

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

- MVP-50M
- MVP-50

INDEX

Manufacturer’s Limited Warranty3
Introduction4
Installation Instructions5
Pre-Installation Checklist	
Installation Diagram	
Start-Up	
Operation & Maintenance	14
Normal Operation	
Changing In-line Filter	
RO Monitor Function	
In-Field Resolution Guide	16
Replacement Parts	18
System Specifications	20

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 replaced 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 than 27 mg/L nitrate and 3 mg/L nitrite in combination measured as N and is certified for nitrate/nitrite reduction only for water supplies with a pressure of 280 kPa (40 psig) or greater.

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



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 warranted.

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.

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 give you specific legal rights. You may also have other rights which vary from state to state.

INTRODUCTION

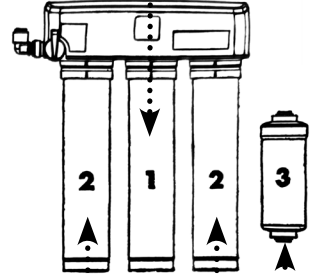
Your new Reverse Osmosis (RO) drinking water system uses a combination of filtration technologies to reduce unwanted contaminants in a water supply. The following steps combine to give you the best in clear sparkling drinking water.

1. REVERSE OSMOSIS MEMBRANE

The RO membrane (Part #MVP-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.



2. MECHANICAL FILTRATION/ACTIVATED CARBON

The sediment/carbon cartridges (Part #MVP-CARB-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.

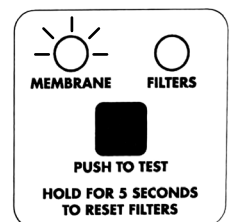
3. IN-LINE ACTIVATED CARBON POST FILTER

The in-line activated carbon post filter (Part #MVP-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.

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 requires water to be running. It compares the level of the TDS in the incoming (feed) water versus the product water (permeate) and calculates the percent rejection. The monitor is preset to indicate a level of 75% rejection. The monitor is also equipped with a filter timer that can be set for 3, 6, or 12 months. A green light indicates that the percent rejection is at or above the set value and that the system is producing quality water and the filters are good.

An amber light indicates that the product water quality is less than acceptable on the membrane side, or filters need to be changed. The water quality monitor was designed to operate best while the system is making water, a false reading may occur if tested when your RO 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 your local water treatment professional for service. The water quality monitor requires a coin cell battery, which is included. Systems not



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
- Two (2) Sediment/Carbon Cartridge Filters
- RO System Cover
(with or without Water 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.

- $\frac{3}{8}$ " Variable Speed Electric Drill
- Extension work light with outlet
- Safety Glasses
- Low Range Air Pressure Gauge
- Bicycle Hand Air Pump or Compressor
- 1 $\frac{1}{4}$ " Porcelain Hole Cutter Kit
- 1 $\frac{1}{4}$ " Greenlee Hole Punch plus $\frac{1}{8}$ " and $\frac{1}{2}$ " metal drill bits for pilot hole
- Center Punch and Hammer
- 1 $\frac{1}{4}$ " Wood Bit
- Concrete Drill Bits
- Assorted wood and metal drill bits including $\frac{7}{32}$ " metal drill bit
- Phillips head and flat blade screwdrivers
- $\frac{1}{2}$ ", $\frac{9}{16}$ ", and $\frac{5}{8}$ " 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 cold 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 $\frac{1}{4}$ ". Watch for strengthening webbing on the underside of cast iron sinks.

