Guidelines:

Units are located either on the plant floor, mounted on a wall shelf / bracket, or ceiling hung (includes hanging frame with lift rings mounted to bottom of base unit / standard on all HC-250 units). Operational weight with 8 gallons of water in reservoir is 242 lbs. Allow 79” overall height for base unit with drain and choice of air diffuser. Allow 15” of air space around all four sides.

Optional special order air socks to tightly control horizontal air disbursement.

Pre-Installation Requirements:

- Water supply of pre-treated water to control water hardness. Incoming water line to have steady pressure between 20-50 psig at the unit. Unit includes adapter hose to connect with 1/2” FPT hose connector.
- Your choice of electrical supply of 208-240 VAC / 3 Ph / 60 Hz or 460 VAC 3 Ph / 60 Hz;
- Access to a drain (water can be easily pumped by a condensate pump to a gravity flow pipe which empties into an available drain).

All units include an LCD controller, humidistat/sensor, air flow transition and diffuser, intelligent auto clean, low water protection.



Finished HC-250 with ceiling hung mounting bracket frame attached to bottom of base unit. Shown in Upflow Design with Quad Diffuser.



Drain Line Fitting



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• Controls, Humidistat & Programming Overview

The HC-250 User Manual provides detailed instructions for programming all control functions including many options for both manual and automatic control.

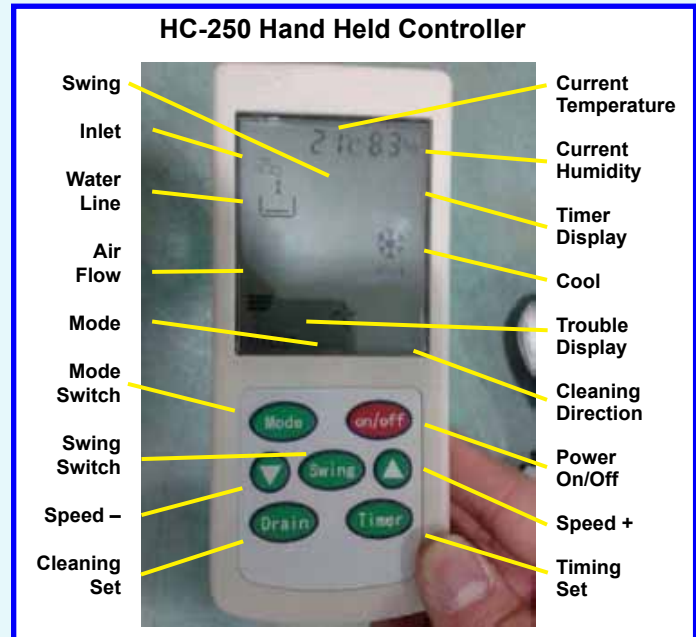
Your unit is factory pre-programmed for all functions including your required set-point (e.g.45% RH) and only changes to settings would be required (fan speed adjustments, timer settings for all functions and clean cycles can be re-set). If there is a loss of building power, the unit will restart automatically.

Unit with power connected is in Standby State alternating display of room temperature and humidity. After inputting your operating parameters, system runs in AUTO Mode during the winter by the Humidistat Sensor automatically controlling all of your input parameters with real time humidity readings on display. The added functionality of using both humidity and temperature allows you to operate the HC-250 year round for both winter humidification and summer evaporative cooling:

Air passing through the wetted media gives up some of its heat energy to evaporate the water off of the media. This adiabatic process yields both humidification and cooling. In the wintertime, the humidity setpoint becomes the control (typically 45-50%) and the temperature control provides a limit (typically 60°F). In the summertime, the temperature becomes the control point (75°F for example) and the humidity would be the limit control (65% for example). Changing the setpoint is easy on the included digital controller. In either mode, operation is automatic and overcooling (in winter) and overhumidifying (summer) is prevented by the control parameters you set.

AUTO CLEAN mode button sets clean cycle for drain valve to empty reservoir which is factory pre-set for every five hours but can be changed to empty the reservoir once per day.

The Humidistat Sensor comes with 25' of phone cable. The humidistat sensor is integrated into the hand-held controller shown above and can be wall mounted or located as needed. Wherever the controller is located, HC-250 reads the air humidity in that exact location which in turn controls the on/off operation. Each HC-250 acts as an independent zone controlled by the location of the dedicated controller.





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• Pad Care & Maintenance

The HC-250 has four pads located on each side of the unit. They are accessed by removing the clip on the top side of the unit and the side panel separates from the top of the unit.

Pads should be cleaned periodically to ensure unit output performance. Pad cleaning frequency is dependent on both duty cycle and water supply. The key to maintenance is to allow the units to drain once per day and insure the pads are dried thoroughly before extended periods of unit/fan shutdown. Average cleaning frequency will be every 3-6 months. To clean pads, completely dry pads and clean with soft brush.

For seasonal shutdown, empty and clean reservoir, run the fan (only) for two hours to completely dry out pads, remove pads, clean with soft brush and store until next season startup. Note: pads can be also placed back into the unit in the event of dry air conditions during off-season and the HC-100 used as needed.

