

# MAINTENANCE

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General maintenance requirements depend upon the feed water quality and use of the machine. To build a proper maintenance schedule, a log sheet, as shown in the rear of this manual, should be prepared for each machine. The log sheet will contain information about feed water and RO product water. Periodic analysis of water quality and system parameters will help track the performance of the machine and indicate if any replacement parts are needed. Additionally, the log sheet will track replacement dates of any components, system repairs, or comments concerning operation.

The following schedule is a "Rule-of-Thumb" guide to performing general maintenance and service on the water vending machines. For additional maintenance information addressed in the schedule below, please refer to the appropriate sections in the manual.

## **TESTING GROUND FAULT CIRCUIT INTERRUPTER (GFCI) DUPLEX RECEPTACLE AND POWER CORD**

Push in test button, GFCI will trip and machine power is shut OFF. Push reset button firmly in to reset GFCI, power is restored to machine.

If GFCI fails to trip or reset properly, **DO NOT USE**. Call a qualified electrician.

## **MAINTENANCE SCHEDULE**

### **Daily**

- Clean and disinfect the customer contact surfaces.
- Clean exterior of cabinet.
- Check the machine for good working order.

### **Weekly Or Monthly or Bi-Monthly**

- Clean and disinfect the drain tank (See Cleaning-Sterilization Section).

- Measure and record the TDS of the feed and RO product water (See Measuring TDS Section).
- When any of the above TDS readings are out of specification, perform required service to bring them back to normal. (See Reverse Osmosis Maintenance Section).
- Test and record the chlorine level after the chlorine removal filter. Use the sample valve on filter to collect sample. The carbon filter must be replaced when the residual free chlorine approaches 0.1 ppm maximum. Free chlorine will destroy the membrane (See Filter Maintenance and Measuring Chlorine Section).
- Check filters, replace if dirty.
- Log pressure gauge readings.
- Check softener salt tank level (where applicable).
- Test Ground Fault Circuit Interrupter (GFCI) duplex receptacle and power cord.

### **90 Days**

- Replace the chlorine removal carbon filter.
- Replace the post-carbon filter.
- Replace the sediment filter.
- Coliform test.

**NOTE: Must conform to all state and local regulations**

### **6 Months**

- Test UV bulb intensity or replace bulb.
- Check UV Quartz Sleeve and clean if necessary.

### **Yearly**

- Replace UV bulb
- Clean UV Quartz Sleeve

## Periodic (As Required)

- Sterilization as required.
- Reverse osmosis membrane replacement for cleaning. When drinking water TDS rises to more than 10% of the feed water TDS (See measuring TDS).

**NOTE: Water quality must conform to all state and local regulations.**



**CAUTION: Your actual maintenance schedule may vary according to water quality, machine usage, and must conform to all state and local requirements. Please adjust the maintenance schedule to best suit your needs. However, for any filter replacement please do not exceed the maximum period of time or volume of water recommended for their respective replacement.**

## FILTER MAINTENANCE

**NOTE: Coster Water recommends frequent replacement of the prefilters in order to minimize any possible fouling of the reverse osmosis element. It is Coster Water's belief that such replacements will save you money in membrane replacement in the long run.**

### General

The following points should be observed when changing filters.

1. Filter housings are to be screwed on only hand tight.
2. Relieve line pressure before attempting to unscrew filter housing.
3. Unscrew filter cartridge housing (counter clockwise) by hand.
4. Discard old filter.
5. Clean filter housing and rinse with clean water.

**NOTE: If the interior of the filter housing gets slimy, a cleaning and disinfection will be required. (See Sterilization Section).**

6. Insert new cartridge.

Make sure cartridge filter is lined up on top and bottom posts before screwing cartridge housing tight.

7. Replace cartridge housing.

Check to make sure o-ring is clean, properly seated and lubricated before assembling filter housing. Hand tighten, check for leaks.

**NOTE: Use only food grade grease for lubrication.**

### Sediment Filter

This filter catches any of the sediment in the feed water. It should be inspected and changed according to the maintenance schedule. The frequency of changes can be adjusted according to the appearance of the interior of the sediment filter.

### Pre-Carbon Filter (Feed Filter) (CBC Carbon Briquette)

This filter removes chlorine before the feed water is fed to the membrane. With sediment filter installed always flush a new filter using sample port until water runs clear with no visible trace of carbon fines.

