

INSTALLATION & SERVICE MANUAL

Under-the-sink Reverse Osmosis Water Systems

Model:

RO6-ALK 6-Stage RO+Alkaline Reverse Osmosis Water System 75GPD

**Made by: WaterGeneral Mfg. Co.
Made in U.S.A.**

PRODUCT SPECIFICATION

6- Stage Reverse Osmosis Water Purification Systems

Model no: RO6-Alkaline

Capacity: Generates 45 to 85 gallons per day depends on water temperature, pressure, chemistry variations)

System includes

- RO unit: 6-stage unit, all filters included.
- Storage Tank: Pressurized tank with pre-charge pressure of 7~10 psi., powder coated steel construction with Food Grade butyl water bladder. NSF listed
- Water Dispensing Faucet: lead-free, long reach goose neck type, chrome steel, locking lever for continuous dispensing.
- Hardware: feed water adapter, feed water valve, drain saddle valve, tank valve, and screws.
- Installation & Service manual

System Requirements

- Working pressure: 40 to 80 psi feed water pressure required, if below 40 psi, a booster pump is needed. We have a RO system with booster pump assembly. If the input pressure is above 80 psi, you **MUST** put a pressure regulator to reduce the pressure below 80 psi.
- Working temperature: 100 ~ 40 deg. F (37 ~ 4 deg. C)
- pH range: 2-11
- If feed water has hardness level above 300 ppm, we recommend putting a water softener prior to the RO system.
- If feed water has iron, rust problem, we recommend putting a iron filter prior to the RO system.
- If feed water has bacteria problem, we recommend putting an ultra violet sterilizing system prior to RO system.

Filter Service Life

- | | |
|--|---------------------------------|
| • 1 st Stage <u>Sediment filter</u> : Recommend changing every 6 ~12 months. | Replacement filter Part no. 201 |
| • 2 nd Stage <u>Carbon block filter</u> Recommend changing every 6 ~12 months. | Replacement filter Part no. 205 |
| • 3 rd Stage <u>Carbon block filter</u> : Recommend changing every 6 ~12 months. | Replacement filter Part no. 205 |
| • 4 th Stage <u>TFC-75 membrane</u> : Recommend changing every 2~3 years. | Replacement filter Part no. 385 |
| • 5 th Stage <u>Alkaline filter</u> : Recommend changing every year | Replacement filter Part no. 225 |
| • 6 th Stage <u>Inline carbon filter</u> : Recommend changing every 6 ~12 months. | Replacement filter Part no. 213 |

The filters & membrane used are all standard sizes.

Dimension

- RO unit: Length 15 inch, Width 5 ½ inch, Height 16 inch
- Storage tank: Diameter 10 ¾ inch, Height 15 ¼ inch
- Faucet: 9 ½ inch above counter top

Warranty

- 1 years Limited Warranty on parts, components. Filters are not under warranty.

Performance

- Average Rejection rate: 92 to 98% of dissolved solids after RO

Purification Processes/ Filter specifications

Removes microbiological contaminants like Cysts (protozoan), inorganic/Radiological contaminants like Barium, Cadmium, Copper, Chromium (hexvalent), Chromim (trivalent), Fluoride, Lead, Radium 226/228, Selenium, etc. Ammonia, Arsenic, chloramines, chlorine, copper, lead, nitrate, phosphate, silica, hardness, calcium, magnesium, other dissolved solids.

