



Evaporative Cooling Equipment

Installer / Contractor Pre Start-Up Checklist

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4 PRE START-UP CHECKLIST



The installer/contractor shall completely install and thoroughly inspect the equipment prior to start-up. Please submit the completed form to your local BAC Representative for scheduling and present a copy of the completed form at the time of start-up.

Please refer to the product specific Operation and Maintenance Manual and Rigging Guidelines for detailed instructions.



Safety and Equipment Precautions



DANGER

- **DANGER:** Do not perform any service on or near the fans, motors, and drives, or inside the unit without first ensuring that the fans and pumps are disconnected, locked out, and tagged out.



WARNING

- **WARNING:** When access to the top of the unit is desired, the purchaser/end-user is cautioned to use appropriate means to comply with applicable safety standards related to working on elevated surfaces.
- **WARNING:** When the fan speed of the unit is to be changed from the factory set speed, including changes achieved by the use of a variable fan speed device, steps must be taken to avoid operation at or near the fan's "critical speed" which could result in fan failure and possible personal injury or damage.
- **WARNING:** The recirculating water system may contain chemicals or biological contaminants, including Legionella, which could be harmful if inhaled or ingested. Personnel exposed directly to the discharge airstream and the associated drift mists, generated during operation of the water distribution system and/or fans, or mists produced by high pressure water jets or compressed air (if used to clean components of the recirculating water system), must wear respiratory protection equipment approved for such use by governmental occupational safety and health authorities.
- **WARNING:** All electrical, mechanical, and rotating machinery are potential hazards, particularly for those not familiar with their design, construction, and operation. Accordingly, use appropriate lockout procedures. Adequate safeguards (including the use of protective enclosures where necessary) should be taken with this equipment both to safeguard the public from injury and to prevent damage to the equipment, its associated system, and the premises.
- **WARNING:** A lockable disconnect switch should be located within sight of the unit for each fan motor associated with this equipment. Before performing any type of service or inspection, make certain that all power has been disconnected, and the switch is locked out in the "OFF" position.
- **WARNING:** Dangerous voltages are present in this equipment. Disconnect the electrical service of the source and follow proper lock out and tag out procedures to de-energize the circuit before servicing or replacing components.



CAUTION

- **CAUTION:** The operation, maintenance, and repair of this equipment shall be undertaken only by personnel authorized and qualified to do so. All such personnel shall be thoroughly familiar with the equipment, the associated system and controls, and the procedures set forth in this document. Proper care, personal protective equipment, procedures, and tools must be used in handling, lifting, installing, operating, maintaining, and repairing this equipment to prevent personal injury and/or property damage.
- **CAUTION:** Openings and/or submerged obstructions may exist in the bottom of the cold water basin. Use caution when walking inside this equipment.
- **CAUTION:** Follow exposure control and personal protective equipment requirements as outlined in the Materials Safety Data Sheet (MSDS) for all recommended lubricant and maintenance materials.



NOTICE

- **Please refer to the product specific Operation and Maintenance Manual and Rigging Guidelines for detailed instructions.**
- The basin heater is not designed to prevent icing during unit operation.
- The heater control panel temperature/low level control can only be used with the supplied combination temperature/liquid level sensor probe. Please contact your local BAC Representative for replacement parts.
- For the stand alone BAC heater control panel, do not operate the system unattended or for extended periods of time during test mode (resistor across terminals T1 and T2). Operation in water temperatures above 45°F (7.2°C) could damage the unit.
- For heater control panels, do not operate the system unattended or for extended periods of time with terminals G1-G2 jumpered. A low liquid level condition could occur, and the system will not shut off which could result in damage to the heater and unit.
- Check to ensure the controls for the fan motor are set to allow a maximum of six on-off cycles per hour to prevent motor overload.
- For fan motors controlled with VFDs with a switching frequency of 2.5 kHz, the line lead length cannot exceed 300 feet. If the switching frequency is higher than 2.5 kHz and/or the line lead length exceeds 300 feet, a dV/dT output filter is recommended to protect the motor.
- When reversing the direction of fan rotation, allow the fan to come to a complete stop before restarting the motor.
- Only lubricate the bearings with one of the compatible water resistant greases **listed in your Operation and Maintenance Manual.**
- Do not use steam or high pressure water to clean PVC eliminators or materials other than steel.
- Never use chloride or chlorine based solvents such as bleach or muriatic (hydrochloric) acid to clean stainless steel. It is important to rinse the surface with warm water and wipe with a dry cloth after cleaning.
- Gear drives should not be used with Wye-Delta (Y- Δ) motors.
- For installations with 2-speed motors when slowing from high speed, allow a minimum 15-second time delay for the fan to slow down before energizing the low-speed winding.
- For towers with optional gear drives, do not mix synthetic lubricants and mineral oils. Attempt to use only one brand of lubricant at all times. If the brand is changed, completely drain the old oil before filling the gear with new oil.
- Do not use power tools on the Whisper Quiet Fan.

