R.O. DRINKING WATER FILTER SYSTEM

INSTALLATION GUIDE & OWNER'S MANUAL

Tested and certified by NSF International against NSF/ANSI Standard 58 for the reduction of the claims specified on the Performance Data Sheet.

FOR MODELS

- GG-435M
- GG-435

INDEX

IMPORTANT NOTICES:

If this system is not maintained and operated as specified in this manual, there is a risk of exposure to contaminants.

This drinking water system contains components that are critical to be replace for effective performance. The end-user is responsible to periodically test the RO product water to verify that the system is performing satisfactorily. See the test kit(s) for sampling instructions.

This RO drinking water system is acceptable for treatment of influent concentration of no more that 27 mg/L nitrate and 3 mg/L nitrite in combination measure as N and is certified for nitrate/nitrite reduction only for water supplies with a pressure of 280 kPa (40 psig) or greater.

This system conforms to NSF/ANSI Standard 58 for pentavalent arsenic reduction. See the Performance Data Sheet and Arsenic Facts section for an explanation of reduction performance.

DO NOT USE WITH WATER THAT IS MICROBIOLOGICALLY UNSAFE OR OF UNKNOWN QUALITY, WITHOUT ADEQUATE DISINFECTION BEFORE OR AFTER THE SYSTEM.

Systems certified for cyst reduction may be used on disinfected water that may contain filterable cysts.

CAUTION—

All individuals should take adequate precaution when changing the filter modules, including protective gloves, to avoid direct contact with the exhausted modules.

MANUFACTURER'S LIMITED WARRANTY

The manufacturer will stand behind the product components and assembly of your reverse osmosis drinking water system when installed and used properly as outlined in this manual. They will repair or replace at its discretion any defective component at their discretion based on the following coverage guidelines.

5 YEAR COVERAGE

The manufacturer warrants this reverse osmosis drinking water system to be free from defects in materials and workmanship for a period of 5 years from the date of purchase when installed and operated within recommended parameter.

1 YEAR COVERAGE

The reverse osmosis membrane is warranted for one year. This warranty does not cover the disposable sediment and carbon filters whose service life depends on feed water conditions. If the required prefilter conditions to the membrane are not followed, the membrane will not be warrantied.

(Some states do not allow limitations on how long an implied warranty lasts, so the above limitations may not apply to you.)

CONDITIONS OF WARRANTY

The above warranty shall not apply to any part of the reverse osmosis drinking water system that is damaged because of occurrences including but not limited to: neglect, misuse, alteration, accident, misapplication, physical damage, or damage caused by fire, acts of God, or extreme temperatures.

The warranty does not cover the disposable sediment and carbon filters whose service life depends on feed water conditions. Additionally, the membrane cartridge is only warranted if the feed water conditions are met during use.

All replacement filters and membranes must be factory-approved cartridges and membranes or the warranty is void. Contact your local water treatment professional to purchase.

If the system is altered by anyone other than the manufacturer, the warranty is void.

To obtain warranty service:

- Contact your local dealer who supplied the system
  —OR—
- Contact the manufacturer for the dealer nearest you.

It is the obligation of the owner to pay for shipping or travel charges to return the defective components.

This is the sole warranty made by the manufacturer with respect to this reverse osmosis drinking water system. No other warranties, expressed or implied, are given including merchantability or fitness for a particular purpose, incidental, or consequential damages, or other losses.

This exclusion applies to the extent exclusion is permitted by law. No person or representative is authorized to assume for the manufacturer any liability on its behalf, or in its name, except to refer the purchaser to this warranty.

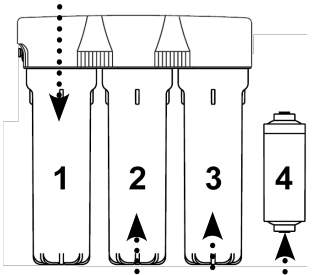
This warranty gives you specific legal rights. You may also have other rights which vary from state to state.

INTRODUCTION

Your new Reverse Osmosis (RO) drinking water system uses a combination of filtration technologies to reduce unwanted contaminants in a water supply. The following steps combine to give you the best in at-home purified drinking water.

1. MECHANICAL FILTRATION/ACTIVATED CARBON

The sediment/carbon cartridges (Part #GG-CARBPRE-CART) are designed to reduce the larger particles such as silt, rust and scale. Its 5 micron (equal to 0.0002 inch) nominal rating helps to give maximum life to the RO membrane. The activated carbon in the modules has been designed to reduce any chlorine that may be present in the feed water. This pretreatment is also necessary for membrane protection.



2. REVERSE OSMOSIS MEMBRANE

The RO membrane (Part #GG-RO-CART) is the heart of the filtration system. It is designed to reduce the dissolved mineral content of the water. Minerals picked up in the environment, by the water, are measure as Total Dissolved Solids (TDS). In the reverse osmosis process, dissolved minerals are separated from the incoming water (feed water) to product the product water (permeate). The excess minerals are rinsed to the drain (reject water).

The membrane is specifically constructed, fully aromatic polyamide film and is classified as a Thin Film Composite (TFC). The spiral wound construction of the RO membrane provides maximum surface area for water production and is less susceptible to fouling by particulate matter, turbidity, and colloidal materials.

This reverse osmosis system contains replaceable components critical to the efficiency of the system. Replacement of the reverse osmosis component should be with one of identical specification, as defined by the manufacturer, to ensure the same efficiency and contaminant reduction performance.

3. ACTIVATED CARBON POST FILTER

The activated carbon post filter (Part #GG-CARBPOST-CART) contains carbon particles that encapsulations a huge network of pores. The tremendous amount of surface area (approximately 800-1200 square meters per gram of carbon) gives the filter cartridge a high capacity for adsorption of contaminants that affect tastes and odors.

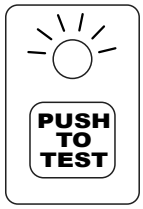
4. IN-LINE ACTIVATED CARBON POST FILTER

The in-line activated carbon post filter (Part #GG-INL-FILT) is located after the holding tank and has been design to reduce the tastes and odors that may pass through the system. It adds a final polish to the water.

5. AUTOMATIC SHUTOFF VALVE

The integrate automatic shutoff (ASO) valv esense when the holding tank is full and closes the feed water supply. This prevents excess reject water from going to the drain when the unit is not producing water.

WATER QUALITY MONITOR



The optional Water Quality Monitor has been integrated into the system cover for instant monitoring at the touch of a button. The monitor compares the level of the total dissolved solids in the incoming (feed) water versus the product water and calculates the percent rejection. The monitor is preset to indicate a level of 75% rejection. NSF/ANSI Standard 58 requires a 75% total dissolved solids rejection to pass the requirement of the standard.

- A green light indicates that the percent rejection is at or above the desired value and that the system is producing quality water.
- An amber light indicates that the product water quality is less than acceptable.

Because the Water Quality Monitor was designed to operate best while the system is making water, a false reading may occur if tested when your R.O. drinking water system is not making water. Please empty the Holding Tank, wait 15 minutes for the system to begin making water, and test your water quality again.

If the Water Quality Monitor light is still amber, please contact a water treatment professional for service. The Water Quality Monitor requires a 9 volt battery, which is included. Systems not equipped with a Water Quality Monitor contain a Water Quality Test Kit.

