

This manual is used for several variations of the same system. Your system may vary slightly from the pictures or descriptions contained in this manual. It is the end users responsibility to ensure that this system is installed according to all local codes and regulations.

Thank you for your purchase of a state of the art Reverse Osmosis (RO) water treatment system. Water quality concerns are becoming more of a focus for the public. You may have heard about contaminants in the drinking water, such as Arsenic, Chromium, Cryptosporidium or Giardia. There may also be some local water issues such as high levels of Lead and Copper. This water treatment system has been designed and tested to provide you with high quality drinking water for years to come. The following is a brief overview of the system.

Your Reverse Osmosis System:

Osmosis is the process of water passing through a semi permeable membrane in order to balance the concentration of contaminants on each side of the membrane. A semi permeable membrane is a barrier that will pass some particles like clean drinking water, but not other particles like arsenic and lead.

Reverse osmosis uses a semi permeable membrane; however, by applying pressure across the membrane, it concentrates contaminants (like a strainer) on one side of the membrane, producing crystal clear water on the other. This is why RO systems produce both clean drinking water and waste water that is flushed from the system. This reverse osmosis system also utilizes carbon block filtration technology, and can therefore provide a higher quality drinking water than carbon filtration systems alone.

Your system is a four (GTS450) or five (GTS550) stage RO which is based upon separate treatment segments within the one complete water filtration system. These stages are as follows:

5 Stage RO System has 3 vertical bowls. 4 Stage RO System has 2 vertical bowls.

Stage 1 – Sediment filter, recommended change 6 months, (only applicable in stage 5 RO)

The first stage of your RO system is a five micron sediment filter that traps sediment and other particulate matter like dirt, silt and rust which affect the taste and appearance of your water.

Stage 2 and 3 – Carbon filters, recommended change 6 months - Stage 3 Only on the GTS550 model.

The second and third stages each contain a 5 micron carbon block filter. This helps ensure that chlorine, chloramines and other materials that cause bad taste and odor are greatly reduced.

Stage 4- Membrane, recommended change 2-3 years.

Stage four is the heart of the reverse osmosis system, the RO membrane. This semi permeable membrane will effectively take out TDS & Sodium and a wide range of contaminants such as Perchlorate, Chromium, Arsenic, Copper, Lead as well as Cysts, such as Giardia and Cryptosporidium. Because the process of extracting this high quality drinking water takes time, your RO water treatment system is equipped with a storage tank.

Stage 5- Carbon in-line filter, recommended change 6 - 12 months.

The final stage is an in-line granular activated carbon (GAC) filter. This filter is used after the water storage tank, and is used as a final polishing filter.

Note: Filter & Membrane life may vary based upon local water conditions and/or use patterns.

System Maintenance

Just because you can not taste it, does not mean that it is not there. Contaminants such as Lead, Chromium and Arsenic are undetectable to the taste. Additionally, over time if you do not replace the filter elements, other bad tastes and odors will be apparent in your drinking water. It is important to change out your filters at the recommended intervals as indicated in this system manual. When replacing the filter elements, pay special attention to any cleaning instructions.

6 Month System Maintenance

Items needed:

- √ Stage 1 - Sediment Filter (only applicable for 5 stage RO)
- √ Stage 2 & 3 - Carbon Block Filter - *Stage 3 Only on the GTS550*

Step 1 Turn off the incoming water supply to the RO by turning the needle valve on the adapt-a-valve clockwise until it stops.

Step 2 Open the RO Faucet and allow water to drain from the tank until it is completely empty.

Note: *Water may be saved in a container for drinking or to rinse system parts.*

Step 3 Let system sit for one minute after the tank is empty to let the system depressurize before attempting to remove filter housings.

Step 4 For more leverage you may leave the RO module attached to wall of cabinet. If you are unable to access the module while it is mounted, remove it prior to changing filters. Starting with the closest housing (Stage 1), remove it by turning it clockwise (left), empty water, then discard filter. Continue on to the 2nd housing (Stage 2) and 3rd housing (Stage 3).