Warranties

Please refer to the Limitation of Warranties in the submittal packet applicable to and in effect at the time of the sale/purchase of these products.

Site Information

Job Name	Owner's Name	Start-up Date	Sales Representative Name	Report Prepared by

Job Location	Owner's Phone Number	Model Number	Serial Number	Preparer's Phone Number

Pre Start-Up Checklist

Note: This checklist must be completed while the unit is not energized. For multi-cell installations please provide a separate checklist for each cell.

	Yes	No	Comments
Will mechanical, electrical, and controls contractors be on site the day of start-up? Note: If the tower has a VFD installed, both controls and electrical contractors must be on site.	<input type="checkbox"/>	<input type="checkbox"/>	
Access			
Are there site specific requirements to gain access to the site (e.g. safety training, security clearance, proof of insurance)? If yes, please specify.	<input type="checkbox"/>	<input type="checkbox"/>	
Is the unit located on the roof or ground level? Please specify.			
Are there ladders to access the tower?	<input type="checkbox"/>	<input type="checkbox"/>	
Do all equipment doors open and close freely?	<input type="checkbox"/>	<input type="checkbox"/>	
Have all foreign objects been removed from electrical and mechanical areas?	<input type="checkbox"/>	<input type="checkbox"/>	
Accessories			
Note: All accessories must be installed and secured prior to start-up.			
Are external access platforms and/or ladders installed on the unit and secured per instructions? If applicable.	<input type="checkbox"/>	<input type="checkbox"/>	
Is the proper landing space at ladder in compliance with local codes?	<input type="checkbox"/>	<input type="checkbox"/>	
Are internal platforms, walkways and/or ladders installed in the tower and secured per instructions? If applicable.	<input type="checkbox"/>	<input type="checkbox"/>	
Are fan deck rails installed? If applicable.	<input type="checkbox"/>	<input type="checkbox"/>	
Is door hardware installed and secure?	<input type="checkbox"/>	<input type="checkbox"/>	
Is the fan guard properly installed? If applicable.	<input type="checkbox"/>	<input type="checkbox"/>	
Are all accessories installed and secured per instructions? (If applicable; e.g. VR stack, sound attenuation, dampers, and cowl extensions)	<input type="checkbox"/>	<input type="checkbox"/>	
Is the basin heater installed and wired properly? If applicable.	<input type="checkbox"/>	<input type="checkbox"/>	
Is the water make-up installed and operating properly? (e.g. make-up valve and electric water level control)	<input type="checkbox"/>	<input type="checkbox"/>	
*Please refer to the product specific Operation and Maintenance Manual and Rigging Guidelines for detailed instructions.			