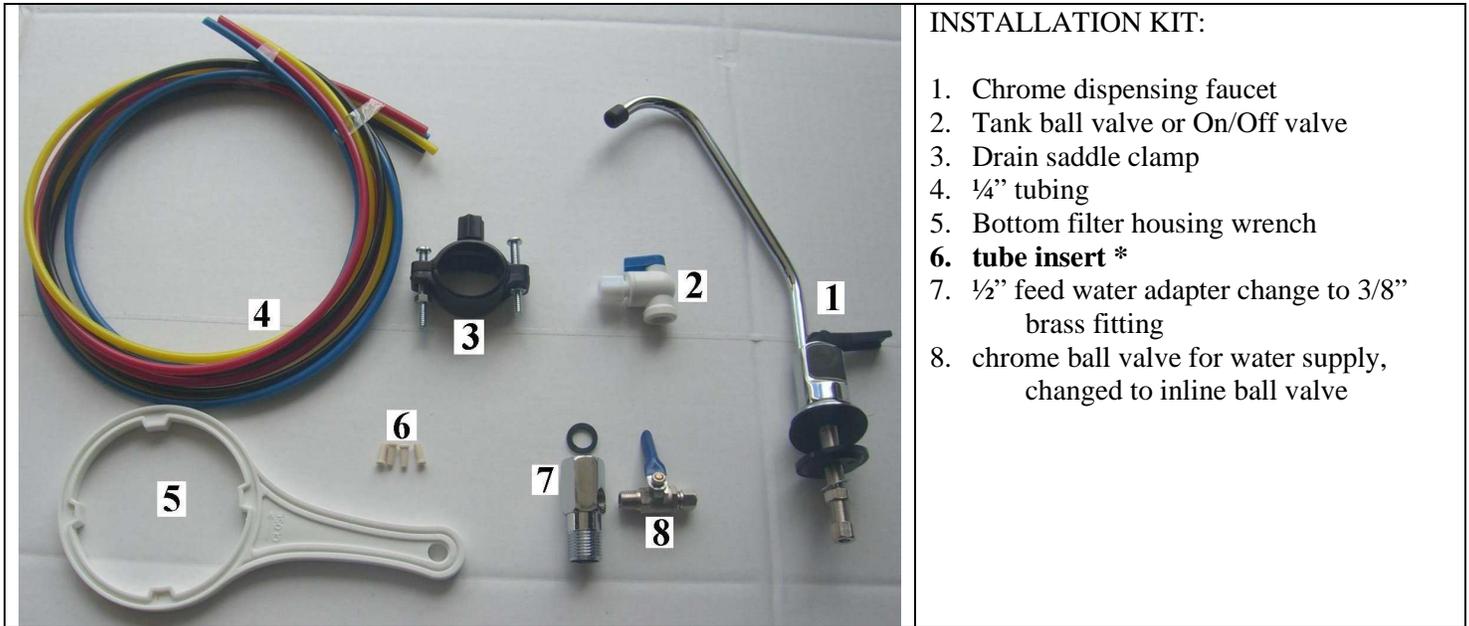
- 1st stage: 5 micron sediment filter, 2 3/4". x 9 7/8" height, made by 100% pure polypropylene fibers
- 2nd & 3rd stage: carbon filter, 2 3/4" x 9 3/4" height, composed of high-performance coconut shell carbon.
- 4th stage: TFC/TFM type membrane, 75 GPD, 1 3/4" x 11 3/4" long
- 5th stage: inline type alkaline filter, Calcium & Magnesium minerals slow dissolving, pH level about 8.5
- 6th stage: Inline carbon filter (polishing filter, improves taste): 2" x 10"

Thank you for choosing Watergeneral Reverse Osmosis Water Systems. You now own a superb Reverse Osmosis (RO) system that effectively reducing most contaminants, organic and inorganic compound, unwanted taste and odor from tap water. It is designed to transform your tap water into distill water.

Read carefully and follow the instruction in this manual before proceeding with actual installation. Failure to do so could result in personal injury or damage to the equipment or other properties. Be sure to follow any special plumbing codes in your area.

CHECK LIST:

1. Reverse Osmosis Unit
2. Water storage tank
3. Installation kit consists tank ball valve, drain saddle valve, feed water adapter, feed water needle valve, faucet assembly, tubing, tube inserts
4. Installation manual



INSTALLATION KIT:

1. Chrome dispensing faucet
2. Tank ball valve or On/Off valve
3. Drain saddle clamp
4. 1/4" tubing
5. Bottom filter housing wrench
6. tube insert *
7. 1/2" feed water adapter change to 3/8" brass fitting
8. chrome ball valve for water supply, changed to inline ball valve

* **NOTE:** Item #6 **tube inserts** are not required in the installation, but you can put them in three places; (1) tubing connection at 1st stage filter, (2) tubing connection at tank ball valve, (3) tubing connection at dispensing faucet.

RECOMMENDED TOOLS LIST

Variable speed drill	1/8" 1/4", 7/16", 1/2", and 5/8" drill bit
5/8, 9/16 open-end wrench, or adjustable wrench, pliers	Phillips screwdriver
Utility knife, or scissor	Teflon tape

OPERATING PARAMETER

- Working pressure: 40 to 80 psi feed water pressure required. If input pressure is below 40 psi, a booster pump or a permeate pump is needed. We have a RO system with built-in permeate pumps, and we also carry booster pumps. If the input water pressure is above 80 psi (**you must use a pressure regulator** to step down the pressure). We also carry small pressure regulators just for the RO system.
- Working temperature: 100 ~ 40 deg. F (37 ~ 4 deg. C)
- If feed water has hardness level above 300 ppm, we recommend putting a water softener prior to the RO system.
- If feed water has iron, rust problem, we recommend putting an iron filter prior to the RO system.
- If feed water has bacteria problem, we recommend putting an ultra violet sterilizing system prior to RO system.

WARNING: Do not use this RO+DI system alone to treat water with bacteria problem or water source with unknown quality.

WARNING: Do not connect HOT water source to this unit.

WARNING: Bottom 3 housing and membrane housing need to be replaced every 5 years to prevent cracking.

WARNING: **Input pressure must not exceed 80 psi.** Pressure regulator must be installed to reduce pressure.

