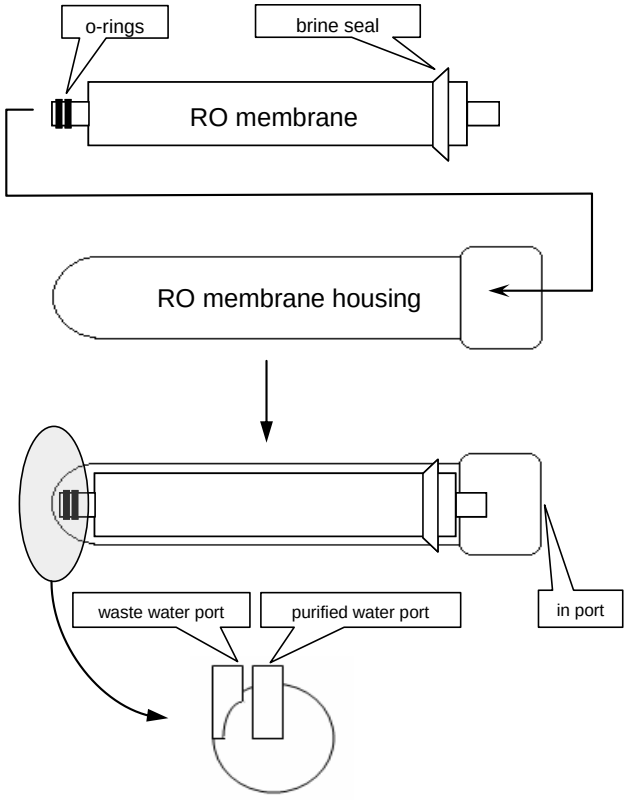
Understanding and Operating Your New Reverse Osmosis System

Congratulations on your purchase of a water purification system from Buckeye Hydro – you've made the right choice! Carefully remove all parts from the shipping box. Identify your sediment cartridge (already installed in right housing), carbon block cartridge (already installed in the left housing), RO membrane, sediment housing "in" port, drain saddle, tubing, flush valve and pressure gauge (Premium Series systems only).

Securely mount your system using the mounting holes on the back of the mounting bracket. Mount the system out of direct sunlight in a location protected from temperatures below freezing and above 100°F.

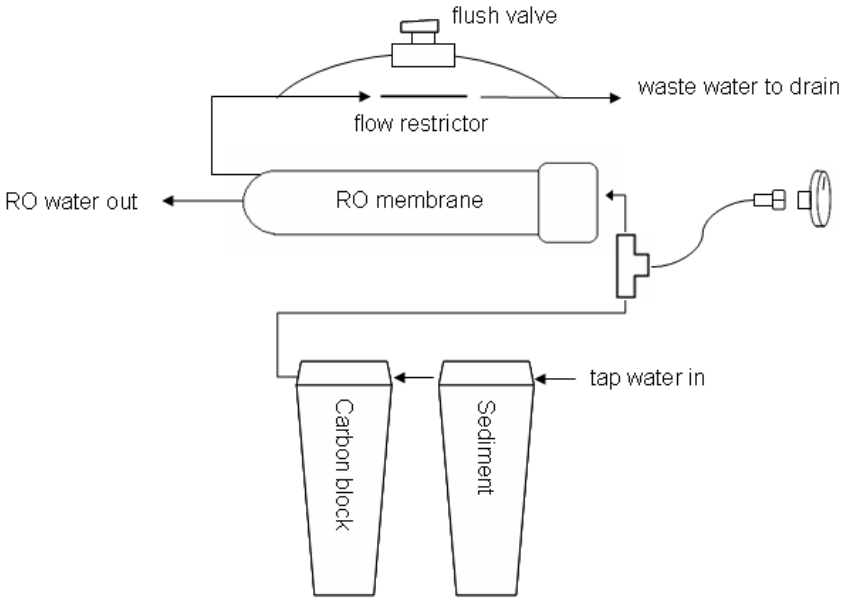
Once the system is mounted, you'll note two vertical housings below the white metal bracket. To prepare your system for operation:

1. Unscrew the sump on the right, and insert your sediment cartridge. Screw the sump back onto lid. Your sediment cartridge may already be installed.
2. Unscrew the sump on the left, and insert your carbon block cartridge. Screw the sump back onto lid. Your carbon block may already be installed.
3. Attach the ¼" blue water supply tube to the quick connect fitting in the lid (marked "in") on the sediment cartridge housing. Don't turn the water on yet!
4. Identify the white, horizontal RO membrane housing above the mounting bracket.
5. On the left-hand end of the RO housing, locate the two quick connect fittings (elbows).
   - The permeate port (i.e., the purified water) is near the center of the end of the housing.
   - The waste water port is near the edge of the RO housing.



