



StanCo Scientific, Inc.



SSD5000 – Refrigerated and Humidity Controlled Air Intake Tower for Motor Octane Testing

Installation, Operation, and Maintenance Manual

Version 1.2

System Requirements

- Standard wall outlet or 115 VAC power supply
- Input water line (3/8" hose barb)
- 3/8" insulated tubing connections to engine carburetors

Installation

To install the StanCo Scientific, Inc. SSD5000:

- 1) Place unit in desired location
- 2) Connect engine carburetor tubing to designated hose barbs on the unit
- 3) Connect external water line and drain line if utilizing unit's auto-fill feature
- 4) Machine a 1.5" hole into the top side of the wall of the inlet air pipe. The green saddle will fit over that hole and create a seal. Attach saddle with included hose clamps.
- 5) Place inlet air pipe over top exhaust opening of unit and secure with proper rubber hosing. Secure with hose clamps if required.
- 6) Insert Edgetech probe/transmitter into saddle. If probe does not insert into saddle easily, check to see if shroud is still over the transmitter. Remove shroud and insert probe into saddle until it stops.
- 7) Plug in power cord to standard 115V wall outlet. **DO NOT POWER ON**
- 8) Once all connections are in place and secured, coolant can be added to the reservoir: Begin by setting the valve handle to the **BYPASS** direction. Remove the white screw cap and fill the white reservoir with high quality antifreeze diluted to a concentration of 50/50. Fill until just under the return port near the top of the reservoir.
- 9) Once the reservoir is nearing the top of the reservoir, the unit (and pump can be turned on). The pumping of the coolant will prime the lines of the system, causing the level within the reservoir to decrease. Let this run for a few minutes to remove all air bubbles present within the system. As the pump is operating, fill the coolant to the appropriate level again. Once this is complete, the carburetor lines are now ready to be added to the system. By turning the flow control valve on the side of the unit to **CARBURETORS**, the lines to the carburetors will now be receiving flow from the SSD5000.
- 10) Once the carburetor lines have been filled and stabilized and no air bubbles appear to be present in the return flow, turn the flow control valve back to **BYPASS** and turn the unit off. The coolant level will stabilize, and you may add more coolant so that it reaches the maximum level. Replace the cap on the reservoir.
- 11) To fill the ultrasonic humidity bath, either attach a 3/8" water line to the designated water input or utilize the drain port to fill with a funnel. Standard tap water is to be used within the bath as deionized water can drastically decrease the life of the ultrasonic mister. Check water level indicator so that it fills approximately half way up the tube. **DO NOT OVERFILL RESERVOIR**

Maintenance

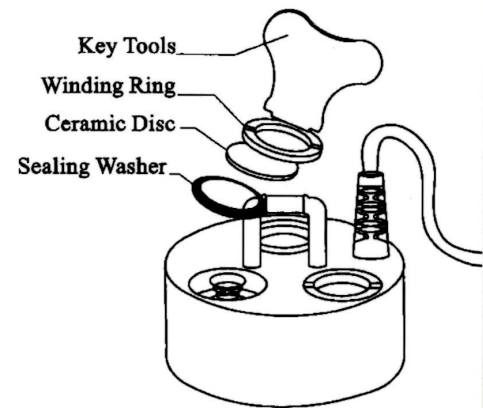
To clean the ultrasonic bath and mister:

- 1) Disconnect water fittings from SSD5000
- 2) Disconnect barrel plug connection for mister
- 3) Remove back panel of SSD5000
- 4) Open the electronics panel and carefully lift the fan/lid off the bath; rest it somewhere it will not tip over
- 5) Remove the ultrasonic bath through the opening of the back panel
- 6) Clean out the bath with any common cleaner and completely dry. Re-install in reverse order of steps.

To clean/replace discs on ultrasonic mister:

- 1) Remove ultrasonic mister from SSD5000 (utilizing steps from the above removal of the ultrasonic bath).
- 2) Remove old disc with key tool
- 3) Remove protective black ring from new disc
- 4) Install new disc with key tool
- 5) Tighten until retaining ring is fully seated

NOTE: Do not install new discs if they have been dropped or damaged in any way.