INSTALLATION INSTRUCTIONS

PRE-INSTALLATION CHECKLIST

Major System Components— The following items comprise the RO drinking water system:

- RO Manifold Assembly
- Drinking Water Holding Tank
- Dispensing Faucet
- Feed Water Saddle Valve
- Drain Clamp
- Plastic Tubing and Tube Connectors
- RO Membrane Cartridge Filter
- Sediment/Carbon Pre-Filter Cartridge
- Activated Carbon Post-Filter Cartridge
- In-Line Activated Carbon Post-Filter
- RO System Cover
  (with or without Water Quality Monitor)*
- Water Quality Test Kit
  (for systems without the quality monitor)
- Other items necessary for installation may include: wood screws or machine screws and nuts for mounting the manifold, concrete anchors for hanging on basement wall, additional tubing or tube connectors, plastic wire ties for organizing tubing

Tools Recommended for Installation— The following tools will cover most of the installation sites encountered.

- ⅜" Variable Speed Electric Drill
- Extension work light with outlet
- Safety Glasses
- Low Range Air Pressure Gauge
- Bicycle Hand Air Pump or Compressor
- 1 ¼" Porcelain Hole Cutter Kit
- 1 ¼" Greenlee Hole Punch plus ⅛" and ½" metal drill bits for pilot hole
- Center Punch and Hammer
- 1 ¼" Wood Bit
- Concrete Drill Bits
- Assorted wood and metal drill bits including 7/32" metal drill bit
- Phillips head and flat blade screwdrivers
- ½", 9/16", and ⅝" Open End Wrenches
- Teflon Tape
- Wide Masking Tape or Duct Tape
- Plastic Tubing Cutter
- Extra Plastic Tubing
- Small Bottle of Liquid Chlorine Bleach
- Graduated Measuring Cylinder
- Paper towels, whisk broom, and assorted clean up materials

Site Selection for Major System Components— The RO system is designed to fit under a sink; however, because of space limitations or other reasons, the system's flexible design allows for installation in other locations. When determining the location, remember that access to a cod water tap line, the household drain, and ease of filter replacement are important considerations.

All components and tubing should be located in an area which is not exposed to freezing temperatures. If winter temperatures are severe, the area should be above the minimum temperature listed in the specifications on Page 20.

Dispensing Faucet— The faucet should be placed near the sink where drinking water is normally obtained. Consider the following for the best placement: convenience of use (filling of water pitchers and glasses) with an open under the sink for attaching the product and drain tubing. A 2" diameter flat surface is required above and below the installation site. The thickness of the mounting surface should not exceed 1 ¼". Watch for strengthening webbing on the underside of cast iron sinks.

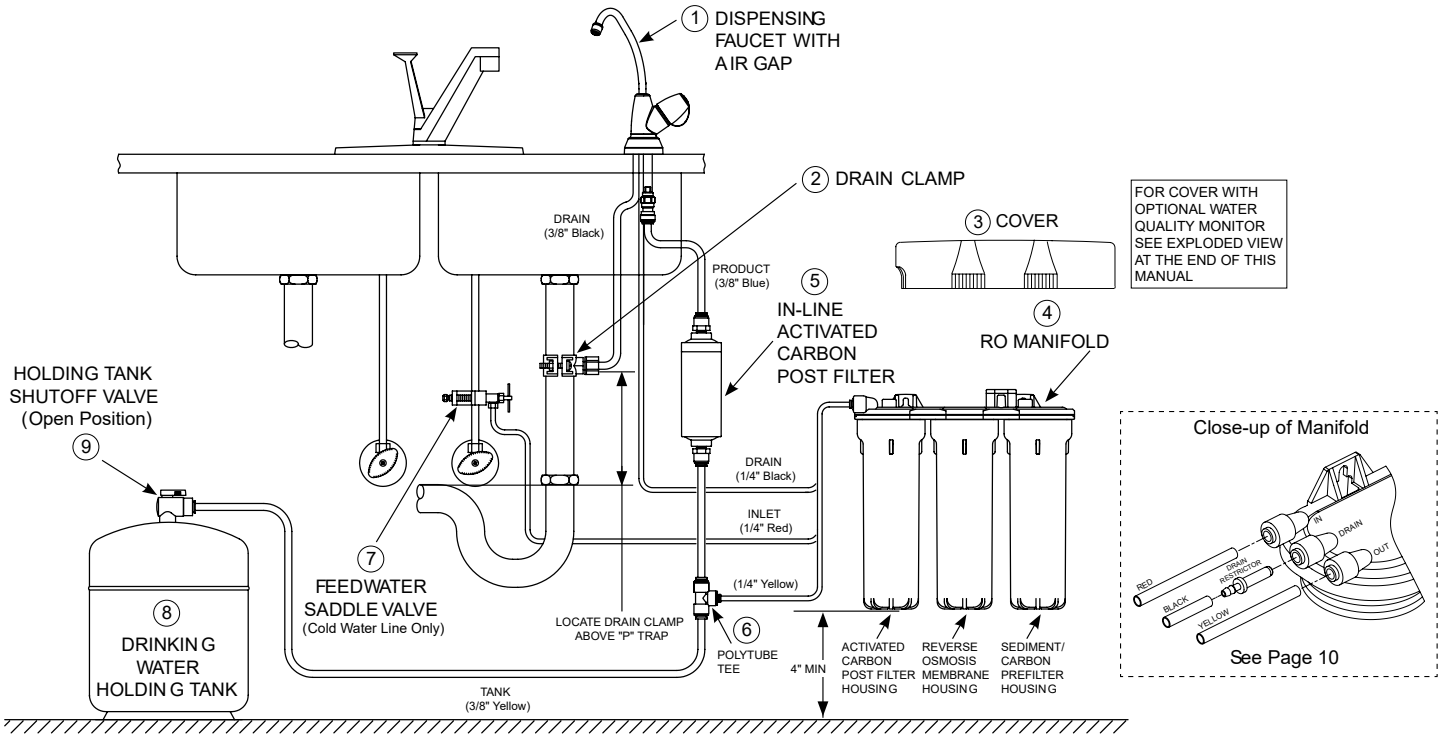
Drinking Water Holding Tank— The holding tank may be placed where it is convenient within 10 feet of the faucet; under the sink or in an adjacent cabinet are the best choices. If a longer, run of tubing is required, the tubing should be the ⅜" diameter OD size to prevent a high pressure drop. Remember, these tanks can weigh up to 30 pounds when full of water; a firm, level area is required.

RO Manifold Assembly— The manifold can be installed on either the right or left side of the under-sink area or a cabinet. The right side is recommended because all the tubing will be to the back of the cabinet and out of the way. Installation in the basement or near the laundry/utility sink where cold potable water and drain access is handy. The mounting location should allow adequate clearance for cartridge changes.

Feed Water Connection— The feed water saddle valve should be located as close to the manifold assembly as possible. **USE A POTABLE COLD WATER SUPPLY ONLY.** Softened water is preferred as it will extend the life of the RO membrane.