6. Connected to the wastewater port you will find a flow restrictor (inside the yellow tube), or a flow restrictor and a flush valve. If you purchased a Premium Series RO, connect the length of yellow tubing to the open port on the flush valve assembly. A drain saddle is provided with your system. Route the yellow tube to a drain, or to the drain saddle installed high on a vertical drain pipe under a sink – select a location away from a dishwasher or disposal drain. After identifying the correct position of the drain saddle, drill a ¼-inch hole through one side of the vertical drain pipe. Center the gasket on the hole and tighten the drain saddle bolts. Insert the yellow tubing into the drain saddle.

7. If you purchased a Premium System, open the flush valve (place the handle of the valve parallel to the tubing. Wastewater will flow from the yellow tube when your RO system is on.



8. Connect the length of white tubing to the permeate port on the RO housing. Temporarily route this tubing to a drain or large bucket. It is from this tube that your purified water will flow.

9. Turn on the supply water to the unit and allow water to flow through the sediment filter, through the carbon block, into the horizontal empty RO membrane housing, and out the waste line and purified water line. Check the system for leaks. Allow the carbon block to rinse for 10 minutes. Turn off the water supply to the unit.

10. Remove the RO membrane housing from its mounting clips.

11. On the end of the RO housing that unscrews, locate the single quick connect fitting. This is the RO housing supply ("in") port. Disconnect the tubing from the quick connect fitting by depressing the collar on the fitting with your thumbnail and pulling the tubing. The tubing will come out easily if the collar is fully depressed and the system is un-pressurized.

12. Unscrew the end of the RO housing.

13. Insert your new RO membrane into the housing, with the double o-ring end first. Push the membrane in firmly to seat the o-rings.

14. Replace the screw-on lid to the RO housing.

15. Replace the RO housing into its clips.

16. Replace the tubing into the quick-connect fitting on the RO housing "in" port.

Buckeye Field Supply is not responsible for any damage caused by leaks. *The user bears full responsibility to assure the RO system is not leaking.*

17. With all tubing secured as described above, turn the water supply on. Immediately check for leaks.
18. Allow the system to produce 3 gallons of permeate (purified water). Discard this water.
19. Your system is now ready for use.

Additional Notes

Your reverse osmosis membrane capacity (in gallons of permeate produced per day, or gpd) was rated with supply water at 250 ppm total dissolved solids (TDS) at 77°F and 50 psi pressure for 50, 75, and 100 gpd membranes; and 550 ppm total dissolved solids (TDS) at 77°F and 65 psi pressure for 150 gpd membranes. Colder water and/or lower pressure will reduce the permeate your system produces. Low pressure can be corrected with a booster pump.

Don't run your system with supply water exceeding 100°F or 80 psi.

If you shut off the flow of permeate with a valve, you'll note waste water continues to flow. To stop the waste water flow, shut off supply water to the unit. If you'd prefer the supply water to the unit to remain on, install an automatic shut off valve and check valve to stop the flow of waste water.

If you purchased a Premium Series unit and would like to flush the RO membrane and housing, open the blue-handled ball valve, and allow water to rush through the waste line - you'll note that when the flush valve is open, water bypasses the flow restrictor (located inside the blue tube next to the valve). This action will flush deposits from your membrane and from within the housing. Flush for approximately 30 seconds. Ideally, flush the RO each time you shut off flow through the unit. If that's not practical, once a week is better than once a month, and once a month is better than once a year.

Premium Series systems are equipped with a pressure gauge. Make a note of the pressure while the system is running while your system is new. Check the pressure periodically. Reduced pressure reaching the RO membrane is a symptom of clogging prefilters.