General Maintenance tips:

- Wipe down excess condensation when encountered to reduce corrosion of components
- Turn off SSD5000 when not in use to prolong life of pump, compressor, and electronics.
- Complete maintenance procedures every 6 months to improve longevity of SSD5000.
- A temperature calibration can be achieved on the temperature controllers. Consult the included manual for assistance with adjusting the offset of the temperature controller.

Troubleshooting

Unit is not reaching coolant setpoint (NOTE: Unit will likely bottom out in temperature between 10-20°F)

- 1) Check that coolant is within reservoir
- 2) Check that chiller is turning on automatically
- 3) Check there is flow coming into reservoir from top copper tube
 - if there is no flow, try the following steps
 - 1) Switch back and forth between bypass and carburetors when the unit is running
 - 2) Using compressed air, push air into the top port of the reservoir towards the aluminum chilling unit
 - 3) Quickly remove and replace the silicone tubing that runs up to the top from the aluminum chilling unit. This can allow the air bubble to dissipate.
 - 4) If no flow is found between aluminum chilling unit and reservoir, turn the unit off and let the unit reach ambient temperature. The compressor lines have likely frozen and need to thaw
 - 5) If none of these solutions work, drain the coolant of the entire system by running the carburetor out line to a container and allowing the pump to drain the system completely. Once the system is drained, turn off the unit and return lines so the system is closed. Next, refill the system with the unit on until flow returns to the reservoir.

Unit is not outputting humidified mist

- 1) Gr/# level is above 30, the humidified mist should not be turning on
- 2) Check water level to see if there is enough supply
- 3) Check wire connection to mister
- 4) Check connection to Solid State Relay that controls the mister
- 5) Check Solid State Relay voltages to see if relay is functioning properly

Operation

Once installation of the StanCo Scientific, Inc. SSD5000 is complete, operation of the unit can be achieved.

Turn on the unit using the main power switch.

Allow Edgetech DewTrak II module to stabilize and self-calibrate. During this time, the unit will display “**AUTO BAL. CYCLE**” on the LCD display. Once the unit stabilizes (60-90 seconds), the SSD5000 is fully ready to monitor and adjust for humidity parameters.

NOTE: It is normal for the grains per pound value (Gr/#) to be erratic during the auto balance cycle. The unit should stabilize within a few minutes

The SSD5000 has a self-monitoring humidity input system that measures the humidity content of the air inlet stream and corrects the humidity level within the inlet air stream to meet ASTM requirements of humidity between 25 and 50 grains per pound of dry air. (Gr/#)

The unit shows the grains per pound value on the LCD display of the Edgetech DewTrak II module in real time for easy visibility. Two temperature displays are located on the front panel of the unit. The upper temperature display reports the temperature of the air leaving the SSD5000. The lower temperature display reports the temperature of the coolant within the system.

On the display, there will sometimes be an “A2” in the upper right corner. This is normal functionality and corresponds with the humidity setpoints of the Edgetech programming.

Alternatively, cooling of the carburetors can be bypassed by switching the flow control valve to **BYPASS**. The SSD5000 will still be cooling the air passing through it under this configuration.

NOTE: Never leave the flow control valve half-turned. This will present flow issues within the system, resulting in poor performance.

The SSD5000 coolant temperature can be controlled. To adjust the set temperature of the unit, press the up and down errors of the bottom controller on the front face. The green digits indicate what temperature the controller will target. There is a natural overshoot of a couple degrees. The red indicating number on the display shows the coolant temperature that is travelling to the carburetors if the SSD5000 is set to ‘carburetors’

NOTE: Be careful not to reduce the temperature too much as this can cause failure within the cooling system. Never use low temperature setpoints with high water content coolant, the system will freeze.

To turn off the misting functions of the SSD5000, flip the front switch to the down position.



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