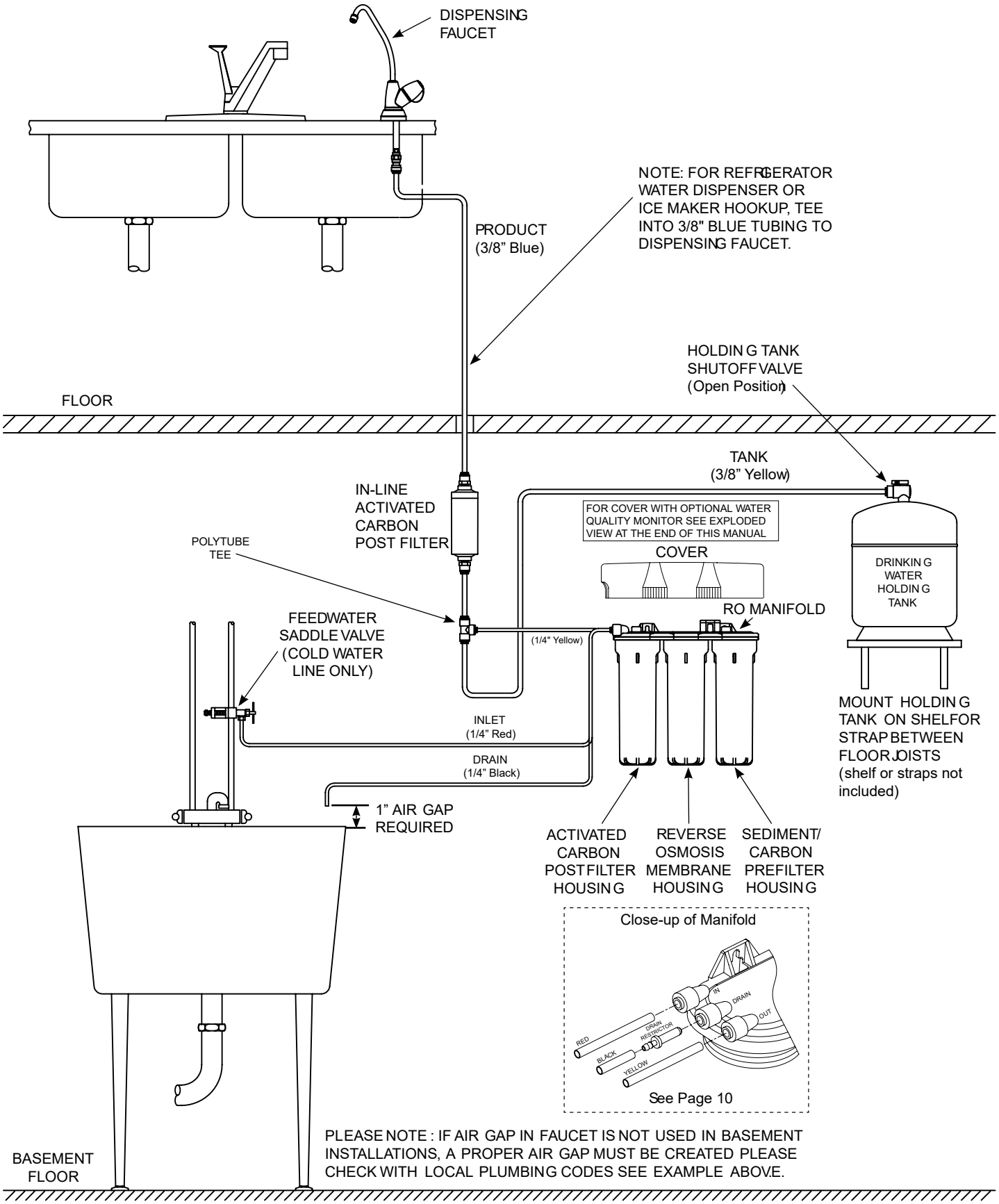
Drain Connection— The wastewater must go to drain through an anti-siphon air gap. The air gap is provided in the base of the faucet. If discharging into a utility sink or standpipe, an air gape of greater tan 1" above the flood rim must be provided. **DO NOT** connect the system drain line to the dishwasher drain or near the garbage disposal Backpressure from these units may cause the air gap to overflow.

TYPICAL UNDER-SINK INSTALLATION DIAGRAM



See Page 10

TYPICAL BASEMENT INSTALLATION DIAGRAM



INSTALLATION STEPS

All plumbing should be done in accordance with state and local plumbing codes. **NOTE:** Some codes may require installation by a licensed plumber; check with the local plumbing authority prior to installation.

In restricted under-sink areas, it may be easier to install the faucet first. Allow adequate tubing lengths for any final component position.

IMPORTANT—

When cutting polytube, make clean, square cuts. Failing to do so could result in poor connections and possible leaks. See Page 11 for proper tube connector operation.

Dispensing Faucet— The faucet contains an anti-siphon air gap. While the system is producing water, the drain water flows from the RO, through the air gap and then to the household drain. The purpose of the air gap is to prevent water in the drain from backing up into the RO drinking water system.

The easiest installation is to use an existing spray attachment hole. If the spray faucet hole is not available, then the sink top must be drilled.

1. Mark the location of the center of the faucet base.

2A. Drilling a Stainless Steel Sink:

- Center punch the hole to provide a stating point for the drill.
- Start with a smaller drill as a pilot, and then drill a ½" diameter hole to accept the bolt of a 1 ¼" Greenlee Hole Punch (1 ¼" chassis punch).
- Clean away any chips.
- Install the punch and tighten the nut to cut the hole.
- Deburr any sharp edges.

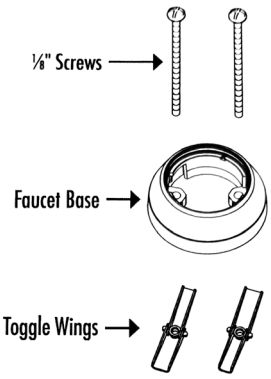
2B. Drilling a Porcelain Sink:

- It is best to use a special 1 ¼" diameter cutter designed for porcelain. A carbide tipped masonry bit is a good second choice.
- Place a piece of tape over the area to be drilled to help prevent chipping.
- Drill a pilot hole for the porcelain cutter. Use the pilot drill supplied with the kit or a carbide tipped drill.
- When drilling the 1 ¼"hole, drill slowly and carefully, the porcelain chips easily.
- After drilling, clean the area well. Iron filing, if left in place, can cause rust stains.

2C. Drilling a Countertop:

- NOTE: The countertop must be less than 1 ¼" thick. Treat ceramic tile as porcelain as described above until the tile is penetrated, then use the carbide tipped metal cutter. Formica counter tops may be drilled with a good 1 ¼" wood bit; drilling a $^{3}/_{32}$" pilot hole will help keep the bit going straight.

3. Assemble the ⅛" screws and toggle wings into the faucet base. Adjust the wings approximately 1" plus the thickness of the mounting surface away from the bottom of the Faucet base.

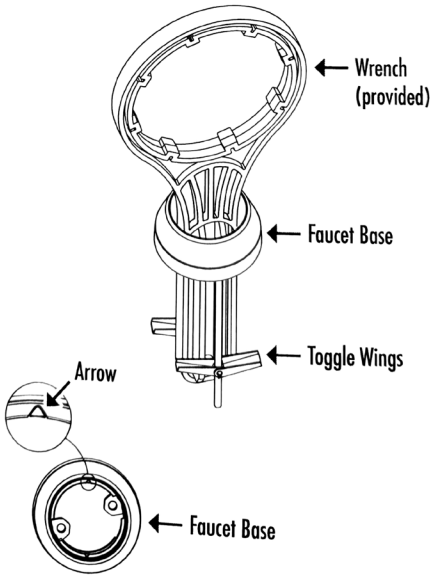


Process continued on next page

4. Place the base assembly through the mounting hole on the sink or countertop. Place the handle of the Wrench through the faucet base opening. This will separate and orient the toggle wings.