Note: *If you own a four stage system it will not have the third stage. A four stage system has two vertical housings instead of three.*

Step 5 Clean the filter housings (bowls) with a mild soap solution and rinse with water. Check O-rings and lubricate with water soluble lubricant. KY Jelly® or other water based lubricants may be used. Petroleum based lubricants (such as Vaseline®) must not be used.

Caution: *Before re-installing the filter bowls back on to the system, check O-rings to make sure they are still in place. **

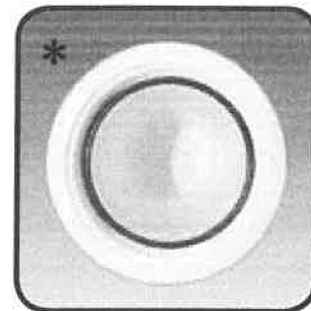
Step 6 Insert a new sediment filter (cloth like appearance) into the 1st filter housing which is the one on the water inlet side (green tubing from the adapt-a-valve) of the RO system and re-install housing.

Step 7 Insert the new filters _____ into the second and third filter bowls and re-install housings.

Step 8 Turn water supply on to the unit by turning the needle valve on the adapt-a-valve counter clock wise.

Step 9 Open the RO faucet and leave it open until water begins to trickle out (it will come out slowly).

Step 10 Close the RO faucet allowing the storage tank to fill with water. It may take 4 to 6 hours to fill the tank completely depending on the production capability of the membrane, local water temperature and water pressure.



Annual Maintenance

- √ Stage 1 - Sediment Filter (only applicable for 5 stage RO)
- √ Stage 2 & 3 - Carbon Block Filter - *Stage 3 Only on the GTS550*
- √ Stage 5 - 10" Final Polishing filter
- √ 1/2 Cup of hydrogen peroxide or common household bleach.

Note: *Sanitizing of unit is recommended.*

Step 1 Perform steps 1 through 5 in the Six Month System Maintenance (Page 11).

Note: *If not sanitizing the system skip to step 8.*

Step 2 Remove the RO membrane from its housing and rest in a clean sanitary place. (Refer to "Membrane Replacement" section on page 15 for directions on removing the membrane). Replace cap onto empty membrane housing and re-connect green tubing.

Step 3 Leaving the filters out, replace stage 2 and 3 empty filter housings (hand tight) onto unit. Measure & pour either 1/2 cup of hydrogen peroxide or common household bleach into the 1st filter housing (Stage 1) and hand tighten onto unit.

Step 4 With the RO faucet in the closed position turn on the incoming water supply to the system by turning the adapt-a-valve counter clockwise. Wait 1 minute for the unit to pressurize. Turn on the RO faucet and let the water run for 30 seconds. Turn off the RO faucet and let the unit rest for 2 minutes. Finally, open the RO faucet and let the water run for 5 more minutes.

Step 5 Turn off the incoming water supply to the system by turning the adapt-a-valve clockwise until it stops. Keep the RO faucet open until the storage tank is completely drained.

Step 6 Open the membrane housing and re-install the RO membrane while making sure not to kink the O-rings. (Refer to "Membrane Replacement" section on page 13 for directions on installing the membrane). Tighten the cap back on the housing and reconnect green tubing.

Step 7 Remove filter housings Stage 1, 2 and 3 and empty of water.

Caution: *Before re-installing the filter bowls back on to the system, check O-rings to make sure they are still in place and lubricate with water soluble lubricant.*

Step 8 Insert the new sediment filter (cloth like appearance) into the 1st filter housing which is the one on the water inlet side (green tubing from the adapt-a-valve) of the RO system and re-install housing.

Step 9 Insert the new filters _____ into the 2nd and 3rd housing and re-install housing.

Step 10 The final in-line filter is located on the blue tube between the storage tank and the RO faucet. Remove it by loosening the compression fittings on both ends of the filter and replace with new filter. (Discard used final filter after sanitizing)

Note: *The arrow on the final filter must be pointing towards the RO faucet / away from the RO storage tank.*

Tip: *This is a good time to check the air pressure in your storage tank. For instructions please see page 14.*

Step 11 Follow Steps 8 through 10 in the Six Month System Maintenance (Page 11) for startup directions.