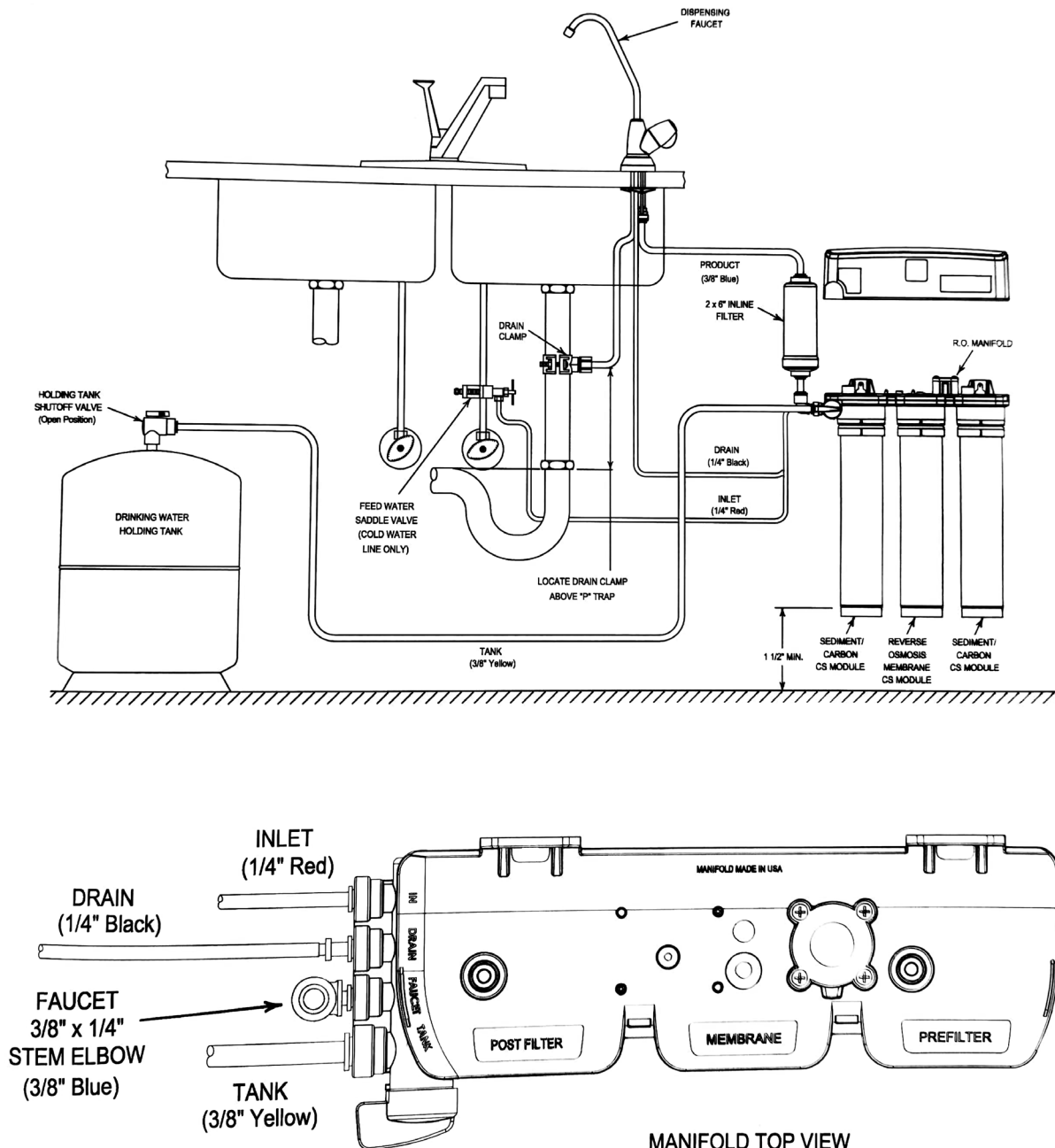
Drinking Water Holding Tank— The holding tank may be placed where it is convenient within 10 feet of the faucet; under the sink or in an adjacent cabinet are the best choices. If a longer, run of tubing is required, the tubing should be the $\frac{3}{8}$ " diameter OD size to prevent a high pressure 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 is also an option. Another location is near the laundry/utility sink where cold potable water and drain access is handy. The mounting location should allow adequate clearance and accessibility for cartridge changes.

