GENERAL MAINTENANCE

General maintenance depends 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 feedwater and product (permeate) water quality. Periodic analysis of water quality and system parameters; flow rate and pressure readings, 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 unit. For additional maintenance information addressed in the schedule below, please refer to the appropriate sections in the manual.

MAINTENANCE SCHEDULE

Daily

- Check the machine for proper working order. Fix any leaks immediately.

- Maintain unit cleanliness.

  IMPORTANT: To reduce rust, Do Not use Carbon Steel Wire Brushes or devices to clean stainless frame or vessels. Clean with soap and water and plastic (non-metallic) abrasives and brushes. Lightly coat stainless with WD-40 or equivalent spray lubricant suitable for location.

Weekly

- Test and record the chlorine level after the precarbon filter. Use the test cock on prefilters to collect the 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).

- Log sheet readings on a weekly basis are completed for more critical operations. Frequency to be determined by customer/owner.

Weekly Or Bimonthly

- Check the 10" sediment filter, replace if dirty. Replace the filter when pressure drop approaches 15-20 psi maximum.

- Check machine for leaks or damage.

- Check salt tank level (where applicable).

3 Months

- Coliform test.

  NOTE: Must conform to all state and local regulations regarding frequency.

6 Months

- Test UV light (If equipped).

Periodic (As Required)

- Sterilization as required.

  NOTE: Must conform to all state and local regulations.

- Clean exterior of unit.

IMPORTANT: Your actual maintenance schedule may vary according to water quality, machine usage, and must conform to all federal, state and local requirements. Please adjust the maintenance schedule as required. 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 Engineering recommends frequent replacement of the prefilters in order to minimize any possible fouling of the reverse osmosis element. It is Coster Engineering'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. Close inlet valve. Relieve line pressure by opening sample port.

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.

IMPORTANT: Always flush carbon fines from a new filter using sample port until water runs clear. Carbon fines can damage the RO membrane.

NOTE: Use only food grade grease for lubrication.

Sediment Filter

This filter catches any of the sediment in the feed water. It also prevents any carbon fines from getting through to the membrane. 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 (Optional)

This filter removes chlorine and other volatile organics 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: Chlorine will attack the membrane, destroying the membrane and it's ability to reject contaminants. Filters must be replaced when the residual free chlorine approaches 0.1 ppm maximum. Test for free chlorine using "low range" 0-.7 mg/1 test kit instructions.

Change Schedule

Pre Carbon

- Checked or Replaced: Daily/Weekly
- Replacement: As required/0 to .1 ppm max free chlorine
- Max: As required

Sediment

- Checked or Replaced: 1-2 weeks
- Replacement: As required
- Max: 90 days

NOTE: Filter replacement listed is maximum amount of time period and volume. Actual replacement must be tailored to specific feed water quality.

R.O. MAINTENANCE

Reverse Osmosis Membrane Performance

1. Collect a sample of product water.

2. Take a TDS (product water) reading with your TDS meter.

3. Collect a sample of the feed water through the sample port located on prefilter.

4 Take a TDS (feed water) reading.

IMPORTANT: If feedwater quality changes, check pretreatment devices for proper function.

5. Calculate rejection of the minerals with the following formula:

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

6. Compare current rejection reading with the first entry on the log sheet.

IMPORTANT: If product flows and/or system rejection decreases, reduce recovery of system by increasing concentrate flow to drain.

Short Term Shut Down

Run the unit for 10-15 minutes daily to flush water through the system. Variables which may affect this schedule are ambient temperature and feedwater quality.

Long Term Storage

Remove membrane and immerse in a storage solution of 1.0% by weight sodium bisulfite. For freeze protection add 20% by weight propylene glycol to the storage solution.

Mixing ratio for storage/shipping solution:

1 U.S. gallon (3.79 liters) potable water
(plus)
1.3 oz (38 grams) sodium bisulfite (food grade) (biological growth reduction)
(plus)
27 fluid oz. (760 grams) Propglene Glycol (freeze protection)

UV LIGHT MAINTENANCE (Optional Equipment)

WARNING: Ultraviolet light given off by the UV lamp can cause serious burns to unprotected eyes. Never operate Ultraviolet Unit with the end cap covers removed and never look directly into the cell's ports while the unit is in operation.

WARNING: When testing UV intensity, always wear UV safety goggles (available from Coster Engineering). Exposure may result in irreversible eye damage.

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.

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/cm2 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 Engineering 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 lit. If this monitor light is not on, it will prevent the machine from dispensing water.

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

Mineral deposits and sediment can accumulate on the Quartz Jacket, decreasing UV output. Proper maintenance of filtration equipment will help prevent build-up. Mild acidic solutions, such as vinegar, can be used every 3 to 6 months to remove any lamp deposits.

Quartz Jacket Cleaning/Replacement

1. Shut off the water supply.

2. Disconnect the power supply.

3. Remove the water supply lines and allow canister to drain into a pail.

4. Disconnect the lamp connector at the end of the UV canister.

5. Remove lamp from U.V. canister.

   Unscrew the cap and gently slide the Quartz Jacket out of cell being sure not to scrape or touch the Quartz Jacket, this can cause etching. The jacket can be cleaned with a mild acidic solution; for example, common household vinegar. Replace Quartz Jacket if necessary.

   Clean and grease o-rings with food grade lubricant before reinstalling.

NOTE: Be sure there are not marks or fingerprints on the UV lamp or Quartz Jacket.

6. Install end cap covers and the retaining nuts.

WARNING: Replace immediately any damaged or missing end cap covers or shields, to protect against UV leakage.

7. 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 to see if the cell is properly installed with the lamp holders securely fastened to the lamp pins. When operating, a blue light will emanate from the water ports. NEVER LOOK DIRECTLY INTO THE PORTS!!

8. Unplug the power line and continue the plumbing connections. A couple of turns around the port threads with a teflon tape or similar pipe thread sealant will ensure that no water can leak. DO NOT use a permanent sealant material, since the cell will need to be replaced at a future date. REMEMBER, THE BOTTOM PORT IS THE INLET AND THE TOP PORT IS THE OUTLET. DO NOT REVERSE!

9. When all connections have been made, turn on the water and check all connections for leaks. The end cap should be checked prior to any water leak testing when installing or maintaining the unit. Please note, the end cap should be firmly “hand tightened” only. If all connections are water tight, plug in the electrical connection and check to see that the LED monitor is glowing brightly.

10. Allow the water to run for a few minutes to clear out any air or dust that may be in the cell.

    Lamp replacement is determined by intensity reading (See previous section) or 12 months of operation whichever comes first.