About the system

Reverse Osmosis process is a separation process. Tap water enters the system, and it is separated at the 4th stage membrane filter. One side would go to the storage tank (purified water); the other side carrying all the minerals is purged to the drain. The ratio of purified water to drain water is 1:3. That means for every gallon of water you use, it will drain 3 to 4 gallons. The drain is required for the RO process to work. If the drain is intentionally shut off, all the minerals will be accumulated inside the membrane, and it would permanently damaged the membrane filter.

All Reverse Osmosis units require purging of water when it's producing water.

Production rate: The system uses a 75 GPD (gallons per day) RO membrane. The actual production rate will depend on water input pressure, temperature, and water chemistry. At optimal condition the membrane will make 85 GPD, but on average, it would make about 45 to 60 gallons per day, or about 2 to 3 gallons per hour.

Drain rate: The drain rate of the system is set at 600 mL/min. using a flow restrictor. This drain rate is constant, independent of input pressure. If the input water supply is very hard (> 17 grains) or the TDS reading is above 700 ppm, it would be advantageous to change the membrane to 50GPD, in order to get better rejection and prolong the life of the membrane filter.

ASSEMBLY QUICK VIEW



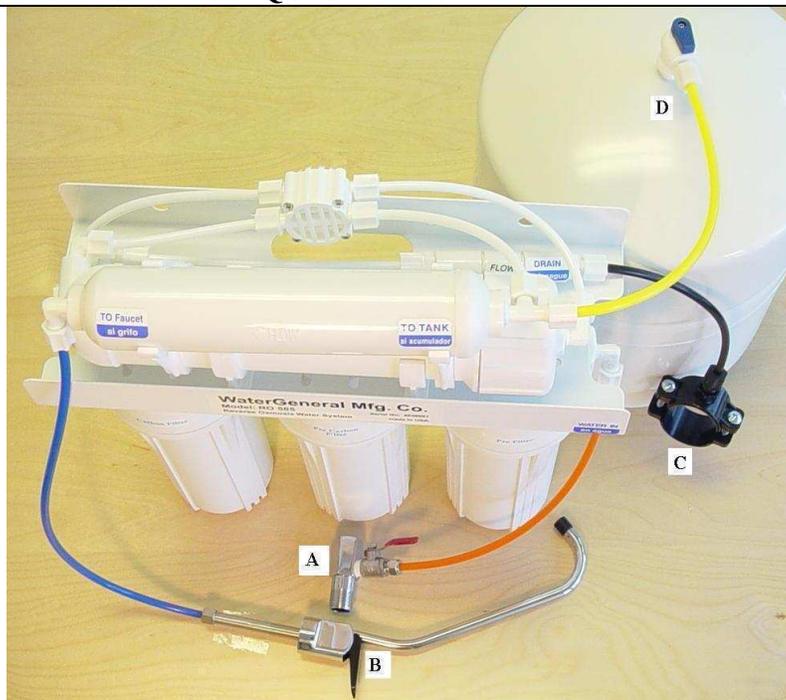
Carbon Carbon Sediment

1. Remove plastic wrap on the filters
2. Insert the filters as shown above.



1. Put upper portion of the unit on top of the filter housing
2. Screw on filter housing **vertically** to the filter housing cap by hand
3. Then use filter housing wrench to tighten the each housing

INSTALLATION QUICK VIEW



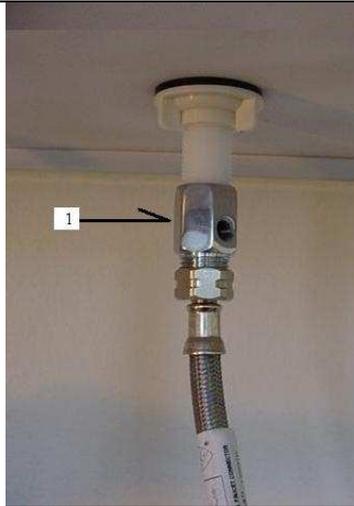
	4 connections	Color of tubing
A	Feed water valve	Red or orange
B	Dispensing Faucet	Blue
C	Drain saddle valve	Black
D	Tank ball valve	Yellow

INSTALLATION (for under-the-sink installation)

STEP 1: TAPPING INTO COLD WATER SUPPLY

CAUTION:

- The water supply to your RO unit **MUST** come from **COLD water line**. Hot water will damage your RO system.
1. Locate cold water shut off valve under the sink and turn it off. Open cold-water faucet to release the pressure, and make sure there is no water.
 2. Choose one of the feed water adapter. Adapter 1: use 1/2" MPT, it is usually connected to the bottom of the faucet. Adapter 2 is a Brass 3/8" compression adapter. It's connected to the cold water supply valve.
 3. Connect male connector fitting 1/4" NPT to the chrome adapter, put about 8 rounds of Teflon tape on the thread of the male fitting and screw on to the 1/4 hole, then wrench tight.
 4. Connect the inline ball valve near the RO system input side. The inline ball valve has quick connect fitting, so just push the tubing all the way inside the fitting (must go through the small O-ring inside the fitting) then it will seal itself.