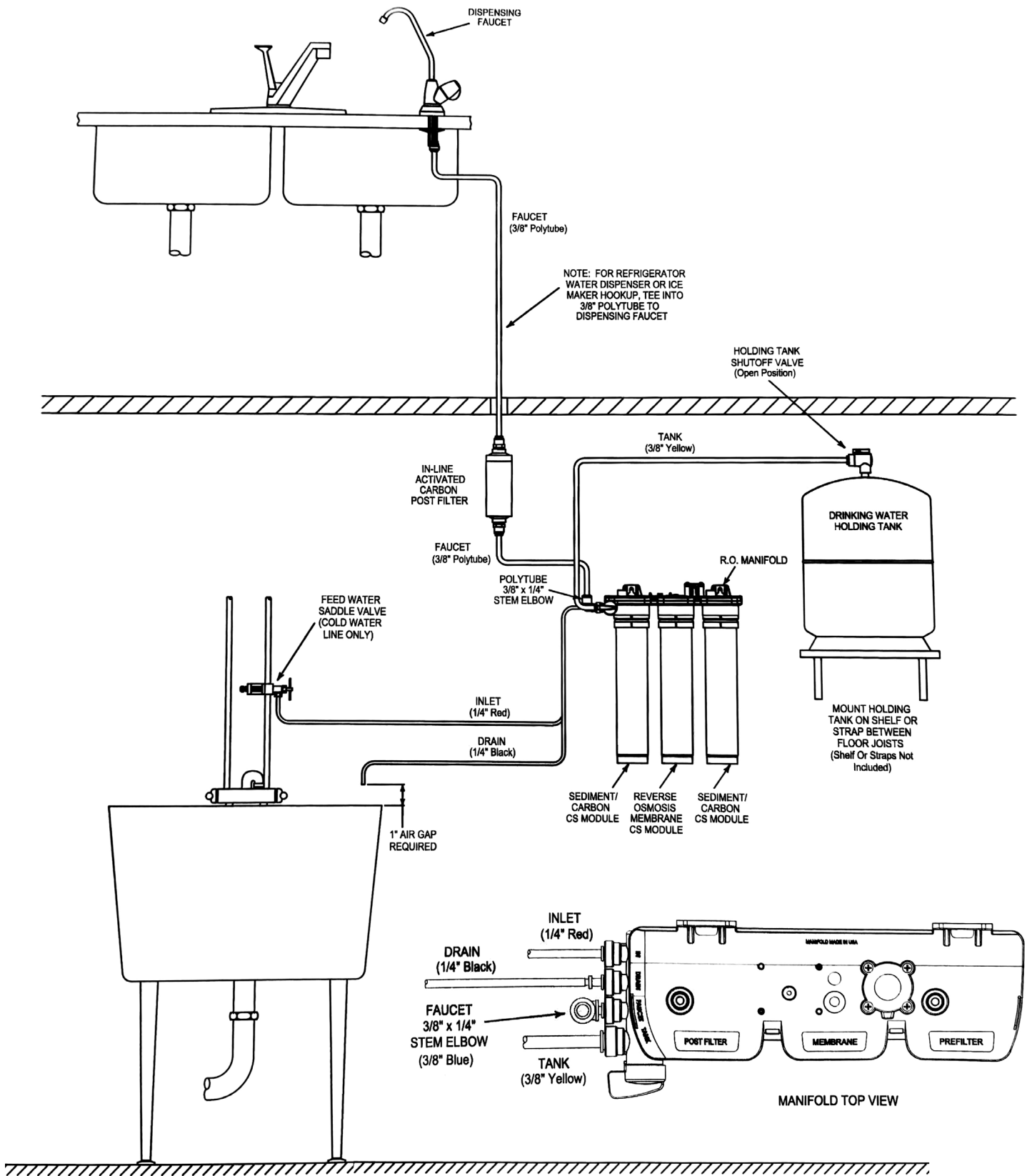
Feed Water Connection— The feed water saddle valve should be located as close to the manifold assembly as possible. **USE A POTABLE COLD WATER SUPPLY ONLY.** Softened water is preferred as it will extend the life of the RO membrane.

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 than 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.

