



# User's Guide

## EcoFilter Models 450 & 800

VortX KleanAir System Inc. - +1-800-854-4816

[www.vortxkleanair.com](http://www.vortxkleanair.com)

## FIRST THINGS FIRST

1. Check crate for signs of stress. Photograph damage to crate and ask carrier to witness the damage. If possible, immediately remove lid and inspect crate contents and notify VortX & carrier of damage.
2. We highly recommend using professionals to help assure a successful installation:
  - a. Employ an HVAC engineer with experience in roasters and cyclones to design the intermediate and exhaust ducting for your installation. **VortX engineers will discuss options with your HVAC engineer and provide a free review of your stack design to assure optimal performance of your roaster and EcoFilter**
  - b. Employ an electrician familiar with local codes to bring power to the pump; please follow specifications in the Pump Maker Manual located in the pump carton and be sure to attach an earth-ground to the grounding lug located on the leg of the cyclone.
  - c. You can connect the inlet and outlet valves using hoses or hard plumbing
  - d. VortX can also recommend a VortX-certified service company to install your EcoFilter

## VORTX STANDARD EQUIPMENT WARRANTY

### General Warranty

For a period of one (1) year after equipment is delivered, VortX KleanAir Systems Inc. (“Seller”) warrants the EcoFilter™ shall be free from defects in material and workmanship.

### Remedies

Seller’s sole obligations and the buyer’s exclusive remedies with respect to goods determined to be defective shall be limited to repair or replacement at Seller’s option.

Replacement may constitute, at Seller’s option, a new, refurbished or functionally equivalent item. Seller will reimburse the buyer for the cost of returning to Seller the item covered under this Warranty if Seller requests the return. When the buyer notifies VortX (or its sale representative) of a defect covered by this Warranty, a replacement item or replacement parts will be shipped the next business day, if such item or parts are in stock. If that item or those parts are not in stock, it or they will be shipped within one business day of VortX’s receipt of them, or drop-shipped to the buyer.

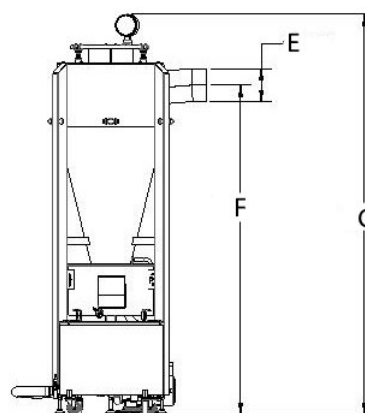
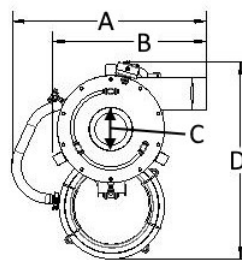
### Your Obligations

This warranty is expressly conditioned on the buyer’s obligation to complete installation according to a plan approved by VortX and perform regular maintenance on and care for any equipment and supplies in accordance with the EcoFilter User Guide, a copy of which the buyer acknowledges receiving and to which the buyer agrees to be bound. If the buyer does not comply with such instructions and that failure results in damage, the buyer shall bear the full cost of necessary repair.

**SELLER’S WARRANTY IS EXCLUSIVE, AND SELLER DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.**

## INSTALLATION LAYOUT

Dimension	EF-450	EF-800
A	36" 90 cm	42" 107 cm
B	28" 70 cm	35" 90 cm
C	8" OD 20 cm	10" OD 25 cm
D	36" 90 cm	36" 90 cm
E	6" OD 152.4 mm	8" OD 203.2 mm
F	60" 152 cm	66" 167 cm
G	73" 185 cm	80" 203 cm
WEIGHT IN CRATE	363 LB 165 Kg	420 LB 190 Kg



