ZEROWASTE® HX

SYSTEMS USER MANUAL

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AIR OUALITY LABORRATORIES

SEATTLE, WA

APRIL 2012

IMPORTANT – MAINTENANCE SCHEDULE FILTERS

The B-1 charcoal filters should be changed each 30 days. To change the filters, remove the cartridge from filter housing “A” and dispose of it in your hazardous waste drum. Move the cartridge from filter housing “B” to filter housing “A”. Place a new filter in filter housing “B” to complete changeover.

The particulate filter should also be changed at least each 90 days. Dispose of the old particulate filters in your hazardous waste drum and replace with a new particulate filter.

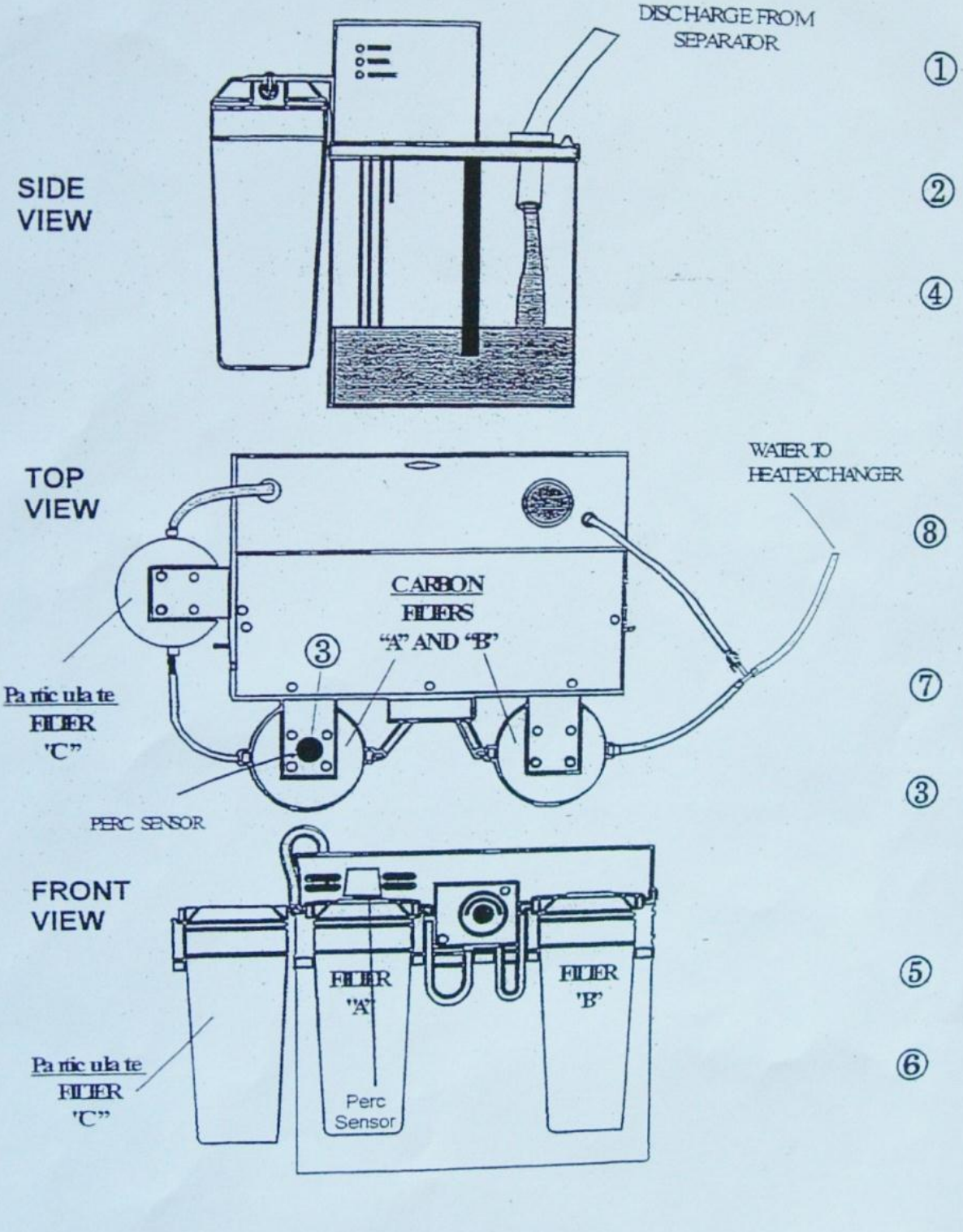
“O” RINGS Place some lubrication on the rubber “O” rings in all three filter housings. This can be Vaseline or any other bodied lubricant. This will seal against leaks.