Position the Faucet Base so that the arrows are pointing in the direction that the faucet handle will face.

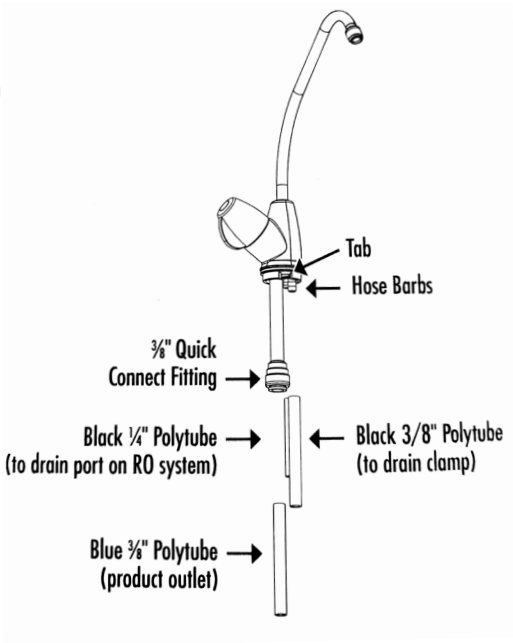
Tighten the 1/8" Screws with a Phillips screwdriver. When the Toggle Wings make contact with the mounting surface, adjust the Faucet Base to the exact desired position. Tighten the 1/8" Screws an additional 2 –3 turns while holding the Faucet Base in place.

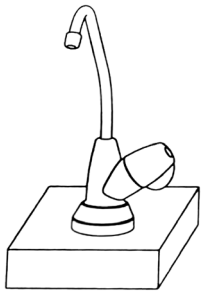


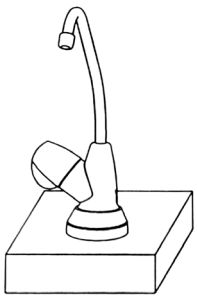
5. Connect the tubing to the faucet. Push the blue ⅜" polytube into the ⅜" quick connect fitting. Push the black ⅜" polytube onto the large hose barb. Push the black ¼"polytube onto the small hose barb.

6. Determine which direction the handle should face (right or left). As shown, it can be mounted in two direction. With the handle facing the chosen direction, slide the fastened polytubes through the faucet base. Next, slide the faucet assembly into the faucet base, lining up the tabs on the faucet with the slots on the base.

The Faucet Assembly may have to rotate slightly to get the tabs into the slots. When aligned, apply firm downward pressure to get the Faucet to fully seat. After the Faucet Assembly is seated, lock it into place by rotating it clockwise about 30 degrees.

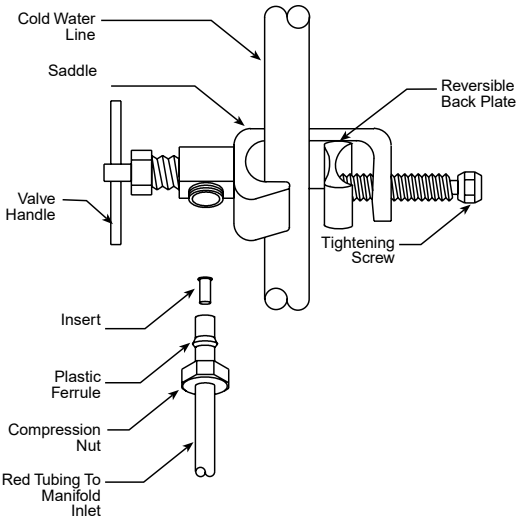



Handle to the right side


Handle to the left side

Feed Water Saddle Valve Installation— Decide on location. DO NOT connect to a hot water feed line. If you are not sure of the supply, run the hot water and feel the supply piping. Water over 100° F may cause permanent damage to the RO membrane.

FEED WATER SADDLE VALVE



1. Shut off the water supply and drain the line.

2A. For Copper Pipe (soft) Supply Line:

- Turn the handle of the feed water saddle valve counter-clockwise (outward) until the lance does not protrude from the gasket. It may have to be pushed in.
- Assemble the feed water saddle valve on the tubing.
  - For ⅜" OD tubing, use the backplate side with the small groove to prevent distortion of the tubing.
  - For larger tubing (up to ⅝" OD), use the large groove of the backplate.

Process continued on next page

- Assemble and tighten the brass screw.
- To pierce the tubing, turn the valve handle fully clockwise (inward). A small amount of water may escape from the outlet until it is fully pierced.
- When you feel the valve handle firmly seated in the clockwise direction, the copper tube is pierced and the valve is closed.

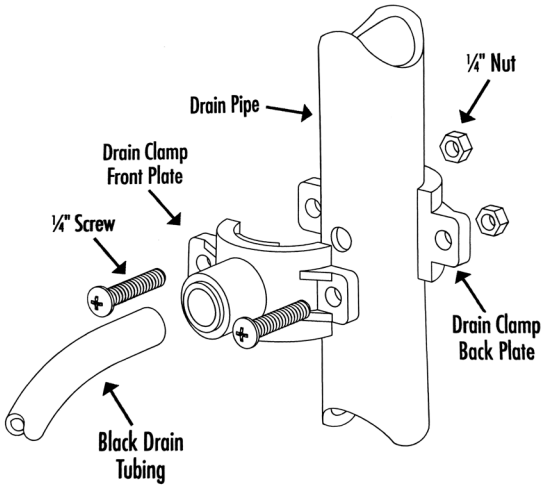
2B. For Steel or Brass Pipe (hard) Supply Line:

- After the line is drained, use a battery powered or properly grounded drill to avoid shock hazard.
- Drill a 3/16" hole in the supply line. Be careful to not drill through the opposite wall.
- Turn the handle to expose the lance no more than 3/16" beyond the rubber gasket.
- Place the body of the valve over the hole so that the lance fits into the hole.
- Assemble and tighten the brass screw.
- Turn the valve handle clockwise (inward) until firmly seated. The valve is closed.

3. With the feed water saddle valve closed, open the sink faucet and the water supply allowing water to run for a few minutes to flush any debris caused by the installation.

- Close the faucet and check the feed water saddle valve for leaks.

Drain Clamp Installation— Choose the drain outlet location per Sec. III, C.5. The following are instructions for discharging into the sink drainpipe.



1. Position the drain clamp on the sink drainpipe above the drain trap.

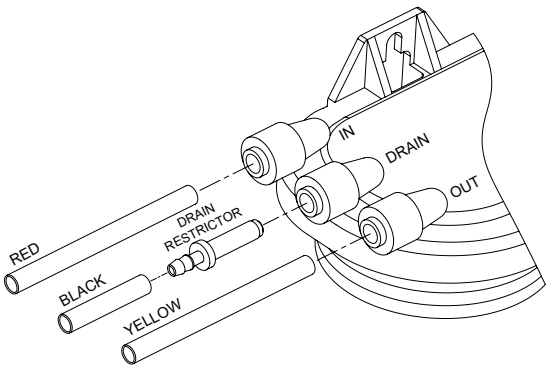
2. With a battery powered or properly grounded drill, use the clamp port as a guide to drill a 7/32" hole through the wall of the drainpipe. DO NOT penetrate the opposite side of the pipe.