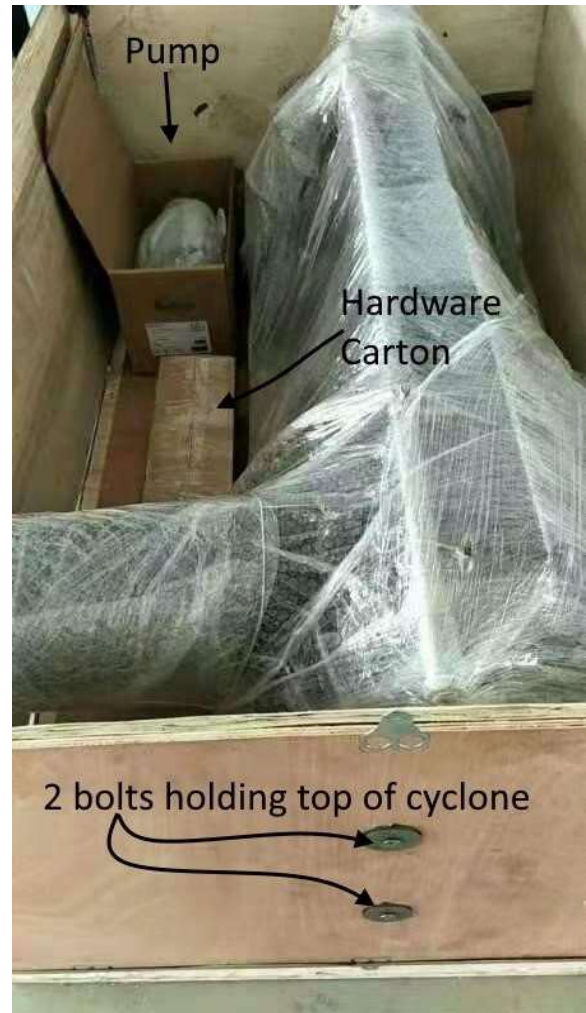
The EcoFilter pictured above shows a **right-hand inlet** stack; optional left-hand inlet is available.

Please respect all local building and safety codes for clearance to combustibles and access to the VortX for emptying the chaff sieve and main filter, as well as access for hoses for both the water supply and drainage of wastewater. When VortX is operating to specification, the air inside the cyclone exhaust stack should be  $\leq 120$  F.

A qualified electrician must follow local safety codes and Pump Maker Operations Manual Guidelines included with pump to bring power to the pump motor. In addition to bringing power safely to the pump motor, the cyclone must be properly tied to an earth ground via the grounding lug on the cyclone leg.

Optimal performance of your VortX requires laminar air flow of a volume sufficient to generate the required vorticity inside the cyclone. We recommend you have your ducting plans prepared by an HVAC or Chimney Specialist, and then have those plans reviewed by VortX to assure minimal air turbulence going into the VortX and adequate air volume into the cyclone to create the vorticity necessary for separation of contaminants from the exhaust air. The VortX process produces steam, some of which will condense inside the stack and run downhill. We recommend the use of positive pressure ducting and water-tight connections.

## UNCRATING



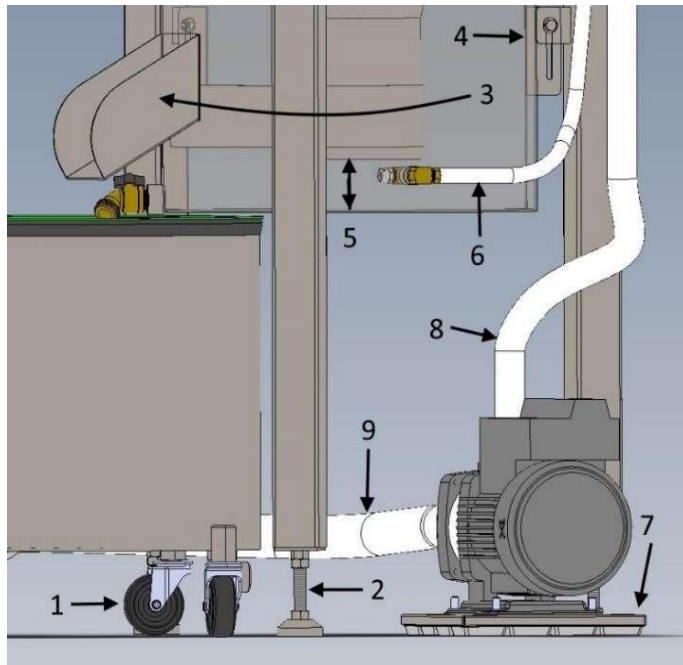
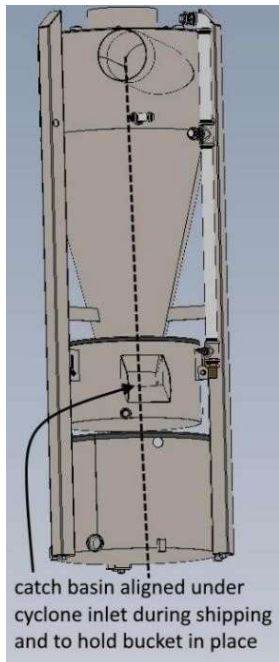
Bend up metal tabs holding lid onto crate walls, remove lid. Remove 2 bolts holding mounting flange which holds top of cyclone in place and lower cyclone to crate floor. Remove 3 bolts holding 3 legs of cyclone in place and lower cyclone to crate floor. Remove 4 vertical sides to expose contents. Cut open stretch wrap and remove filter bucket and filters from between the cyclone's legs.