1. feed water adapter 1/2" connect to base of kitchen faucet



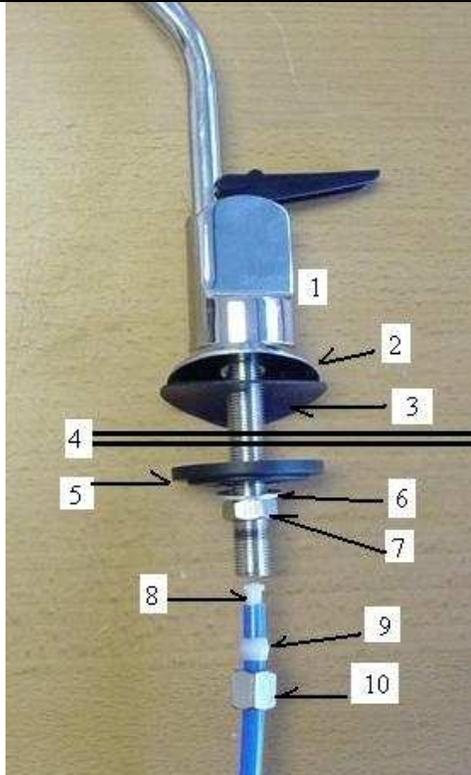
Feed water adapter with inline Ball valve





NOTE: The system uses compression fitting connections: When connecting tubing to the system, first, you must unscrew the compression nut off the fitting, then pass the tubing through the compression nut about 1", then screw on to the fitting, then use a 5/8" wrench to tighten the nut until the thread is not visible. Don't over-tighten it.

STEP 2: INSTALLING THE DISPENSING FAUCET



1. faucet base
2. small washer+chrome plate
3. large washer
4. kitchen sink
5. bottom plate
6. lock washer
7. lock nut
8. tube insert
9. sleeve
10. faucet nut

drill 5/8" hole on the sink

The faucet should be positioned with aesthetics, function and convenience in mind. An ample flat surface is required for the faucet base so that it can be drawn down tight. Also check the under sink area of the desired location to see if there is ample space to complete the faucet installation.

If the space is not available on the upper sink area, the faucet could be positioned on the counter top at the edge of the sink. Be sure to watch for obstructions below, i.e., drawers, cabinet walls, support braces, etc. If the counter top is ceramic tile, the method for drilling the hole should be the same as for porcelain sink.

NOTE: The sink drilling process, although not complicated, requires a certain amount of caution and forethought. Porcelain sink can chip if care is not exercised.

PORCELAIN ENAMEL SINK/ STAINLESS STEEL SINK/ ALUMIUM SINK

A 5/8" hole is required for the faucet. It is recommended that you get special drill bit for porcelain and tile counter.

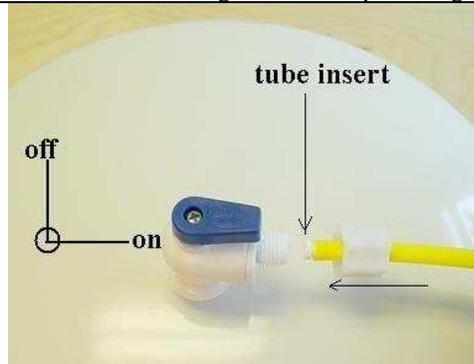
1. Place a piece of masking tape or duct tape on the determined location where the hole is to be drilled.
2. Use a variable speed drill at slow speed with 1/8" drill bit, and drill a centering hole in the center of the desired faucet location.
3. Enlarge the hole using a 1/4" drill bit.
4. Enlarge the hole using 7/16", 1/2", and 5/8" drill bit. Pause occasionally to cool drill bits.
5. File or clean the surrounding area and remove the masking or duct tape. (NOTE: the metal chips on porcelain will stain very fast)
6. DON'T put Teflon tape at the tip of the threaded mounting base of the faucet since it's a compression fitting.
7. Put the small rubber washer, the chrome base plate, large rubber washer according to the diagram through the threaded mounting tube at the base of the faucet.
8. From under the sink, install the bottom plate, lock washer, and nut. Then screw on tightly.
9. According to the diagram, put the brass nut through the BLUE tubing first, then plastic sleeve (preferred), or brass sleeve, then the plastic insert. Push the white plastic sleeve against the insert.
10. Screw on the Blue tubing with brass nut to the faucet base. Uses wrench to tighten the nut but don't over tighten it. Too tight would cause leak.
11. The spout can swivel 360-degrees. The faucet lever can be pushed down for dispensing or pulled up for continuing dispensing.