3. Locate the 3/8" black drain tubing connected to the dispensing faucet. Route the tubing to the drain clamp and trim to length.

CAUTION: The lowest point of the line should be the point of connection to the drain clamp. There should be no sag in the line as this may cause excessive noise as the reject water is flowing to drain.

- Insert the tubing into the drain clamp. Make sure the tubing is pressed all the way in to create a pressure-tight connection.
- NOTE: If you want to pull the tubing out, push the ring around the tubing in and pull the tubing out.

Manifold Assembly Instructions— Locate the site per Sec. III, C.3. Various installation sites will require different types of mounting fasteners; be sure the fastener selected will provide a firm, solid mounting. A support panel may be necessary on thin cabinet walls or to span between wall studs on particleboard or drywall.



Do not drill through exterior cabinet walls or leave sharp wood screw points exposed in readily accessible cabinet interiors. The proximity of a dishwasher or a trash compactor may require special fabrication of a mounting plate.

1. The mounting bracket will accept either #10 or #12 (5mm) mounting screws spaced on 7 ⅛" (18.1cm) centers. Allow at least 2" (5.08 cm) of clearance beneath the filter housing to accommodate filter changes. Mark the two locations (the bracket can be used as a template). Install the screws and tighten them until the heads are about ⅝" from the wall.

2. Locate the ¼" red feed water tubing. Remove the red plug from the fitting labeled "IN" on the manifold and insert the tubing. See the diagrams below for proper connection of tubing and removal of plugs. Run the tubing along it's course to the feed water saddle valve, trim to length. To the end of the red polytube, install the compression nut, the plastic ferrule, and the insert. Connect to the feed water saddle valve.

3. Locate the ¼" black drain tubing connected to the dispensing faucet. The end of the black drain tubing that should be inserted into the "DRAIN" port on the manifold will have a **drain restricter** in it. Remove the black plug from the fitting labeled "DRAIN" on the manifold and insert the tubing. Allow the tubing to relax, then press firmly again to ensure proper seating.

4. Locate the ⅜" yellow tubing; remove the yellow plug from the fitting labeled "TANK" on the manifold and insert the tubing.

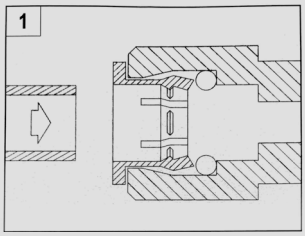
5. Locate the ⅜" blue product water tubing connected to the dispensing faucet. Firmly press one end into the elbow labeled "faucet." The fittings will grab the tubing and seal it in place. Make sure the tubing is pressed all the way in to create a pressure-tight connection.
   - NOTE: If you want to pull the tubing out, push the ring around the tubing in and pull the tubing out.

6. Hang the manifold assembly on the mounting screws and tighten. **DO NOT OVER-TIGHTEN.**

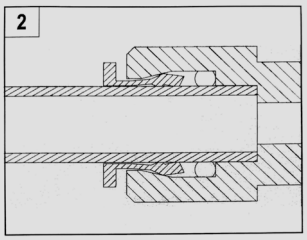
7. Remove the wrapping from the In–Line Activated Carbon Post Filter. Slice the 3/8" Blue Polytube where it would be convenient to install and change the In–Line Filter. Make a clean straight cut to insure proper connections. The "Out" port on the In–Line Filter should be toward the faucet.

   Firmly press in the tubing. The fittings will grab the tubing and seal it in place. Make sure the tubing is pressed all the way in to create a pressure tight connection.

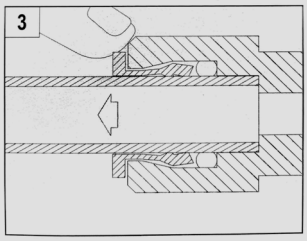
ASSEMBLY AND USE OF TUBING CONNECTORS



Simply insert tube to connect.

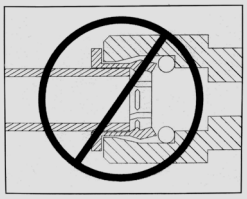


Tube is secured in position.



Press in collar to unlock tube.

- Carefully trim tubing to length, ensuring ends are cut square. Be sure tubing is free of debris, nicks, or scratches that may cause fittings to leak past the O-ring seal.
- Firmly insert the tubing into the fitting. Be certain tubing goes past the O-right seal and properly bottoms in fitting (See Fig. 2).
- To remove the tubing, push the collar around the tubing in and at the same time, pull the tubing out. You can use your finger as shown in Figure 3, or use the fitting wrench that is included with each system.



INCORRECT ASSEMBLY— Tubing may leak or disconnect when pressurized.

Position the Drinking Water Holding Tank— The holding tank can be positioned under the sink, in a nearby cabinet, or in the basement. The following instructions are applicable for any installation site, but be aware that if the holding tank is installed too far away from the faucet, a delivery pump may need to be added after the tank to help it travel to the faucet.

1. Check the tank precharge pressure. Make sure it is between 5-7 psig. If not, use a bicycle hand pump or other pump to bring the pressure up to the 5-7 psig range.

2. Pull the cap/plug off the top of the tank where the tank shut-off should go.

3. Wrap teflon tape 3 times around the ¼" male outlet thread. Wrap in the direction of the threads (clockwise when looking down on the holding tank). The tape will act as a thread sealant. Screw on the holding tank shut-off valve.

4. Locate the ⅜" yellow tubing. Firmly press one end into the holding tank shut-off valve. The fittings will grab the tubing and seal it in place. Make sure the tubing is pressed all the way in to create a pressure tight connection.

Start Up— Follow the next steps after all components have been positioned, secured, and all tubing properly connected. At time of start up and each time the filters are changed the system should be sanitized BEFORE any of the cartridge filters are installed.

1. **Sanitizing the System:**
   - Add a drip pan under the manifold to minimize clean up. Use a good quality unscented 5¼% liquid chlorine household bleach.
   - Open the Dispensing Faucet and open the Holding Tank Shut–Off Valve (the handle should be parallel with the valve body).
   - Remove the plug on the underside of the manifold labeled "SEDIMENT/CARBON". Pour one capful of bleach (approximately 2 tsp. or 10 ml) into one of the white Housings. Insert a Housing O–ring into the Housing groove, (press firmly in place). Engage and firmly tighten the Housing hand tight only.
   - Remove the plugs labeled "MEMBRANE" and "ACTIVATED CARBON" from the underside of the manifold. To each of the remaining white Housings, add one capful of bleach. Insert a Housing O–ring, engage and firmly tighten the Housings hand tight only.
   - Slowly open the Feed Water Saddle Valve (turning counter clockwise).
   - As soon as the water begins to come out of the Dispensing Faucet, close the Faucet. Let stand for 15 minutes. **NOTE:** During this time, check the entire system carefully for leaks.
   - At the end of 15 minutes, CLOSE the Feed Water Saddle Valve and open the Dispensing Faucet.
   - Allow the Holding Tank to completely drain, then remove the Sediment/Carbon Filter Housing (the farthest of the three from the In–Out ports), empty, and install the Sediment/Carbon Prefilter. Firmly tighten the Housing hand tight only.
   - Remove the Activated Carbon Filter Housing (the closest of the three to the In–Out ports), empty, and install the Activated Carbon Post Filter. Firmly
2. **Installing the RO Membrane:**
   - Remove the R.O. Membrane Housing, (the middle one), and empty.
   - Insert the Membrane up into the manifold. (The O–rings should be up toward the manifold.) Check the Housing O–ring for proper position in its groove, engage and firmly hand-tighten the Housing.