**NOTE: Free Chlorine will attack the membrane, destroying the membrane's ability to reject contaminants. Carbon filters must be replaced when the residual free chlorine approaches 0.1 ppm maximum. Test for free chlorine using 'low range' 0-7 mg/l test kit instructions, if available. If feed chlorine levels are unusually high (greater than 1.0 ppm) additional carbon pretreatment devices may be required.**

### Post Carbon Filter (Product Water)

The post carbon filter is for the removal of any remaining tastes and odors from the dispensed water. This also must be changed according to the maintenance schedule.

**NOTE: Position a large open container under the 10" post-carbon filter on door when changing. This will reduce time spent cleaning up drain down water spillage on floor.**

FILTER CHANGE SCHEDULE			
	<u>Check/ Test</u>	<u>Replacement</u>	<u>Max Time</u>
Pre Carbon	1-2 weeks	As required/ 1500 gal.	90 days
Sediment	1-2 weeks	As required	90 days
Post Carbon	-----	3000 gal.	90 days
Storage Tank Air Filter (Open Tank Only)	1-2 weeks	-----	12 months

### R.O. MAINTENANCE

#### Reverse Osmosis Membrane Performance

R.O. membranes will eventually get fouled, decreasing membrane performance. When an R.O. membrane no longer produces acceptable product water flow or quality, it will need to be replaced. Completing the following steps in accordance with the maintenance schedule will help determine when replacement is necessary.

1. Vend one (1) gallon of drinking (reverse osmosis) water. Discard
2. Vend another gallon of drinking (reverse osmosis) water.
3. Take a TDS reading with your TDS meter. (See measuring TDS).

**NOTE: Make sure readings have been temperature compensated.**

4. Collect a sample of the feed water through the sample port located directly after pre- filters.

**NOTE: If the machine is not charging, then vend two (2) gallons of water. This will start the charging cycle and enable you to collect a feed water sample.**

5. Take a TDS reading:
6. Calculate rejection of the minerals with the following formula:

$$\text{Rejection \%} = \frac{\text{TDS (Feed Water)} - \text{TDS (Product Water)}}{\text{TDS (Feed Water)}} \times 100$$

7. Compare current rejection reading with the first entry on the log sheet.
- If the vending machine is running on unsoftened water, then a 10% drop in rejection indicates membrane needs replacement.
  - If the vending machine is running on softened water, then a 15% drop in rejection can be tolerated before cleaning.

**NOTE: If any valves have been adjusted or membrane replaced since installation, then the rejection comparisons must be made with the TDS values obtained after these adjustments.**

### UV LIGHT MAINTENANCE



**WARNING: Ultraviolet light given off by the UV lamp can cause serious burns to unprotected eyes. Do not operate ultraviolet lamp when is removed from the UV chamber and never look directly into the cell's ports while the unit is in operation. UV radiation may, even in small doses, cause harm to the eyes and skin.**



**WARNING: When testing UV intensity, always wear UV safety goggles. Exposure may result in irreversible eye damage. (Contact Coster Water additional more information).**



**WARNING:** Cover all exposed skin surfaces or skin damage may result. Perform test during closed or quiet times. Keep all unprotected persons away from direct view of the UV lamp.



**IMPORTANT:** A dirty quartz sleeve will reduce UV light transmission to the water and reduce disinfection performance of the UV light. When feeding a UV light with water containing higher mineral content than RO water, such as alkaline water, the Quartz Sleeve coating buildup is accelerated and requires more frequent cleaning. Initially, check sleeve monthly or bimonthly and adjust cleaning procedure to suit the type of water that you are vending. Refer to vending machine operators manual and UV light manufacturer operators manual quartz sleeve cleaning instructions.

### **TESTING LAMP INTENSITY/REPLACEMENT**

Option 1. Replace UV Lamp every 6 months of use.

Option 2. Test at 6 months and replace every 12 months of use. A minimum intensity level of 16,000 UWs/cm<sup>2</sup> at 254 nm wave length shall be maintained for the life of the lamp.

Readings are obtained with a commercially available portable UV intensity meter. Consult Coster Water for recommended meter type. Follow all instructions and safety procedures included with meter.

An LED monitor located on the side of the UV assembly will indicate whether the UV bulb is illuminated. If this monitor light is not on, it will prevent the machine from dispensing water.