IF THE FILTERS ARE HEAVILY CONTAMINATED WITH SOLVENT, SHORTEN THE CHANGE-OVER CYCLE AND CHECK THE DRY CLEANING MACHINE’S SEPARATOR.

FAILURE TO FOLLOW THE SCHEDULE MIGHT CAUSE ENVIROMENTAL DAMAGE AND WILL VOID YOUR WARRANTY.

ZeroWASTE HX

WATER FLOW CHART



ZEROWASTE® HX SYSTEM

Water flow chart

Description

- **All waste water enters the tank through the two inch inlet with the blue cover (1) or directly connected to the barbed fitting on lid top.**
- **When the electronic sensors(2) are in contact with the water, the pump(3) turns on**
- **The pump (3) pulls the waste water through the siphon tube (4). The water goes into the particulate filter "C", where solids are removed.**
- **From there the water will go to filter "A", where *PERC* is removed from the solution by the B-1 filter. The water enters the *PERC* sensor chamber. It is then pulled through the pump and through filter "B" (6) which has another B-1 filter.**
- **The water is now stripped of *PERC* and flows from filter "B" (6) to a tee fitting (7) in the tube which has a by-pass needle valve (8). The by-pass valve regulates the amount of water pumped to the heat exchanger (9).**

By-pass function

- **Adjusting the tee fitting (7), the water continues onto the heat exchanger. The heat exchanger boils off the water using heat from the steam line.**

ZEROWASTE® HX SYSTEM

FILTER GUARD

- **The filter guard tells the operator when filters need to be changed. This occurs when an extreme quantity of *PERC* has been pumped into filter "A".**
- **If this condition occurs, the sensor will turn off the ZEROWASTE® HX SYSTEM and the operator will be alerted to change the filters. A red light will blink on the control panel and an alarm will sound.**
- **The ZEROWASTE® HX SYSTEM will also stop operating when solvent separates from the waste water and touches the sensor in the storage tank. A red light and an alarm will tell the**

operator that there is solvent in the tank which must be drained before the unit can operate again (about 1 gallon).

ZEROWASTE® HX SYSTEM

Operation

- A red "OPERATE" light indicates that the unit is powered. Turn the power switch to ON. There is a sixty (60) second delay built into the circuitry.
- The machine will automatically sense the water level in the tank and will commence to pump until the water level is returned to the reserve level. The reserve level is about 1(one) gallon.
- A red "TANK FULL" warning light indicates when the machine is near capacity which is about 4(four) gallons. You can safely fill beyond this level but use care.

PERC SAFETY INTERLOCK

To assure that the machine is environmentally safe, it is equipped with an electronic *PERC* sensing safety interlock. When about 1(one) gallon of liquid *PERC* has accumulated in the bottom of the tank, the unit will cease pumping, and a red warning light with alarm will indicate "*PERC* IN TANK". If this condition occurs, the *PERC* must be drained from the tank. The drained off *PERC* can be put into the dry-cleaning machine for distillation and reuse.

Caution: Do not put waste water with visible quantities of *PERC* into the machine. Pure *PERC* can deteriorate parts of the system, and will shorten the filter life. If *PERC* is visible in the waste water, it should be returned to the dry-cleaning machine for distillation. Check your water separators on the dry cleaning machine to make sure they are functioning properly.

MAINTENANCE

Change filters monthly. See first page of manual for step by step instructions

CONTACT US

For technical support visit www.zerowaste.net or call 800467-3888

To order filters, parts or supplies call: (800) 467-3888.

1. **CHANGE FILTERS AT LEAST EVERY MONTH. The reason that we tell you to do this is even though the machine has a sensor built into the filter "A", a few drops of *PERC* could travel beyond filter "A" before the alarm sounds and stops the machine from pumping. When this happens, those few drops will be picked up by the "B" filter. However those few drops could shorten the life of the peristaltic pump tube which would stop the machine from functioning. If this occurs, replace the pump tube.**

2. **INSTALLING THE HEAT EXCHANGER. The heat exchanger is simply a round S.S. pipe inside a larger S.S. round pipe. You have a steam-in and a steam-out end and also "Waste Water In" and "Steam Out" on top.**

3. **CONNECTING THE WASTE WATER LINE TO THE HEAT EXCHANGER. Because the tubing from the ZEROWASTE® HX SYSTEM is made of plastic, it could melt. It is suggested that you connect a six(6) foot length of ½" inch copper tube to the heat exchanger and then put the last one (1) foot of the plastic tube into the copper tube. This way the plastic tube will get warm but not enough to melt.**