3. **Start Rinsing the System:**
   - Slowly open the Feed Water Saddle Valve fully counter clockwise.
   - The Holding Tank Valve should be open.
   - Check the Air Gap Window on the Dispensing Faucet to be sure that the drain water is flowing. The R.O. System is now making water.
   - **Do not re-open the faucet for at least 8 hours.**
   - **Do not use the first 3 full tanks of water, open faucet to drain tank empty.**

CAUTION: The R.O. Membrane is shipped with a preservative in it. To ensure proper rinsing of the R.O. Membrane, it is important to wait at least 8 hours before emptying each tank.

- NOTE: When the Faucet is first opened, expect air and carbon fines (very fine black powder) from the In–Line and Activated Carbon Post Filters to be rinsed out. This is normal for the first tank of water or after the Activated Carbon Post Filters are changed.

OPERATION & MAINTENANCE

NORMAL OPERATION

- It is normal for the Total Dissolved Solids (TDS) in the water to be higher than normal during the first 3-5 gallons of operation. This is due to the sanitizing solution and the new post filters. After this water is rinsed to drain, the removal rate should stabilize at a valve of greater than 75%.

  Water pressure, temperature, and high TDS affect the production rate and quality. The optional water quality monitor measures the TDS reduction and gives an indication of proper performance.

- RO systems product drinking water at relatively slow rates. It can take up to 3-5 hours or more to fill the holding tank. Normal operation is to let the holding tank fill with water and then draw water as needed. When the pressure in the holding tank falls to a given pressure (as the water is being used), the automatic shut-off valve (ASO) valve) will start water production and the system will refill the holding tank.

  When the holding tank is full and no water is being used, the ASO valve will automatically shut off the feed water to conserve water. The more water that is used (up to the capacity of the system), the better the RO system will function. Other uses for the water are flowers, pets, and rinsing glassware.

- With each use, it is recommended that you run the faucet for at least 3 seconds prior to using water. This is especially important if the system has not been used daily. After periods of non-use (such as a week of vacation or longer), it is better to empty the holding tank and allow the system to product fresh water for use.

CHANGING FILTER CARTRIDGES

CAUTION—

All individual should take adequate precaution when changing the filter modules, including protective gloves, to avoid direct contact with the exhausted modules.

This RO system contains modules which must be replaced at regular intervals to maintain proper performance. USE ONLY FACTORY APPROVED CARTRIDGES.

- For replacement cartridges, contact your local dealer who installed your RO system or contact the distributor to find the nearest recommended professional.

- The recommended interval for changing the Pre- and Post- filter modules is every 6-12 months depending on the raw water quality (not the RO membrane cartridge). Typical TFC membrane life expectancy is 3 years on average. Local conditions may dictate more frequent changes.

    - **NOTE: When replacing the RO membrane, see the Start Up instructions on Page 11 for proper procedure. This cartridge should be treated as a new install as the membrane has a preservative in them that should be disinfected and rinsed before use.**

- Use a drip pan to catch any water that may spill when the filter cartridges are removed. Refer to the installation views on Pages 5-7 for proper locations.

CHANGING FILTER CARTRIDGES

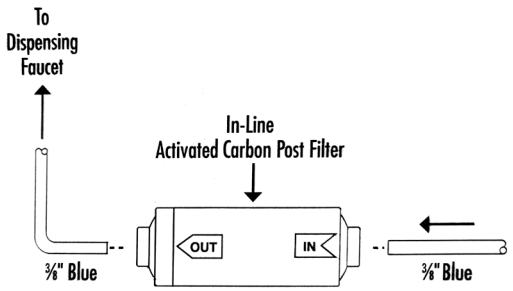
1. Place a drip pan under the manifold for easy clean up. Close the manifold shut off valve by turning fully clockwise and open the dispensing faucet. This will allow the manifold to be de-pressurized and the holding tank to empty so you can safely remove the old filter cartridges.
2. Loosen and remove the Sediment/Carbon Pre-Filter cartridge and the Activated Carbon Post-Filter cartridge housings. Discard the filters.
3. Wash the inside of the Housings using a mild detergent and a soft cloth. Do not use abrasive cleaners or pads. Thoroughly rinse all soap from the Housings before reassembly.
4. The system should be sanitized before installing the Sediment/Carbon Prefilter and Activated Carbon Post Filter. To sanitize the system and replace the filters:

    - Use a good quality unscented 5¼% liquid chlorine household bleach.
    - Add one capful of bleach (this is 2 tsp. or 10 ml) to the Sediment/Carbon Filter Housing and temporarily install the Housing without the Sediment/Carbon Prefilter. Check the Housing O–ring for proper position in its groove, engage and firmly tighten the Housing hand tight only.
    - Add one capful of bleach to the Activated Carbon Filter Housing. Carefully fill the Housing with tap water and temporarily install the Housing without the Activated Carbon Post Filter.
    - The Dispensing Faucet should be open, slowly open the Feed Water Saddle Valve.
    - As soon as water begins to drip out of the Dispensing Faucet, close the Faucet. Let the system stand for 15 minutes.
    - At the end of 15 minutes, in the following order, close the Feed Water Saddle Valve, close the Holding Tank Valve and open the Dispensing Faucet to release the pressure.
    - Remove the Sediment/Carbon Filter Housing and empty. Remove the wrapping and install the Sediment/Carbon Prefilter. Firmly tighten the Housing hand tight only.
    - Remove the Activated Carbon Filter Housing and empty. Remove the wrapping and install the Activated Carbon Post Filter. Firmly tighten the Housing hand tight only.
    - Disconnect the yellow product water tubing that runs from the Holding Tank to the Tee. Put 50 drops of bleach (this is ½ tsp. or 3 ml) into the tubing and reconnect it to the Tee.

      NOTE: Now is the convenient time to change the In–Line Activated Carbon Post Filter.

- Slowly open the Feed Water Saddle Valve. When water begins dripping out of the Dispensing Faucet, in the following order, close the Faucet and then open the Holding Tank Valve.
- **Do not open the Faucet for at least 8 hours.**
- **Discard the first three full tanks of water produced, they will contain chlorine.**

CHANGING THE IN-LINE CARBON FILTER



1. Close the feed water saddle valve by turning fully clockwise.
2. Close the holding tank valve and then open the dispensing faucet to release the pressure.
3. Remove the in-line activated carbon post filter. Disconnect the used post filter by pressing the connector's collar while pulling the tube out of the fitting.
4. Firmly reconnect the polytubes to the new in-line filter. Make sure the tubing is pressed all the way in to create a pressure-tight connection (see diagrams on Page 11).
5. Slowly open the feed water saddle valve.
6. When water begins dripping out of the faucet, close the dispensing faucet. Then, open the holding tank valve. When the faucet first opened, expect air and carbon fines from the new in-line filter to be released. This is normal for the first tank of water used.