Open hardware carton, locate 3 leveling feet and insert into bottom of cyclone legs. There is about 3" of height adjustment using these feet. Install feet and tilt cyclone upright.

- 3 Leveling feet for cyclone
- 4 locking casters for filter bucket
- 3 hose barbs
- Suction hose

- Pressure Gauge
- Stack Thermometer
- Braided SS hoses for catch basin and pump
- Mounting pad for pump (steel & rubber)

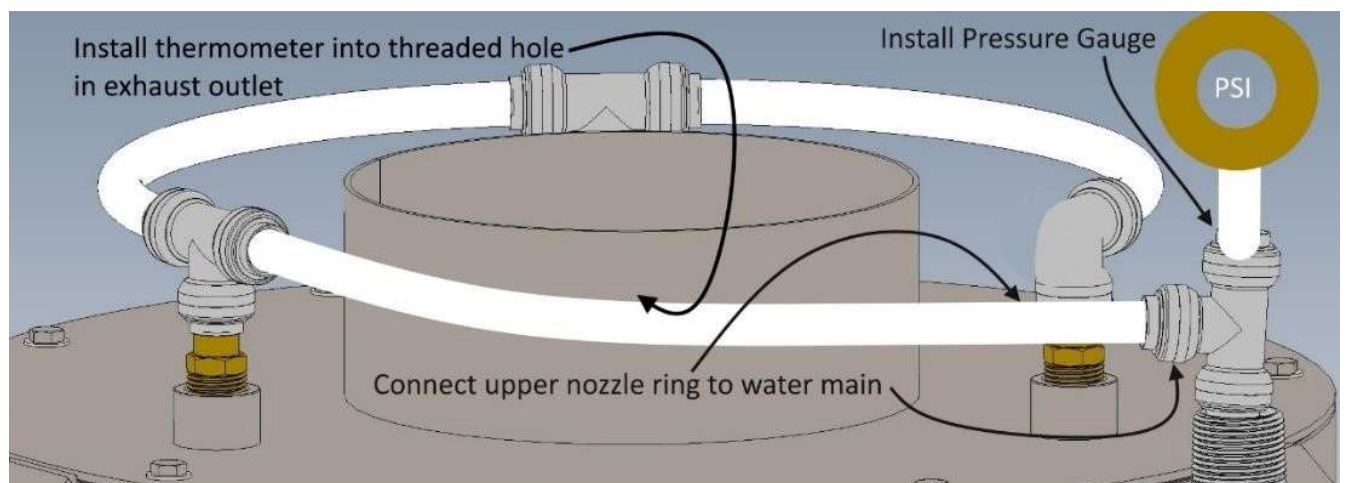
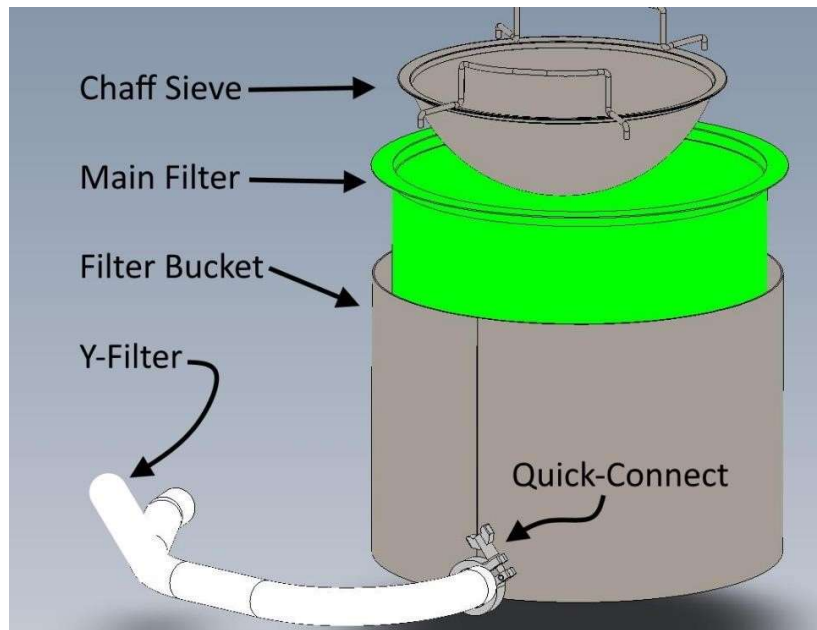
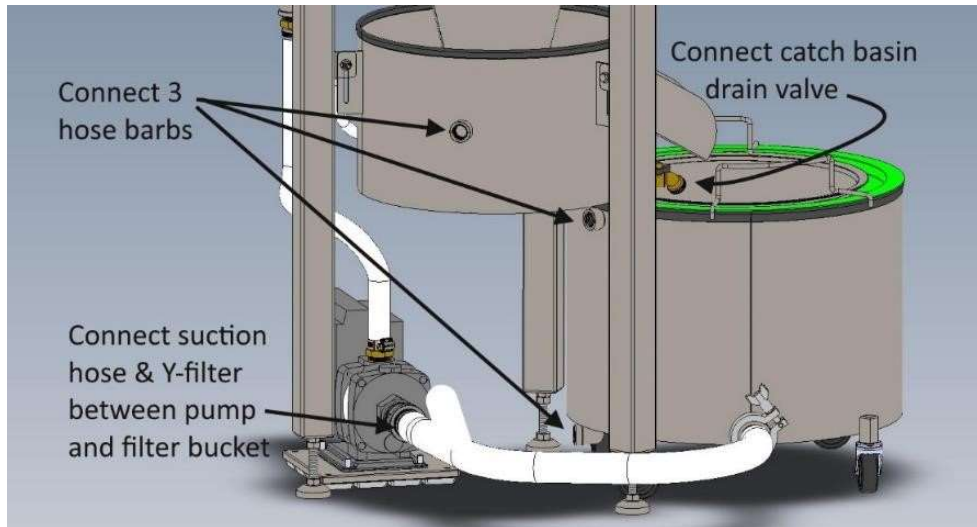
## ASSEMBLY



1. Install 4 casters on filter bucket
2. Install 3 leveling feet on cyclone legs; leave about 3 inch of thread exposed on each leg
3. Mount catch basin with the spillway between any pair of legs in the direction you prefer; catch basin will normally be mounted in its lowest position in the slots of the mounting tabs
4. Catch basin normally mounted in lowest position in slots with spillway facing away from the inlet stack. There should be a 2 inch gap between cyclone's bottom outlet and catch basin. If the filter bucket will not roll under the bottom of the catch basin, then raise the cyclone/catch basin up using the 3 adjustable feet.
5. Connect stirring water elbow on catch basin to valve on water main using braided SS hose
6. Assemble heavy steel plate and vibration pad to bottom of pump
7. Connect water main to pump outlet using braided SS hose
8. Connect filter bucket to pump inlet with suction hose plus Y-filter
9. Connect pressure gauge to top of water main, connect feeder hose from nozzles to water main tee
10. Install stack thermometer in mounting boss welded into cyclone chimney
11. Check all connections are tight, including those provided by the factory, prior to turning on pump. During shipment, plumbing connections can become loose due to vibration inside airplanes, ships and trucks.