STEP 3: MOUNTING THE TANK BALL VALVE

Do not release air from the air valve on the lower side of the storage tank. It is pre-charged at 7 psi at the factory.



put Teflon tape, 6-8 turns

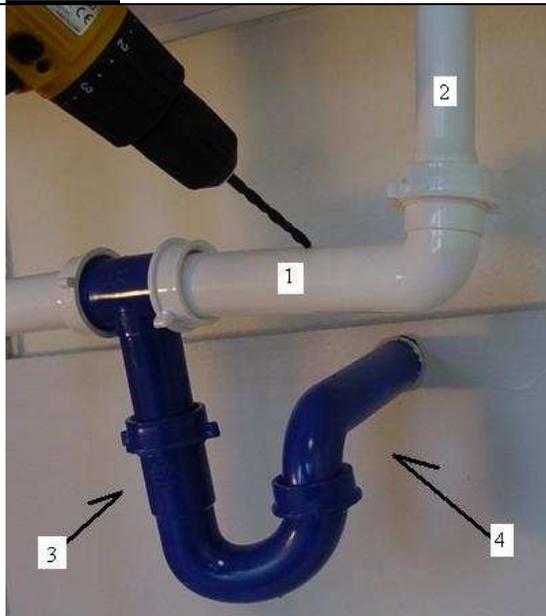


screw on ball valve hand tight, push tubing through the nut, put tube insert, screw on the nut



the tank can be positioned laying down or standing upright

STEP 4: MOUNTING THE DRAIN SADDLE VALVE (don't put in blue area)



The drain saddle valve should fit most standard drain pipe. It should be installed above the trap and on the horizontal pipe (1) or vertical pipe (2).

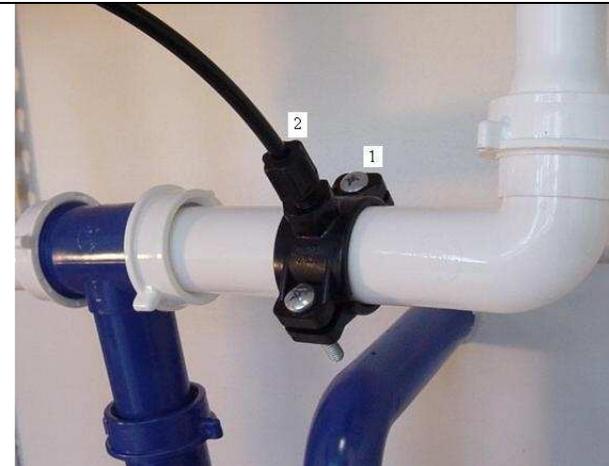
DON'T put on position (3), (4), or blue section



Position the drain saddle in desired location, mark spot. You need to consider available space for drain tubing
 Drill 1/4" hole into the drainpipe above the water line of the pipe. Clean the surface of the pipe.
 Pear off the sticky foam pad, then align the center hole around the drilled pipe hole. Then tape it.



Align the drilled hole in the drain pipe with the drain saddle using a drill bit or narrow screwdriver



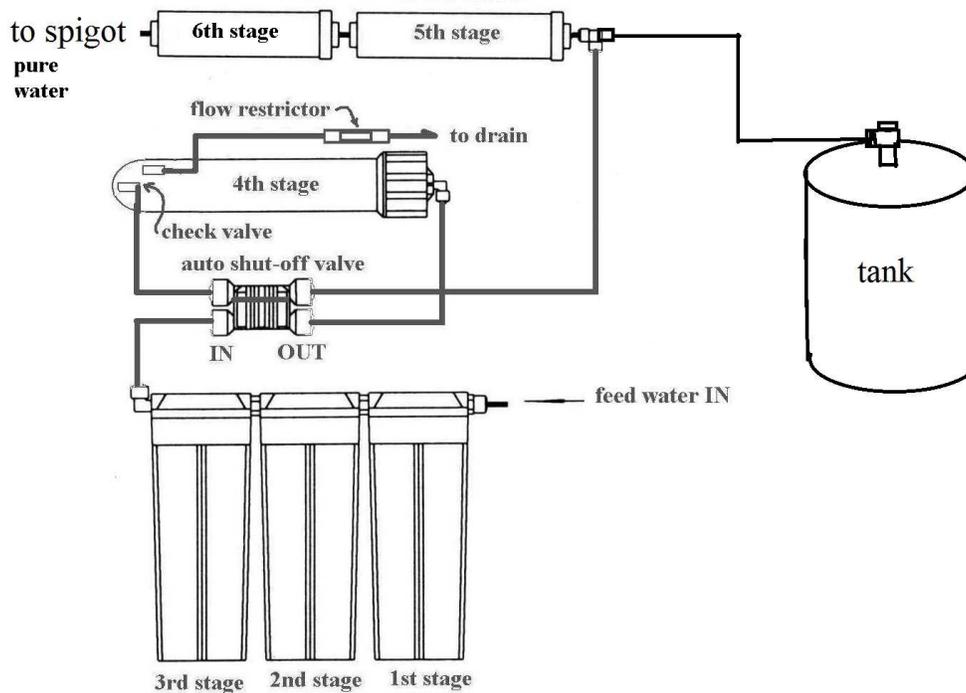
put the complementary piece and clamp them together with the two bolts. (1) Tighten the two bolts evenly. (2) Connect tubing