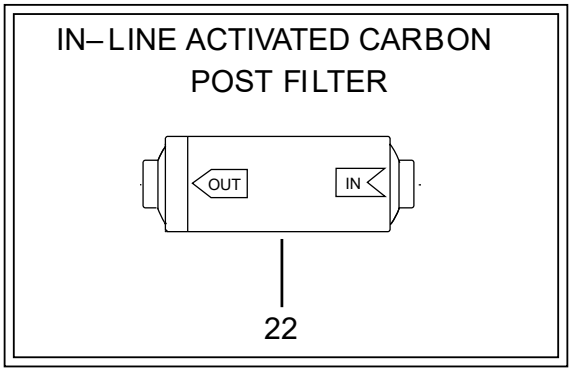
IN-FIELD RESOLUTION GUIDE	
Service Issue	Recommended Solution
Low volume of product water (permeate) from holding tank	Please review all of the following scenarios: ▪ Inspect the feed water valve to ensure it is open and unclogged. Also check the drain line is unrestricted. ▪ Sediment/Carbon cartridges may be clogged and need to be replaced. ▪ In-coming water supply has insufficient water pressure. Minimum feed water pressure required is 40 psig. ▪ RO membrane may be fouled and needs to be replaced. Correct cause of fouling to prevent future issues. ▪ Air precharge pressure in holding tank is incorrect. Empty water from holding tank and with the faucet open, adjust air pressure to 5-7 psig (35-48 kPa). ▪ Air bladder in holding tank may be ruptured and tank should be replaced. ▪ The drain orifice in dispensing faucet is clogged. ▪ The check valve may be stuck and released. ▪ The automatic shutoff valve (ASO valve) is malfunctioning and needs to be replaced.
Low pressure at the dispensing faucet	Please review all of the following scenarios: ▪ In-line carbon post-filter is plugged and needs to be replaced. ▪ Air precharge pressure in holding tank is low. Empty water from holding tank and with the faucet open, adjust air pressure to 5-7 psig (35-48 kPa). ▪ Holding tank valve may not be fully open. ▪ Dispensing faucet is faulty and needs to be repaired or replaced. ▪ Holding tank is being depleted quickly from heavy water use. Give system time to refill tank and/or add a second holding tank if this is a common occurrence.
High Total Dissolved Solids (TDS) in the product water	Please review all of the following scenarios: ▪ Sediment/Carbon cartridges are clogged and need to be replaced. ▪ Low water pressure may be the cause. If membrane cartridges need to be replaced more frequently than recommended, find and resolve issue. Install new membrane cartridge. ▪ Membrane O-ring may be crimped and needs to be reseated or replaced. ▪ The product water and drain water lines are reversed. ▪ Drain line is clogged. Clear debris or replace drain restricter. ▪ The drain orifice in dispensing faucet is clogged. ▪ The automatic shutoff valve (ASO valve) is malfunctioning and needs to be replaced. ▪ New in-line post carbon filter not rinsed well. Flush with several full tanks of product water. ▪ In-coming water quality has changed. An increase in feed water TDS will cause corresponding increase in product water TDS.

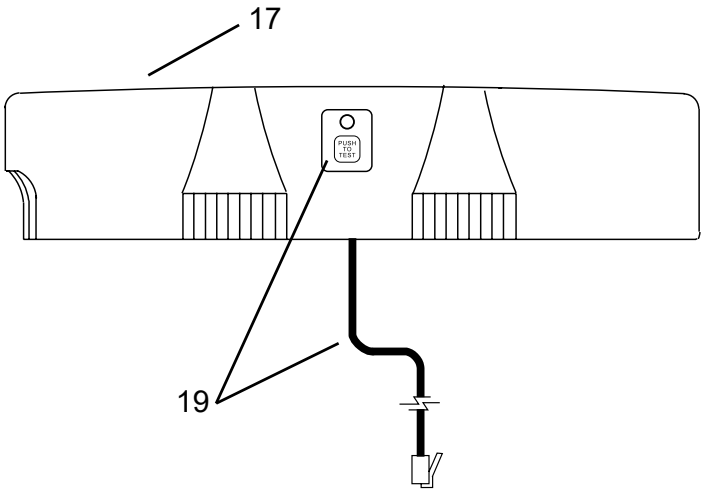
Additional common troubleshooting recommendations continue on next page

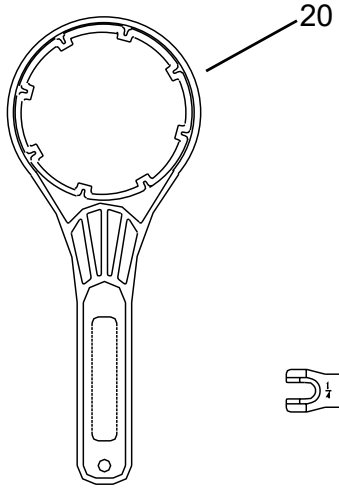
IN-FIELD RESOLUTION GUIDE	
Service Issue	Recommended Solution
Tastes and odors in the product water	Please review all of the following scenarios: ▪ The in-line post carbon filter is exhausted and needs to be replaced. ▪ There is a foreign matter in the holding tank. Clean, flush, and sanitize the system, then replace the filters. ▪ The product water and drain water lines are reversed. ▪ There are dissolved gases in the feed water. Pretreat the water to remove contaminant. ▪ Increase the in-coming water TDS to raise TDS in product water.
Amber light is lit on the water quality monitor (optional)	The filters may be plugged or the membrane is fouled and needs to be replaced. It's also possible that the system may not have been used for an extended period of time. Empty the holding tank and wait 15 minutes for the system to create more water. Test the water quality again.
Drain water overflows at the dispensing faucet	Please review all of the following scenarios: ▪ Air gap is blocked and needs to be cleared. Rinse with vinegar for removal of calcium buildup. ▪ Drain tube may be clogged and needs to be cleared. ▪ The drain clamp may not be aligned properly with the hole in the drainpipe. ▪ Excessive flow rate to the drain. Replace the drain restricter.
Faucet leaks or drips from base	The delivery tube is leaking due to a bad O-ring and it needs to be replaced.
Fitting leaks in general	Close the feed water valve and relieve pressure within the system before disconnecting any tubing or replacing fittings. Before replacing, re-cut the tubing and re-insert into the fitting to see if that solves the leak. If pipe threads are leaking, remove and retape with teflon tape.