Premium Series systems come with a 1 micron sediment filter and 0.5 micron, 20,000 gallon carbon block. Value Series systems come with a 5 micron sediment filter and 5 micron, 6,000 gallon carbon block.

Replacing Prefilters The sediment filter and carbon block should be replaced when they clog, or after 6 months, whichever comes first. To replace the filter:

1. Turn of the water supply to the system.
2. Use the housing wrench supplied with your system to loosen the sediment filter housing. Keep a towel handy during this process.
3. Discard the old sediment filter.
4. Wash your hands thoroughly.
5. Carefully remove and retain the large black o-ring at the top of the housing. Inspect the o-ring for damage (e.g., cracks, tears, deformations).
6. Wash the inside and outside of the housing and the o-ring with warm water to which you've added soap and 2 teaspoons of bleach.
7. Thoroughly rinse the housing and o-ring with warm, chlorinated tap water.
8. Place a small dab of food grade silicone grease on the o-ring, and spread the grease over the entire o-ring using your fingers.
9. Place the o-ring in the housing.
10. Insert the new sediment filter into the housing

11. Screw the housing back onto the system. In most cases it is not necessary to use the wrench when tightening the housing.
12. Follow steps 2 through 11 to replace the carbon block.
13. Rinse the carbon block for 10 minutes. Don't run rinse water through later stages of your RO system.

Replacing the Membrane Under normal conditions RO membranes should last longer than one year. When the performance of the membrane indicates replacement is necessary:

1. Begin by washing your hands thoroughly.
2. Turn off the water supply to the system.
3. Remove the tubing from the quick connect fitting on the RO membrane cap, from the purified water port, and from the waste water port. Label the tubes if needed to assure they are reconnected correctly after replacing the membrane.
4. Remove the RO membrane housing from its clips.
5. Unscrew the RO membrane housing cap.
6. Grasp the stem of the RO membrane with pliers, and twist and pull the membrane from the housing.
7. Carefully remove and retain the black o-ring(s) near the threads of the housing or from within the cap. Inspect the o-ring(s) for damage (e.g., cracks, tears, deformations).
8. Wash the inside and outside of the housing and the o-ring(s) with warm water to which you've added soap and 2 teaspoons of bleach.
9. Thoroughly rinse the housing and o-ring(s) with warm, chlorinated tap water. Dry the inside of the housing with a clean cloth.
10. Place a small dab of food grade silicone grease on the o-ring(s), and spread the grease over the entire o-ring using your fingers.
11. Place the o-ring(s) into position.
12. Place the RO membrane housing into its clips, and reinsert the purified water tube and the waste water tube, being careful to match the tubes to the correct fittings on the RO membrane housing.
13. Insert the end of the membrane with the two small black rubber o-rings first. The end of the membrane near the single large rubber seal ("brine seal") should be closest to the end of the RO housing that unscrews. Push on the membrane firmly with the heel of your hand to assure it is seated, and replace the cap of the RO housing.
14. Replace the tubing into the fitting on the cap of the RO housing.

Testing Performance of the Membrane The two most common symptoms indicating the RO membrane should be replaced are reduced (slowed) production of purified water, and a declining rejection rate. Your membrane capacity (in gallons of permeate produced per day, or gpd) was rated with supply water at 250 ppm total dissolved solids (TDS) at 77°F and 50 psi pressure for 50, 75, and 100 gpd membranes; and 550 ppm total dissolved solids (TDS) at 77°F and 65 psi pressure for 150 gpd membranes. The rejection rate, or the percentage of total dissolved solids (TDS) in the feed water that is rejected by the membrane, should be 96% to 98% for 50 gpd, 75 gpd, and 150 gpd membranes, and 90% for 100 gpd membranes.

To assess the amount of purified water produced by the system, measure the amount of RO water produced in one hour, and multiple that by 24 to calculate the number of gallons per day. To assess the membrane's rejection rate, use a meter to measure TDS in the feed water and in the RO water. For example, if the feed water measured 265 ppm TDS, and the RO water measured 8 ppm TDS the rejection rate can be calculated as follows:

(265 – 8) / 265 = 0.958 or approximately 96%