Miscellaneous, Water and Power Supply	Yes	No	Comments
Is the unit properly installed and secured to the structural support?	<input type="checkbox"/>	<input type="checkbox"/>	
If the unit is mounted on vibration spring isolators, are flex connectors installed on the piping?	<input type="checkbox"/>	<input type="checkbox"/>	
Are any pipes supported by the unit?	<input type="checkbox"/>	<input type="checkbox"/>	
Are all water connections secure?	<input type="checkbox"/>	<input type="checkbox"/>	
Are bypass hoods installed? Size of bypass? If applicable.	<input type="checkbox"/>	<input type="checkbox"/>	
Is the flume box inspected and in satisfactory condition? If applicable.	<input type="checkbox"/>	<input type="checkbox"/>	
Is the building system water loop pump operational and ready to provide water flow to the tower? (do not energize)	<input type="checkbox"/>	<input type="checkbox"/>	
Is the make-up water pressure at 15 to 50 psi?	<input type="checkbox"/>	<input type="checkbox"/>	
Are there any field installed connections? If yes, please specify.	<input type="checkbox"/>	<input type="checkbox"/>	
Is heat trace installed on all exposed piping? If applicable.	<input type="checkbox"/>	<input type="checkbox"/>	
Are all power and electrical connections inspected and in satisfactory condition?	<input type="checkbox"/>	<input type="checkbox"/>	
Are air inlet louvers/combined inlet shields inspected and in satisfactory condition? If applicable.	<input type="checkbox"/>	<input type="checkbox"/>	
Is the fill and/or coil in satisfactory condition?	<input type="checkbox"/>	<input type="checkbox"/>	
Mechanical System	Yes	No	Comments
Has all temporary wiring been removed?	<input type="checkbox"/>	<input type="checkbox"/>	
Has line voltage been confirmed correct for the connected equipment?	<input type="checkbox"/>	<input type="checkbox"/>	
Is all rotating equipment ready for operation?	<input type="checkbox"/>	<input type="checkbox"/>	
Are the motor and fan installed, aligned and ready for operation and all relevant cables connected?	<input type="checkbox"/>	<input type="checkbox"/>	
Are motor cables of the recommended type and size; the acceptable length; and are installed correctly?	<input type="checkbox"/>	<input type="checkbox"/>	
Is the motor disconnect equipment installed properly? If applicable.	<input type="checkbox"/>	<input type="checkbox"/>	
Is the disconnect switch installed within sight of the unit? (for each motor)	<input type="checkbox"/>	<input type="checkbox"/>	
Is the vibration cutout switch mounted and wired properly? If applicable.	<input type="checkbox"/>	<input type="checkbox"/>	
Are short circuit, ground fault, and overload protective devices of the recommended size and type present?	<input type="checkbox"/>	<input type="checkbox"/>	
Is all electrical equipment properly grounded?	<input type="checkbox"/>	<input type="checkbox"/>	
*Please refer to the product specific Operation and Maintenance Manual and Rigging Guidelines for detailed instructions.			

Variable Frequency Drive

Note: All wiring between VFD, motor, main circuit breaker, controls, sensors and Building Management System must be completed prior to start-up by the electrical and/or controls contractor who must be on site during start-up. In addition to this checklist, please ensure that the procedures/requirements from the VFD manufacturer are met.

General Information	Yes	No	Comments
How many VFD's are on site?			
Will the VFD start up be conducted by the BAC Representative?	<input type="checkbox"/>	<input type="checkbox"/>	
Electrical/Controls Contractor: Start-Up Commissioner Name: _____ Certification Number: _____ Phone: _____			
Building Management System Technician (if applicable): _____ Contact: _____ Phone: _____			
VFD Manufacturer _____			
Parties requiring VFD operational overview (if applicable). Contact: _____ Phone: _____			
VFD nameplate information: Serial Number: _____ HP: _____ Amps: _____ Line Voltage: _____			
Does site voltage match the VFD nameplate?	<input type="checkbox"/>	<input type="checkbox"/>	
Is drive to motor sizing verified and correct?	<input type="checkbox"/>	<input type="checkbox"/>	
Confirm Installation Conditions Comply with Electric Requirements			
VFD installation			
Enclosure Rating _____			
Is the VFD and/or enclosure securely fastened?	<input type="checkbox"/>	<input type="checkbox"/>	
Is the VFD and/or enclosure not interfering with air intake?	<input type="checkbox"/>	<input type="checkbox"/>	
Is the line voltage properly connected to VFD and/or enclosure? If applicable.	<input type="checkbox"/>	<input type="checkbox"/>	
Is grounding wiring complete?	<input type="checkbox"/>	<input type="checkbox"/>	
Motor Installation			
Motor line length over 300ft. If yes, is there an output filter installed? Manufacturer: _____ Model Number: _____	<input type="checkbox"/>	<input type="checkbox"/>	
Is the motor space heater wired correctly?	<input type="checkbox"/>	<input type="checkbox"/>	
Control System			
Is the control system installed and ready to operate? (e.g. temperature or pressure sensor, controller or BMS)	<input type="checkbox"/>	<input type="checkbox"/>	
Is the control wiring run in separate conduit than the power wiring?	<input type="checkbox"/>	<input type="checkbox"/>	
Is the control wiring in place and complete?	<input type="checkbox"/>	<input type="checkbox"/>	
VFD input signals. Please check those that apply			
<input type="checkbox"/> Temperature sensor provided by BAC <input type="checkbox"/> Pressure sensor provided by BAC <input type="checkbox"/> Controller provided by BAC <input type="checkbox"/> Temperature sensor provided by others Please indicate manufacturer: _____ <input type="checkbox"/> Pressure sensor provided by others Please indicate manufacturer: _____ <input type="checkbox"/> Building Management System			
*Please refer to the product specific Operation and Maintenance Manual and Rigging Guidelines for detailed instructions.			