If the LED monitor goes out, shut off water supply to sterilizer immediately and disconnect power supply. Replace UV lamp with a new one by following installation directions. Regularly inspect the unit to ensure that the monitor light is still glowing.

### **QUARTZ JACKET CLEANING/ REPLACEMENT**

1. Disconnect power to vending machine.
2. Shut off the water supply.
3. Remove UV chamber from mounting clamps.
4. Disconnect the lamp connector at the end of the UV chamber and remove lamp from chamber.
5. Remove Quartz Sleeve as follows:
  - a. Unscrew retaining nuts, remove floating spring, and carefully slide sleeve out of UV chamber.
  - b. Clean sleeve with vinegar or some other mild acidic solution, then rinse with water.
  - c. Clean and lubricate O-rings with food grade lubricant or replace with new O-rings.
6. Reinstall Quartz Sleeve in UV chamber as follows. **NOTE:** Be sure no marks or fingerprints are on sleeve or lamp.
  - a. Position sleeve in chamber allowing sleeve to protrude an equal distance at both ends of chamber.
  - b. Slide O-rings onto each end of sleeve.
  - c. Reinstall retaining nuts and floating spring. Note: Hand tighten retaining nuts only.



**IMPORTANT: Glass Quartz Sleeve is fragile, hand tighten nuts only.**

7. Install UV lamp, lamp connector, and secure UV chamber in mounting clamps.
8. Test the unit by plugging it into the electrical outlet. The indicator light on the side of the housing should glow steadily within a few seconds. If the light does not come on or continue to glow steadily, check lamp electrical connection. Replace lamp if necessary.

9. Turn on water supply and check all connections for leaks. Allow the water to run for a few minutes to clear out any air or dust that may be in the cell.

### **CLEANING - STERILIZATION** **CUSTOMER CONTACT SURFACES**

Cleaning and disinfecting of the customer contact surfaces must conform to state and local codes. However, it is recommended that daily cleaning and disinfecting of the customer contact surfaces be performed.

The customer contact surfaces of the machine are the dispenser housing and nozzle. The following steps outline their cleaning and disinfection procedure.

1. Wash off any dirt or debris in or around the dispenser housing and dispensing nozzle with a mild detergent solution. Rinse with clean water.
2. Spray a chlorine based disinfecting solution at 100 ppm onto the dispenser housing and nozzle. Allow to air dry.

**NOTE: Prepare 100 ppm chlorine based cleaning solution as follows:**

**- Mix one (1) Tablespoon standard household bleach containing 5.25% sodium hypochlorite with one (1) gallon clean R.O. water (or other low TDS water).**

**NOTE: Stronger more concentrated solutions of chlorine may cause rusting and damage to stainless steel and other components.**

### **PLUMBING**

This procedure should be used if a bacterial contamination is suspected in the machine. Bacteria may grow in the machine if it is taken out of service and stored. This growth can sometimes occur in a one to two week period depending upon the conditions. No matter the cause, if you suspect bacterial contamination of a vending machine, this contamination should be eliminated through the following sanitization procedure.

1. The following materials will be needed for the disinfection of the plumbing system.
  - Two (2) 5 gallon pails.
  - 6 to 9 pints of 3% hydrogen peroxide.
2. Obtain potable drinking water in two (2) five gallon pails.
3. Add 3 pints of a 3% hydrogen peroxide solution to the water in each pail.
4. Discard all filters.
5. Disconnect water inlet on rear of unit.
6. Fill all plumbing, filter housings and UV light with disinfection solution by use of gravity or a portable feed pump.
7. Allow the sterilization solution to set for 3 to 12 hours. The longer the time, the greater the killing effectiveness of the sterilization solution.
8. Flush all sterilization solution from machine by reconnecting inlet and holding vend button.



**CAUTION: Run sufficient water to ensure total flushing of unit.**

9. Install new filters.

### **Auxiliary RO Product Port Bladder Tank Air Pre-Charge**

Check Tank Air Pre-Charge at 6 Months, Minimum

- Step 1. Remove electrical power to unit, (unplug).
- Step 2. Open outlet and drain water from tank.
- Step 3. Measure tank air pressure at Schrader valve. Add compressed air to maintain 25-30 psi. Note: Tank will discharge water when adding air.
- Step 4. Reconnect tank outlet. Restore power.