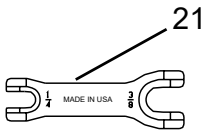
19A .....Water Quality Test Kit

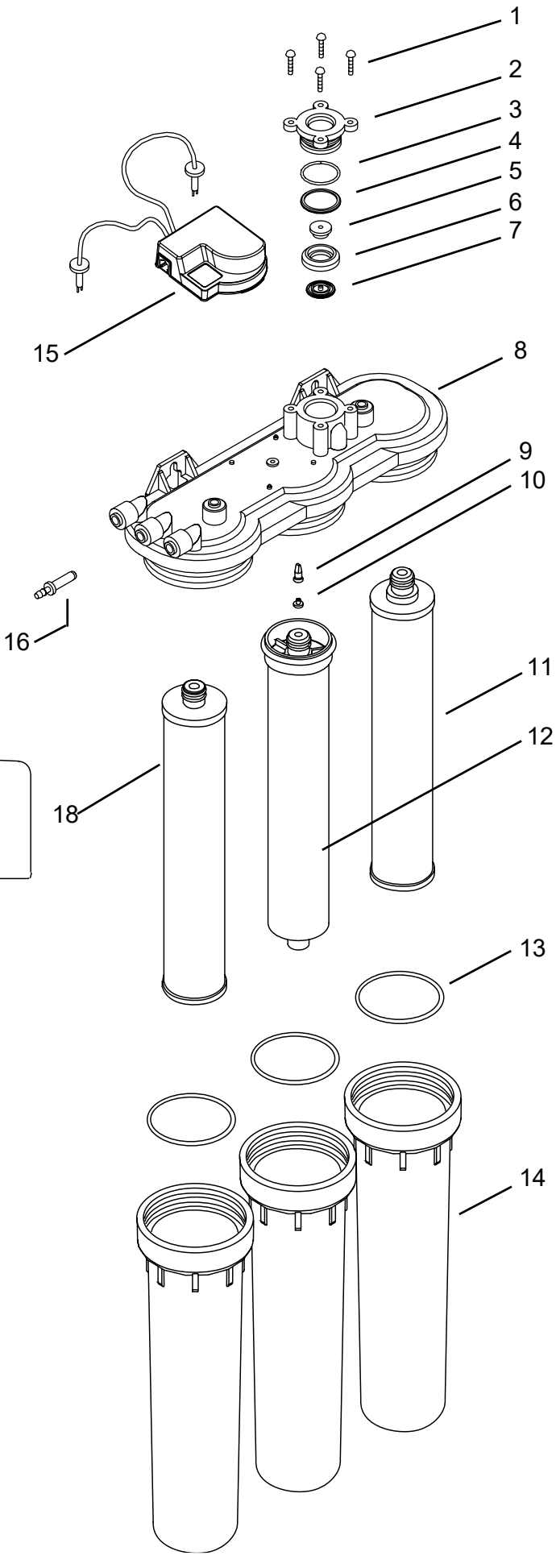
23.....Nitrate/Nitrite Test Kit











REPLACEMENT PARTS

RO DRINKING WATER SYSTEM			
Drawing #	**Part Number**	**Description**	**Quantity**
1	S2009	Self Tapping Screws	4
2	S2005	Auto Shut Off Cap	1
3	S2013	Auto Shut Off Cap O-ring	1
4	S2011	Auto Shut Off Diaphragm Large	1
5	S2007	Auto Shut Off Piston	1
6	S2006	Auto Shut Off Piston Ring	1
7	S2010	Auto Shut Off Diaphragm - Small	1
8	NSCTA0405MNG	Manifold Plate Assembly without Monitor Assembly *(does not include item # 15)*	1
	NSCTA0305MNG	Manifold Plate Assembly with Monitor	
9	S1276	Check Valve	1
10	S1277	Check Valve Retainer	1
11	S7028	Sediment/Carbon Prefilter	1
12	S1229RS	T.F.C. R.O. Membrane 50 gpd (189 lpd)	1
	S1782RS	T.F.C. R.O. Membrane 100 gpd (378 lpd)	
13	S3069	Housing O–Ring	1
14	S7029–09	Housing	2
15	R7078	Optional Water Quality Monitor Board w/Probes	1
16	S2116–5	Drain Restrictor 50 gpd (189 lpd)	1
	S2116-12	Drain Restrictor 100 gpd (378 lpd) - Purple	
17	S2119–01NN	Cover	1
18	S7025	Activated Carbon Post Filter	1
19	R2112	Optional Water Quality Monitor Indicator and Cord	1
or			
19A	S1580	Water Quality Test Kit	
20	S3072	Wrench for Housing	1
21	S1405	1/4"–3/8" Fitting Wrench	1
22	S7206W-JG	In–Line Activated Carbon Post Filter	1
23	S1447	Nitrate/Nitrite Test Kit	1

ADDITIONAL COMPONENTS INCLUDED *(See Page 6 Diagram)*			
Drawing #	**Part Number**	**Description**	**Quantity**
1	R7100-CR	Dispensing Faucet	1
2	S1117–01	3/8" Drain Clamp Assembly	1
6	JG -PI301208S	3/8" x 3/8" x 1/4" Union Tee	1
7	S1118–01	Feed Water Saddle Valve	1
8	C2000FP	Plastic Holding Tank	1
or			
8A	C2000F	Steel Holding Tank	1
9	JGPPSV501222W	Holding Tank Shutoff Valve	1

SPECIFICATIONS

QUALIFIED SYSTEM PERFORMANCE

Because the performance of an RO membrane is highly dependent upon pressure, temperature, pH, and TDS. The following should be used for comparison purposes only.

	U.S.	METRIC
Membrane Production[1]	41-53 gpd	155-201 lpd
Membrane TDS Reduction[1]	96% minimum	96% minimum
System Production[2]	14 gpd	53 lpd
Recovery Rating[2]	38%	38%
Efficiency Rating[2]	22%	22%
TDS Reduction[2]	90%+ typical	90%+ typical
Drain (reject water) Flow	3-5 x product flow	3-5 x product flow
Empty Storage Tank Precharge	5-7 psig air	35-48 kPa air
Storage Tank Capacity[2]	1.8 gallons	6.8 liters

[1]Industry standards measure RO membranes performance with no backpressure on the product water, at 65 psig (448 kPa) and 77° F (25° C). Further conditions on the above are 600 ppm TDS. Production rate and TDS reduction figures are for a new membrane that has been rinsed for 24 hours. The production rate of a new membrane can decrease by 10% per year or more, depending upon the scaling and fouling tendencies of the feed water.

[2]Measured at 50 psig, 77°±2° F, 750±40 mg/l TDS per section 6 of NSF/ANSI Standard 58. 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. 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. This reverse osmosis system contains a replaceable component critical to the efficiency of the system. Replacement of the reverse osmosis component should be with one of identical specifications, as defined by the manufacturer, to assure the same efficiency and contaminant reduction performance.

RECOMMENDED OPERATING LIMITS FOR FEED WATER

	U.S.	METRIC
Water Pressure	40-100 psig	280-690 kPa
TDS	2000 ppm maximum	2000 mg/L maximum
Temperature	40-100° F	4-38° C
pH	4-11 (optimum rejection at pH 7.0-7.5)	
Hardness	<10 gpg or softer	<170 mg/L or softer
Iron	<0.1 ppm	<0.1 mg/L
Manganese	<0.05 ppm	<0.05 mg/L
Hydrogen Sulfide	0	0
Chlorine	Chlorine will damage a TFC membrane. The sediment/carbon cartridge filter has been designed to reduce chlorine from the incoming water. Change filter every 6-12 months, more often if the water contains more than 1 ppm chlorine.	
Bacteria	Incoming water must be potable. **DO NOT USE WITH WATER THAT IS MICROBIOLOGICALLY UNSAFE OR OF UNKNOWN QUALITY, WITHOUT ADEQUATE DISINFECTION BEFORE OR AFTER THE SYSTEM.**	