### Electrical Connections

Refer to the Operator's Manual for the pump supplied with your order. Only allow an experienced, certified electrician to bring dedicated power (Amperage: 15; Voltage: 210-240 AC; Frequency: 50 or 60 Hz; Single Phase) to your pump. Local safety codes will dictate the type of on/off switch to be used. NB - we provide a grounding lug on one leg of the cyclone. Safe installation requires a wire from the lug to earth ground.



## INITIAL START-UP

1. Turn on water supply valve and allow water to fill catch basin and flow down the spillway into the filter bucket; fill until water is just below the chaff sieve.
2. Switch pump on; listen carefully to confirm pump has self-primed (See Pump Operators Manual). Water level in filter bucket must be checked hourly during roasting to assure adequate supply.
3. Use valve on catch basin water line to adjust flow of water to basin and pressure at the top of the water main
  - a Closed valve = highest pressure = maximum filtration & highest noise level
  - b Open valve = lowest pressure = reduced filtration & lowest noise level
  - c Experience will tell you how much pressure is required to achieve the filtration level you desire: the lower the stack temperature, the better the filtration. In all cases, keep stack temperature below 120° F
4. Remove chaff sieve, then use a plastic container to catch water flowing down spillway. Total flow should equate to about 6 to 8 gallons per minute. A 5 gallon/6 liter square container is ideal



## NORMAL DAILY OPERATION:

1. Before turning on pump, check that water level in catch basin is even with spillway and water in filter bucket touches bottom of chaff sieve. Open water supply valve as necessary
2. Turn on pump & listen to make sure pump is primed. **NEVER RUN PUMP DRY.** Allow pump to run while roaster heats up; the interior of the cyclone must be fully wetted before roasting starts and it will dry out quickly from the hot air of the roaster
3. Check main filter and chaff sieve are centered in the filter bucket and water from spillway is flowing down near the center of the chaff sieve
4. Begin roasting and monitor level of chaff in sieve. As chaff begins to fill the sieve, remove sieve and tamp the chaff out into a waste bucket; some customers use liners in the bucket
5. Evaporation of water is critical to the operation of VortX; if you are roasting continuously, check water level in filter bucket hourly and top off water when it appears more than 2" below the sieve
6. Watch stack temperature probe: ideal stack temperature will be below 100° F
7. At the end of each roasting session, perform End of Day Maintenance

NB – your roaster, your roasting style, the beans you use, the inlet and outlet ducts, these all affect the filtering provided by your VortX. Please keep notes on the performance of your EcoFilter and especially as it affects your cleaning routine to discover a routine that works best for you!

## MAINTENANCE

It is imperative that you clean the water and filters at the end of each day in which you roast, whether it be one roast or 8 hours of continuous roasting. **Cleaning is easy – for consistent performance please do NOT let dirty water sit in the VortX overnight. See Daily Maintenance video for help.**

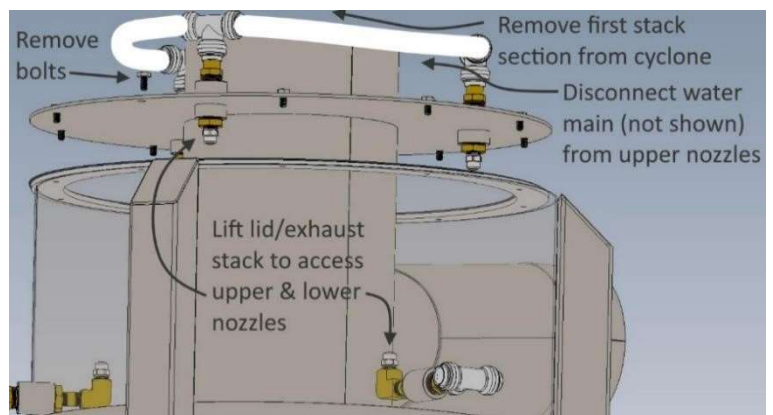
The VortX EcoFilter works best when the water can attract and hold contaminants from the air. Depending on your roast conditions, this may require you to drain dirty water and add clean water during long continuous roast sessions. Some customers chart the TDS and pH of water and use such measurements along with stack observations to determine when it is best to change out the water. If you are unsure how to determine this, please call your VortX Representative or Distributor.