STEP 5: SYSTEM START-UP

1. Make sure all tubing are not kinked.
2. Turn Tank Valve to OFF position.
3. Turn RO faucet lever to continuous flow position. Lever points up.
4. Turn cold water supply main valve on slowly. Also turn input ball valve ON. When the system is pressurized, check for leaks. If a leak is found, tighten the connection.
5. Wait 5 minutes, the water should start dripping out of the RO faucet, and then wait 10 more minutes to allow water to flow through the system, and air inside the system can be purged.
6. Turn Tank Valve to ON position, lever is parallel to the tubing.
7. Turn the RO faucet lever to OFF. Now the purified water will start filling the storage tank.
8. Wait 2 hours for the storage tank to be filled up.
9. **DO NOT DRINK THE FIRST BATCH OF WATER PRODUCED BY THE SYSTEM.**
10. After storage tank is full, turn the RO faucet lever to continuous flow position, (Lever points up) to discharge the first batch of water. It takes about 5 minutes to completely discharge the tank. When the tank is discharged, you will notice just a steady trickle of water coming out.
11. After discharging the tank or about 5 minutes, turn the RO faucet to OFF position. Now the RO system is refilling the tank.
12. After the tank is filled up again, you can start enjoy the purified water. Job Well Done!

NOTE: Check for leaks daily for the first week after installation.

Flow Diagram for 6-Stage Reverse Osmosis Water Systems



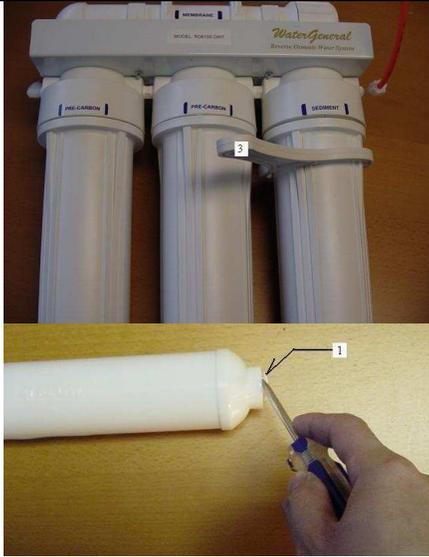
SERVICE RECORD:

DATE OF PURCHASE: _____

DATE OF INSTALLATION/SERVICE: _____

Service Date	Date	Date	Date	Date
1 st stage sediment				
2 nd stage carbon				
3 rd stage carbon				
4 th stage membrane				
5 th stage Alkaline				
6 th stage inline carbon				

Changing Filters Procedures



- Shut off the system by turning off the water supply, and turn off the tank valve, open the spigot to depressurize
- Prepare a towel under the unit for water spills
- Use a filter wrench (part no. 566) or use hands to open the filter housing, unscrew it from right to left. To open is clockwise looking from the top.
- Throw away the used filter, and clean the inside of the housing by rinsing or scrubbing it with dish soap.
- Check condition of the O-ring. It should be replaced every 3 years to prevent leak
- Place the new filter inside the filter housing. For carbon filters, the rubber gaskets should be on both ends.
- Put some Vaseline or silicon-based O-ring lubricant on the side of the housing thread and the O-rings (optional procedure)
- Use a filter wrench or both hands to screw the housing back by turning it from left to right (Don't lay down the unit when turning it, the unit should be standing upright to prevent the o-ring or filters from misalignment)
- Repeat the above steps for other filters
- **The 5th stage inline carbon filter** has penny-sized protective caps on both ends. Please use a screw driver or knife to pry open the caps.

Replace inline carbon filter: (white inline filter)



* if you have compression fitting



*unscrew fitting off to replace filter

For part no. 213 inline carbon filter, remove fittings from both ends of the filter then replace new filter.