- 4 piece pad set • Pad size: 38"H x 34.5"W x 3.9"D
- Replace every 3-5 years
- Pad Replacement Cost: 4 piece pad set - \$400.00 (Current pricing as of Dec 2013)



Water Saturated Pad

• Diagram of Components

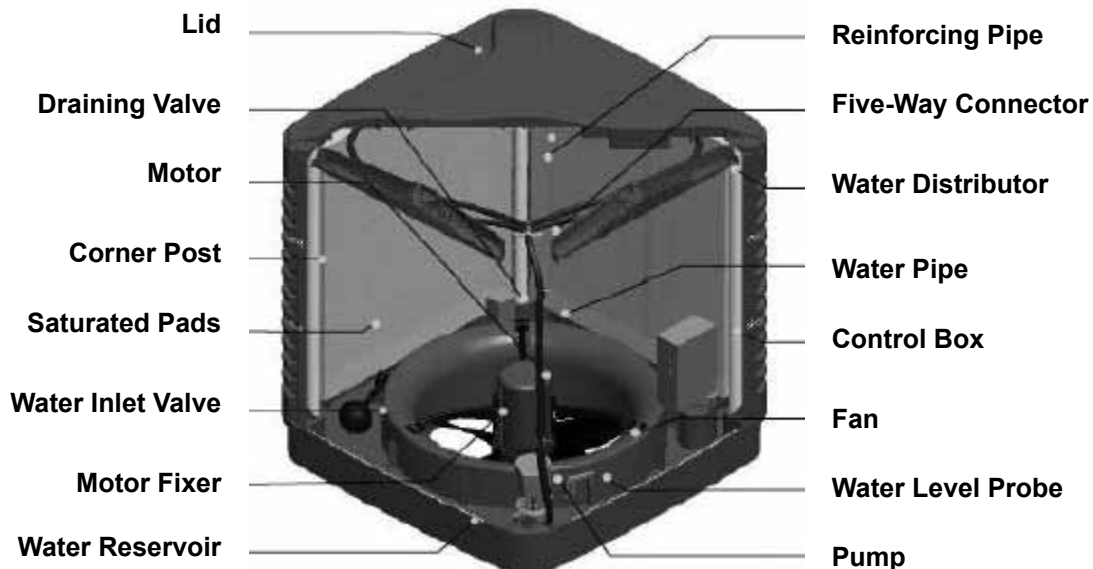


Diagram shows fan at bottom in a downflow unit (fan at top in an upflow unit)



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HydroStream Recommended Water Treatment: ScaleX2®

A Superior Water Softener Alternative – Prevents Scale Caused by Calcium Carbonate for Industrial Humidity Control Systems

- **Chemical-Free Scale Prevention** – Requires no salt, chemicals or electricity – Template Induced Crystallization (TIC) – Chemical-free scale prevention – converts scale-causing calcium carbonate into harmless, inactive microscopic crystals.

- **NSF Tested & Certified** against the international protocol for scale prevention – ScaleX2® achieved a 99.6% effectiveness rating – the highest among all water softener alternatives. Used in business applications successfully for 6 years.

- **Simple & Efficient Operation** – Converts dissolved hardness ions (scale-causing calcium carbonate) into harmless, inactive microscopic crystals - No backwash water waste – Long lasting media-not consumed by the reactions – Great fit for corporate "Green" programs or initiatives.

"Nano-Crystal" observed on the ScaleX2 media surface by a scanning electron microscope – ScaleX converts formerly dissolved calcium into harmless microscopic solid crystals



How it Works: ScaleX2 induces atomic sized nucleation sites on the surface of small polymer beads converting dissolved hardness into microscopic crystals. Once the crystals grow to a certain size they are released from the bead and harmlessly carried away with the flow of water. The crystals maintain their solid form in solution and keep the hardness out of the water so that it can't form scale.

Your Incoming Raw Water Chemistry Limitations (Use only on municipal water)

- pH: 6.5 to 8.5
- Max Hardness: 75 grains (1300 ppm CaCO₃)
- Water Temperature: 41 to 140° F
- Chlorine: less than 3ppm
- Iron: 0.3 mg/l max.
- Manganese: 0.05 mg/l max.
- Copper: 1.3 mg/l max.
- Oil & H₂S: Remove prior to ScaleX2®
- Polyphosphates: Remove prior to ScaleX2®



| Model | SX2-11 | SX2-12 | SX2-12B |
|------------------------------|--------------------|--------------------|--------------------|
| GPM Capacity | 1.5 GPM | 2 GPM | 4 GPM |
| Dimensions | | | |
| Height | 14.5" H | 25" H | 28.25" H |
| Width | 8.5" W | 8" W | 11.75" W |
| Depth | 5" D | 5" D | 8" D |
| Weight | 8 lbs | 10 lbs | 16 lbs |
| Annual Cartridge Replacement | Reorder as SCLX2-1 | Reorder as SCLX2-2 | Reorder as SCLX2-4 |

• Note: Each cartridge provides one year of treatment, replace yearly (HydroStream Quotation includes two year supply)