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GENERAL USE CONDITIONS:

1. System to be used with municipal or well water sources treated and tested on regular basis to insure bacteriological safe quality. DO NOT use with water that is micro biologically unsafe or unknown quality without adequate disinfection before and after the system. Systems certified for cyst reduction may be used on disinfected water that may contain filterable cysts.
2. Operating Temperature: Maximum: 100°F (40.5°C) Minimum: 40° (4.4°)
3. Operating Water Pressure: Maximum: 100 psi (7.0kg/cm2) Minimum: 40 psi (2.8kg/cm2)
4. pH 2 to 11
5. Maximum iron present in incoming feed water supply must be less than 0.2 ppm.
6. Hardness of more than 10 grains per gallon (170 ppm) may reduce membrane life expectancy.
7. Recommend TDS (Total Dissolved Solids) not to exceed 1800 ppm.

RECOMMENDED REPLACEMENT PARTS AND CHANGE INTERVALS:

Note: Depending on incoming feed water conditions replacement time frame may vary.

<u>Description</u>	<u>Change time Frame</u>
Sediment Filter, 5 Micron, 9 7/8":	6 Months
Custom Filter :	12 Months
TFC Membrane, 50GPD @60PSI:	12 Months

	Avg. In. (mg/L)	Avg. Eff. (mg/L)	% Reduction	pH	Pressure	Max Eff. mg/L	Inf. challenge concentration mg/L	Max Allowable concentration mg/L
Arsenic (Pentavalent)	334.62 ug/L	5.039 ug/L	98.4%		50psi	19 ug/L	0.30±10%	0.010 mg/L
Barium Reduction	10.2	0.13	98.7%	7.24	50psi	0.27	10.0±10%	2.0
Cadmium Reduction	0.031	0.0001	99.7%	7.49	50psi	0.0009	0.03±10%	0005
Chromium (Hexavalent)	0.30	0.006	98.0%	7.24	50psi	0.013	0.03±10%	0.1
Chromium (Trivalent)	0.30	0.003	99.0%	7.24	50psi	0.008	0.03±10%	0.1
Copper Reduction	3.0	0.04	98.7%	7.64	50psi	0.06	3.0±10%	1.3
Cysts	222,077#/ml	10 #/ml	99.99%		50psi	58	minimum 50,000/mL	N/A
Fluoride Reduction	8.0	0.33	95.9%	7.49	50psi	0.47	8.0±10%	1.5
Lead Reduction	0.15	0.004	97.3%	7.49	50psi	0.008	0.15±10%	0.0107
Nitrite and Nitrate	29.2	6.6	77.3%	7.64	50psi	10.0	3.0±10%	10.0
Nitrate Reduction	26.3	6.1	76.8%	7.64	50psi	10.0	3.0±10%	10.0
Nitrite Reduction	2.8	0.5	82.1%	7.64	50psi	0.77	3.0±10%	1.0
Perchlorate	0.10	0.003	96.5%	7.39	50 psi	0.005 mg/L	0.10±10%	0.006
Radium 226/228	25pCi/L	5pCi/L	80.0%	7.24	50psi	5pCi/L	25pCiL±10%	5pCiL
Selenium	0.10	<0.001	99.0%		50psi	<0.001	0.10±10%	0.05
TDS	764	36	95.2%	7.84	50psi	50.0	750±40mg/L	187
Turbidity	81 NTU	0.15 NTU	99.8%		50psi	0.28 NTU	11±1 NTU	0.5 NTU
Recovery - 16.34%			Daily Production Rate - 17.32 GPD			Efficiency - 8.91%		

Depending on water chemistry, water temperature, and water pressure Watts R.O. Systems production and performance will vary. Efficiency rating means the percentage of the influent water to the system that is available to the user as reverse osmosis treated water under operating conditions that approximate typical daily usage. Recovery rating means the percentage of the influent water to the membrane portion of the system that is available to the user as reverse osmosis treated water when the system is operated without a storage tank or when the storage tank is bypassed. There is an average of 4 gallons of reject water for every 1 gallon of product water produced.

REFER TO OWNER'S INSTALLATION/SERVICE MANUAL FOR FURTHER MAINTENANCE REQUIREMENTS AND WARRANTY INFORMATION.

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