4. **The plastic tube should also extend a few feet above the copper tube. This will allow the water to drop easily into the heat exchanger and not siphon back.**

5. **<u>MOUNTING THE HEAT EXCHANGER.</u> It is a good idea to mount the heat exchanger so that there is a slight slope down from the "Waste Water In" port. A ½" inch height difference will work. This will cause the waste water to run down as it "flashes off".**

6. **When attaching the copper tube to the "Waste Water Steam Out" port, try to keep the straightest line to the exit point possible. Angles and turns cause restrictions which will decrease the efficiency of the heat exchanger. A severe restriction could cause the device to malfunction and someone could get hurt.**

7. **Insulate the "Waste Water Steam Out" ½" copper tube with a high temperature insulating material for the first ten(10) feet. Polyurethane foam and most common insulation material <u>cannot</u> take this heat. After ten(10) feet, insulate with any insulation for the rest of the run. It is wise to insulate this line so that the steam doesn't condensate and drip back to the heat exchanger. You may lose the efficiency of the unit if this happens.**

8. **<u>ODOR.</u> While the water that arrives at the heat exchanger is free of *PERC*, it still contains materials that will cause odors. Consider where the moisture came from in the first place: The clothes. What the waste water consists of is**

fatty acid, urine, vegetable juice, wine, milk etc., etc. Turning this mixture to steam can smell. It is why we never suggest that you run the heat exchanger without adding a discharge pipe to your roof line.

9. **Pipe the "Steam Out" line to the outside of the building without making a hole in your roof. Check to see if there is an unused pipe on your roof. You can even run the line up the Boiler Stack Housing.**

10. **By changing your filters frequently and wiping the probes clean you will extend the life of the machine. If the machine will not pump the water, check the first filter (particulate). If you don't have a spare particulate filter, it is okay to run the machine for a short time with no filter in this housing. Make sure to attach the bottom part of the filter housing. If you are still having a problem, the answer is either a bad pump tube or an air leak. The easiest way to check this is to remove the clear plastic tubing from filter "A" where it is marked "OUT" on the top of the housing. Put this end of the tubing into a cup of water. If it doesn't pump you probably have to replace the "pump tube. If it does pump , you have an air leak somewhere ahead of the pump. Check to see that the filter housings are tight and the "O" rings are lubricated. Call us if you are still having a problem: (800) 467-3888.**

ZEROWASTE® HX SYSTEM

CHECK LIST

[ ] MONTHLY MAINTENANCE : (Signed)_____Date:

[ ] 1. REPLACE FILTERS:

A. Replace and discard filter "A". This spent filter should be placed in your hazardous waste drum.

B. Inspect filter "B". If it appears free of *PERC* then you can Use it as a replacement for the "A" filter. Place it in the "A" filter housing.

C. Use a new B-1 filter in "B" housing.

[ ] 2. BLEED *PERC* FROM TANK YEARLY:

This *PERC* can be returned to the cleaning machine and reused.

[ ] 3. Clean the electronic probes with a soft cloth soaked in either a soap solution or isopropyl alcohol. It is very important that these probes are kept clean in order for the machine to operate

correctly. The tip end of the nylon encased probe must have a 1/8 inch of stainless steel showing. Cut back 1/8 inch of the nylon sheath to expose the probe end and polish this end with emery cloth.

[ ] 4. Inspect the first filter (Particulate). If it appears dirty, replace it. These filters last for months, and do not affect *PERC* reduction. They are used to increase the efficiency of the B-1 filters.

INSTALLING THE HEAT EXCHANGER

NOTE: It is important that the heat exchanger go in the main steam header line as close to the boiler as possible, and that it goes in series with the steam line. DO NOT INSTALL AFTER THE PRESSURE REDUCING VALVE!!!

1. Measure the length of the heat exchanger (approx. 34").

2. Cut out a length of steam header pipe equal to the length of the heat exchanger and add the measurement of both couplers.

3. Using the couplers install the heat exchanger.

4. Using ½ inch copper fittings add 6 feet of ½ copper tubing to the " Waste-In" port (furthest from boiler) to protect the plastic tubing feed line from the heat of the boiler.

5. Using ½ inch copper fittings the "steam-out" port(closest to the boiler). The ½ inch copper tubing can be fed to the roof alongside the boiler vent. Remember to insulate this line (Page 7).