### END OF EACH ROAST SESSION

- Prior to shutting off the pump, use a plastic brush or scrubber to dislodge any sludge built up on the inside wall of the catch basin or outside wall of the cyclone immersed in the water. Guide sludge down spillway and into the filter. Then shut off pump.
- Open drain valve on bottom of filter bucket to release waste water, then open drain valve on bottom of catch basin so water flows through the filter to bucket
- When water is drained out, remove chaff sieve & main filter and wash them to remove scum and rinse well. Check Y-filter cartridge regularly and clean as required; dirty Y-filters can damage a pump
- Clean any sediment in bottom of filter bucket and catch basin; a wet vac is very convenient, or a small squeegee. **Tilt bucket away from suction hose to prevent sludge from getting into pump inlet**
- Fill with clean water, add VortX Kleener, run pump for 10 minutes so clean water is in plumbing/nozzles overnight and especially for extended periods of time. Confirm water pressure and water volume are within specifications
- Based on experience, occasionally check interior of cyclone and exhaust stack for buildup of sediment/chaff.

### AS REQUIRED BY EXPERIENCE BUT AT LEAST BI-ANNUALLY

- We strongly recommend using a camera snake with a bright light pushed up from the opening at the bottom of the cyclone to check for buildup of sediment/chaff
- After cleaning the unit, use the camera snake to observe the spray patten of the nozzles to confirm they are the same
- Disconnect upper hose from water main, remove lid/stack to clean residue from stack & cyclone interior & nozzles
- Reassemble and check all plumbing and electrical connections





## TROUBLE SHOOTING

VortX highly recommends maintaining a daily operations log for your VortX to confirm settings which give you the results you need at the end of the stack. The relationship between operating parameters of the roaster, the VortX, the green coffee, the roast process and even the weather all contribute to the results at the end of your stack.

- Unusually High Smoke & Odor Emissions – check stack temperature is <120 F and ideally <100 F. If stack temperature is >120 F, then check each of the following: water pressure (adjust using the stirring nozzle valve) – volume of water flowing down spillway – blocked nozzles - interior of cyclone and ducts for blockage. Also check there is an adequate volume of air required to power the cyclone and that pressure loss in the ducting is not interfering with the system. Typical ducting plus the VortX will cause a pressure loss of anywhere from 3 inches water column up to 6 or more if the chimney is long with multiple elbows; any interference in the ducting can exacerbate the problem
- Pump is running hot – check pump is primed; check 3 filters are not clogged (Y-filter clogs easiest); check PSI for indication of blockage on pump inlet or hoses; check electrical connections
- Pump is intermittently shutting down – this is usually a sign the pump is struggling to suction water and the motor is overheating
- Water pressure is too low – usually this is because the pump is struggling to pull in water. Check water level in filter bucket is just below chaff sieve. Check Y-filter is not clogged. Check no plumbing connection is loose including nozzles inside the cyclone, allowing water to leak and preventing pump from fully pressurizing
- Water volume down spillway is too low – this can also be caused by the pump's inability to suction water from the filter bucket. It can also be a sign that plumbing including nozzles inside the cyclone are blocked. If pressure is normal to high, blockage is the usual culprit
- Noise level is objectionable – open the valve to the catch basin stirring elbow and reduce the pressure; check the stack emissions to confirm smoke and odor are sufficiently reduced
- Water is leaking from outlet ducting/chimney – a duct joint is improperly sealed. You must use positive pressure ducting
- Pump will not start – tripped breaker or loose electrical connections

***Call VortX Technical Assistance at +1-800-854-4816 or [info@vortxcleanair.com](mailto:info@vortxcleanair.com)***