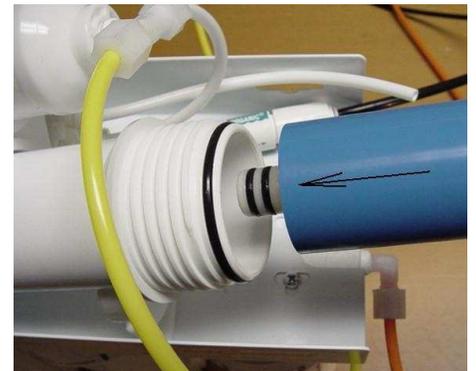
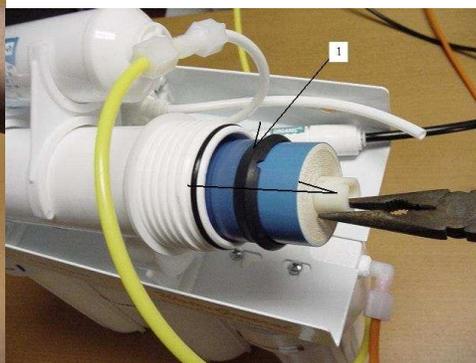
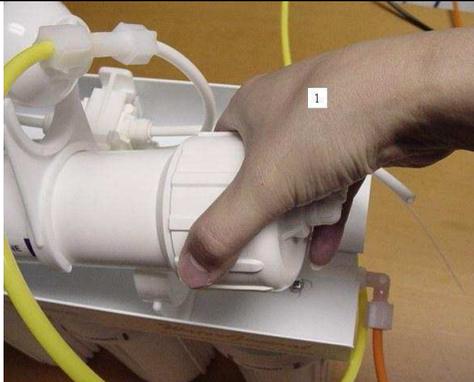
After all housings are tight, turn on the water supply and tank valve.

Check for leaks, if there is a leak; tighten the housing or re-aligning the o-ring.

Open the spigot to drain all the water out of the storage tank. If you are changing a carbon filter or membrane, you must drain the first tank of water after restart the system.

Refer to the next page for recharging tank procedure (if necessary)

Changing Membrane Procedure



- Lift the membrane housing from the U-clips, and remove the tubing from the membrane fitting (the inlet side of the membrane housing, or the side with the membrane housing cap). Unscrew the membrane housing cap off (counter-clockwise)
- Use pliers to pull the membrane out of the membrane housing, and discard the used membrane.
- Put some Vaseline or lubricant on the small black O-rings. Insert the new membrane into the membrane housing (THE SIDE WITH DOUBLE BLACK O-RINGS SHOULD GO IN FIRST) Push the membrane all the way in (some force is required to make sure the membrane is all the way in). Put some Vaseline or silicon based lubricant to the side of the housing threads.
- Screw the membrane-housing cap back (clockwise). Make sure O-ring is in place. Connect the tubing to its elbow fittings.
- Turn on the water supply and tank valve to restart the system. Check for leaks, if there is a leak, tighten the cap
- Wait 2 to 3 hours for the tank to be filled then you must drain the first tank of water by opening up the spigot to flush the system.

TROUBLE SHOOTING

* For more detailed tech support notes & troubleshooting go to www.watgeneral.com

NOTE: Turn off the system before servicing.

Installation Troubleshooting		
PROBLEM	POSSIBLE CAUSE	SOLUTION
No or low water production	1. Feed water valve in not turn on 2. Tank valve is not turn on 3. Tubing is kinked	1. Turn on feed water valve 2. Turn on tank valve 3. Straighten the tubing
Leak at filter housing	1. Housing is not tighten 2. Damaged or misaligned O-ring 3. Housing has cracks	1. Tighten housing 2. Re-aligned O-ring or replace 3. Replace housing
Leak at fitting thread	1. Not properly tighten 2. Fitting has cracks	1. Use Teflon tape, re-tighten 2. Replaced it
Bad-tasting water	1. Not yet flush the system 2. Tubing connection incorrect	1. Discharge water from tank 2. Check flow diagram
Milky/Cloudy water	1. Air in system/filters	1. This is normal, continue use it for 2 weeks
Noise from drain	1. Saddle valve mounted too high	1. Lower the saddle valve When system is making water, waste water to drain is normal, when storage tank is full, drain should stop

Troubleshooting		
PROBLEM	POSSIBLE CAUSE	SOLUTION
When turn on the RO faucet, only small amount of water come out.	1. Lifting the tank to see if there is still water inside. Heavy or light ?	1. If it's heavy, you need to recharge tank, following recharge procedure 1b. If its light, the water either is not going in or the system is not making water.
Vibrating noise or very loud high pitch noise	1. From the auto shut-off valve	1. If the noise is too unbearable, shut-off valve should be replaced.
Drain water never shut off	1. Auto shut-off valve is worn out or becoming ineffective 2. Storage tank not enough pressure 3. Water supply pressure is near 40 psi or below 4. Cold water temperature 5. Filters are clogged up	1. Replace auto shut-off valve 2. Follow recharging tank procedure 3. Increase feed water pressure 4. Can't do anything about it. 5. Replace filters
Low water production	1. Storage tank problem 2. Clogged filters 3. Kinked tubing 4. Clog flow restrictor	1. Follow recharging tank procedure 2. Replace filters 3. Straighten the tubing 4. Replace flow restrictor

