



WELCOMES YOU TO SUGARING WITH THE *RO CLEANING KIT*

The *RO Cleaning Kit* you've just received is perfect for maintaining your *Sugar Cube ZB* or other hobby-sized reverse osmosis machine. Your kit contains:

- 1.5 lbs. of food-safe, Sodium Hydroxide RO Soap, AND
- A pack of PH testing strips.

Notes on Maintaining your RO

The filters inside your RO have varying life expectancies; sediment and reverse osmosis filters have a limited lifespan.

Many factors, including sugar concentration, sap quality, temperature, and time, can affect the replacement cadence for sediment and reverse osmosis membranes. Here are some general guidelines for how frequently you should replace your sediment and reverse osmosis filters:

Sediment Filters – While sediment filters are designed to be a single use filter, if adequately flushed and refrigerated between uses, sediment filters can last for a week or more. Sediment filters usually need to be discarded due to bacterial growth; discolored filters or filters with an off smell should be discarded no matter how long they have been used. If processing large amounts of sap continuously, change your sediment filter every 300 gallons.

Reverse Osmosis Filters – Reverse Osmosis filters can be used for up to two years if properly cared for per the below.

When and How to Use your *RO Cleaning Kit*

Leaving residual sap in your RO can result in a fouling of the system, producing off-flavors, inefficient processing and potentially mold and bacteria growth. After each use, you'll want to flush the system with clean

water, and, if the unit is not going to be used for an extended period and at the end of the season, thorough cleaning is necessary.

You need to use your RO Cleaning Kit if you aren't going to use your RO for an extended period, at the end of the season, or if your RO has been poorly maintained and there has been a fouling of the system. (Don't panic. It happens!)

1. If you aren't going to use your RO for an extended period:

- a. Remove your intake (ZB: white) hose from the sap container and allow the unit to "run dry" (the hose out of which sap concentrate flows (ZB: blue) will be blowing air).
- b. Remove the sediment filter, empty the contents of the filter housing, and install a new sediment filter. Reinstall the filter housing. Save the old sediment filter in the refrigerator for future use concentrating sap. (You will save the second sediment filter in the refrigerator and use it only when flushing your RO.)
- c. Put the loose end of the intake (ZB: white) hose into a 5-gallon bucket of permeate/clean water. **Do not use municipal water or water containing chlorine.** Open the needle valve on the sap concentrate hose (ZB: blue) completely (so that no water comes out of the hose out of which permeate water flows (ZB: red). Run approximately one gallon of the water through the RO, discarding the approximate gallon of water into another bucket as you go. Then, put the loose end of the sap concentrate (ZB: blue) hose into the clean bucket of water and let the remaining 4 gallons of water continuously circulate through the RO for 15 minutes.
- d. After 15 minutes, remove the intake (ZB: white) hose from the bucket of clean water. Allow the RO to "run dry" (the sap concentrate (ZB: blue) hose will be blowing air). Discard the 4 gallons of clean water. (It is no longer "clean" for purposes of flushing your unit.)
- e. Place the intake (ZB: white) hose into a NEW 5-gallon bucket of permeate/clean water (**Do not use municipal water or water containing chlorine.**) and let it run through the unit. Unplug the unit before it runs dry.
- f. Remove the new sediment filter from the filter housing, empty the housing of water, and leave it open until the next use. Save the new sediment filter in the refrigerator for future use flushing the *Sugar Cube ZB*.
- g. Keep your *Sugar Cube* in a cool, dry place. DO NOT allow it to FREEZE.

2. After each use if you aren't going to use the unit again for more than a week:

- a. Flush the *Sugar Cube ZB* according to the directions in #1, above.
- b. Once per week, run 5 gallons of permeate/clean water through the unit using the sediment filter you have reserved for flushing. **Do not use municipal water or water containing chlorine.**

3. After the last use of the season:

- a. Flush the *Sugar Cube ZB* according to the directions in #1, above.
- b. Prepare two gallons of permeate/clean water. **Do not use municipal water or water containing chlorine.** Heat to 105-115 degrees Fahrenheit. DO NOT OVERHEAT; HOTTER TEMPERATURES COULD CAUSE AN EXPLOSIVE LEAK IN YOUR UNIT. Dissolve 1 teaspoon of RO Soap from your *RO Cleaning Kit* in the water at a time until the PH of the solution is approximately 11. This should take 1 to 3 teaspoons; the amount you need to use will

depend upon the acidity of the water you are using. Recirculate the solution through the *Sugar Cube ZB* for 15 minutes by placing both the sap intake (*ZB*: white) and sap concentrate (*ZB*: blue) hoses in the gallon of solution. (Nothing should be coming out of the permeate (*ZB*: red) hose.)

- c. After 15 minutes, check the PH and temperature of the solution. If it has cooled below 100 degrees, heat it back up to 105-115. If the PH has dropped significantly, add some more RO soap until the PH of the solution is back up to 11.
- d. Recirculate the solution for another 15 minutes, turn the unit off and let it sit for at least a few hours and up to a day.
- e. Pull the sap intake (*ZB*: white) hose out of the solution and allow the unit to run dry. Insert the sap intake (*ZB*: white) hose into a 5-gallon bucket of clean water and rinse the system for 2 minutes, discarding the water as you go (do not recirculate). **Do not use municipal water or water containing chlorine.** Remove the sediment filter and reverse osmosis filter. Discard the season's sediment filters. You may save the reverse osmosis filter in your refrigerator for a second year of use.
- f. Disconnect the intake, sap concentrate and permeate hoses from your RO and hang or use compressed air to dry. Wipe out any liquid inside and outside your RO
- g. Store your RO in a cool, dry place. DO NOT allow it to FREEZE.

Next Season:

- You will need 20-30 gallons of clean water. This can be well water, permeate water, distilled water or spring water. **Do not use municipal water or water containing chlorine.**
- Place the loose end of the sap intake (*ZB*: white) hose into a bucket of clean water.
- Put the loose end of the sap concentrate (*ZB*: blue) hose into a second bucket (or wherever you prefer to dispose of water after it runs through the system).
- Put the loose end of the permeate (*ZB*: red) hose into the bucket of clean water.
- Plug your RO into a power source. Let your RO run until the PH of the water discharged through the sap concentrate (*ZB*: blue) hose is 7.

If you have improperly maintained your *Sugar Cube ZB*:

- Don't panic!
- Follow the instructions for "After the last use of the season," above, followed by the instructions for "Next Season" below that.
- Carry on!