Note: Clogged filters: How do you know if the filters are clogged up? For the pre-filters, sediment filters and carbon filters; check the pressure difference before and after the filters. If there is significant difference in pressure that means the filter is clogged. Turn OFF tank valve and cold water main valve then open the RO faucet to depressurize the system, then disconnect the tubing after the bottom three pre-filters, then turn ON the cold water main valve. If you get very strong water pressure, (as strong as water going into the system) then the bottom 3 pre-filters are not clogged. If the water pressure is much smaller, unlike a burst of water pressure, then the bottom 3 pre-filters need to be replaced. **Note:** Checking a clogged membrane uses different method. Use a water quality meter TDS meter to check the condition and performance of the RO membrane (4th stage filter)

Note: Clogged flow restrictor: When you disconnect the black tubing going into the saddle valve, and the RO system is in the processing of making water (by turning on the RO faucet), there should be a small steady flow of drain water. If you do not get any drain water, the flow restrictor may be clogged, then you need to replace a new flow restrictor ASAP, and discontinue using the system.

RECHARGING TANK PROCEDURE

PROBLEMS:

- When you turn on the spigot you get small water pressure and water flow.
- When you turn on the spigot, only a quick burst of water comes out of the system, then it dies down to trickles.
- When you turn on the spigot in the morning, you only can get less than a gallon of water.

If you have above problems, you should recharge the tank. The tank should have about 7 psi of air pressure when it is completely empty. The storage tank has a water bladder inside, and it is surrounded by compressed air, so when you turn on the spigot, the compressed air would squeeze or compress the water bladder to force the water out of the tank. When the tank is full the tank pressure can reach about 35 to 50 psi depending on your feed water pressure, but to accurately recharge the storage tank, you should empty the tank then set the air pressure to 7 psi.

TOOLS NEEDED: An air compressor or air pump (like a bicycle tire air pump. An air pressure gauge that is able to read less than 10 psi. Adjustable wrench or 9/11" wrench

STEPS:

1. Shut off the water supply to the RO system. Turn on the spigot to allow water to run until it stops (you can collect the water if you want)
2. Check to see if there is still water in the storage tank by lifting the tank. If the tank feels heavy, that means you need to recharge to tank, then continue the following steps. If the tank feels light, that means you don't need to recharge your storage tank at this time.
3. Locate the air valve on the side or on the bottom of the tank. It looks like the air valve on tires.
4. Use an air compressor or air pump to pump air into the tank. Keep the spigot on while pumping air, so that all water inside the tank can be purged out. Don't over charged it, just keep around 20 psi.
5. After all water is been discharged, use an air pressure gauge to check the tank pressure.
6. The tank should have 7 psi of pressure when it's empty. Add or purge air if necessary.
7. Turn the feed water valve back on, and turn off the spigot to allow refilling of the tank. It may take couple hours to refill the storage tank.
8. Finished

NOTE: If after few days of running the system, the problem comes back, then you may need to replace a new tank.

LIMITED ONE-YEAR WARRANTY

1. What your warranty covers:

WaterGeneral Reverse Osmosis Systems are warranted to the original owner to be free of defects in material and workmanship from the date of manufacture for one year as follows:

- a. Manufacturer will, within one year of purchase, replace the defected parts (excluding filters) at no charge.
- b. The replaceable filters are not warranted since the service life of replaceable filter varies with local water conditions and thus not warranted.

2. Conditions of Warranty:

- a. System must be maintained and serviced with the manufacturer original replacement parts and filters. The performance of your drinking water system is directly related to the conditions of the water been treated and the particular application in which it is used. Therefore, manufacturer's liability is limited to the cost of repair of the RO systems. **The manufacturer is not liable for incidental or consequential damages of any kind.** Systems must be installed and operated in accordance with manufacture's recommended procedures and guidelines.

3. What WaterGeneral Reverse Osmosis Systems will not do:

- a. Warranty is void if product failure or damage results from freezing, neglect, misapplication, fouling with sediment or scale or failure to operate the system in accordance with the instructions contained in this manual.
- b. The following operating conditions must also be followed for this warranty to be valid
 - The hardness of the water cannot exceed 7 grains per gallon or 120 ppm.
 - No iron can be present in feed water. Or iron should be removed from feed water.
 - The pH of the water must not be lower than 3 or higher than 11
 - Feed water Total Dissolved solids TDS should not exceed 1000 ppm
 - Feed water temperature between 90 F and 45 F or (32C and 5 C)

4. Obtaining Warranty Service:

For Warranty service, obtain a Return Merchandise Authorization (RMA #) number from the manufacture or distributor. You can also contact our technical support department to obtain the RMA # or visit our web site at <http://www.WaterGeneral.com> or email your request to tech@WaterGeneral.com

5. Limitations and exclusions:

Manufacturer will not be responsible for any implied warranties, including those of merchantability and fitness for a particular purpose. Manufacturer assumes no liability whatsoever for any incidental and consequential damages, including loss of revenue, loss of time, travel expenses, inconvenience, and any damage caused by the equipment and its failure to function properly.