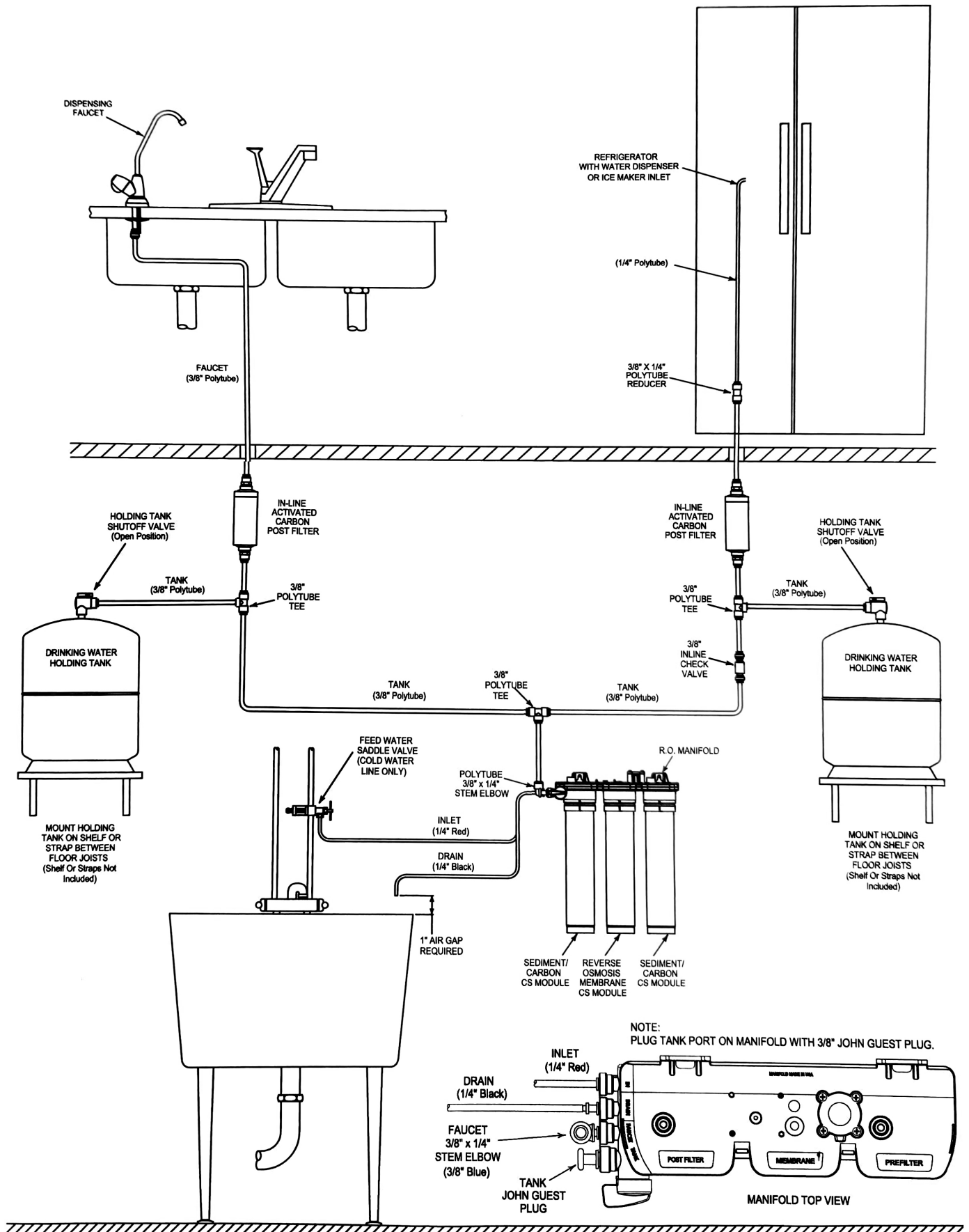
TYPICAL UNDER-SINK INSTALLATION DIAGRAM



TYPICAL BASEMENT INSTALLATION DIAGRAM



TYPICAL BASEMENT INSTALLATION WITH REFRIGERATOR 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 12 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 starting point for the drill.
- Start with a smaller drill as a pilot, and then drill a 1/2" diameter hole to accept the bolt of a 1 1/4" Greenlee Hole Punch (1 1/4" chassis punch).
- Clean away any chips.
- Install the punch and tighten the nut to cut the hole.
- Deburr any sharp edges.

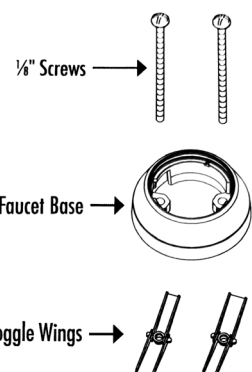
2B. Drilling a Porcelain Sink:

- It is best to use a special 1 1/4" 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 1/4" 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:

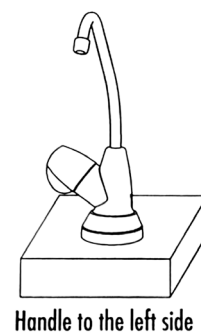
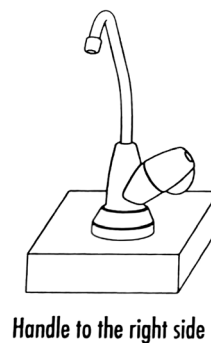
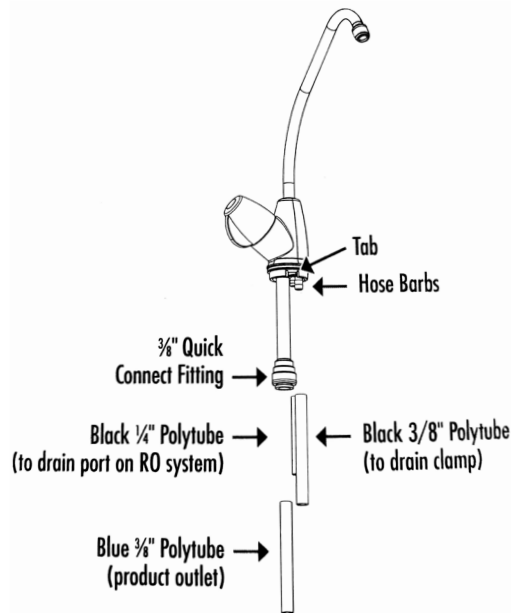
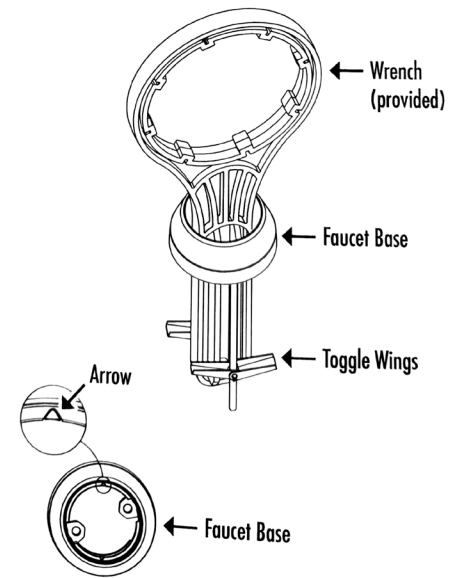
- **NOTE:** The countertop must be less than 1 1/4" thick. Treat ceramic tile as porcelain as described above until the tile is penetrated, then use the carbide tipped metal cutter. Formica counter tops may be drilled with a good 1 1/4" wood bit; drilling a 3/32" pilot hole will help keep the bit going straight.

3. Assemble the 1/8" 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 a piece of a 3/4" PVC pipe (not supplied) into the faucet base opening. This will separate and orient the toggle wings.
5. Connect the tubing to the faucet. Push the blue 3/8" polytube into the 3/8" quick connect fitting. Push the black 3/8" polytube onto the large hose barb. Push the black 1/4" 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.

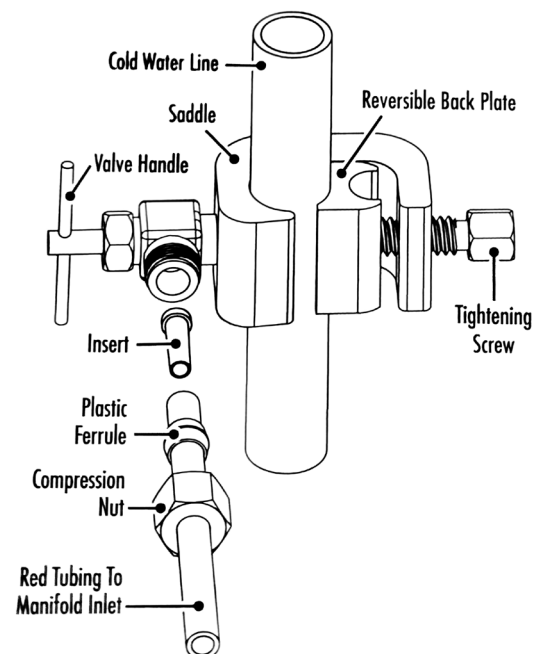


Feed Water Saddle Valve Installation— Decide on location. DO NOT connect to a hot water feed line. If you are not sure of the supply, run the hot water and feel the supply piping. Water over 100° F may cause permanent damage to the RO membrane.

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 3/8" OD tubing, use the backplate side with the small groove to prevent distortion of the tubing.
 - For larger tubing (up to 5/8" OD), use the large groove of the backplate.
- 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.



Process continued on next page

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 $\frac{3}{16}$ " hole in the supply line. Be careful to not drill through the opposite wall.
 - Turn the handle to expose the lance no more than $\frac{3}{16}$ " 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.

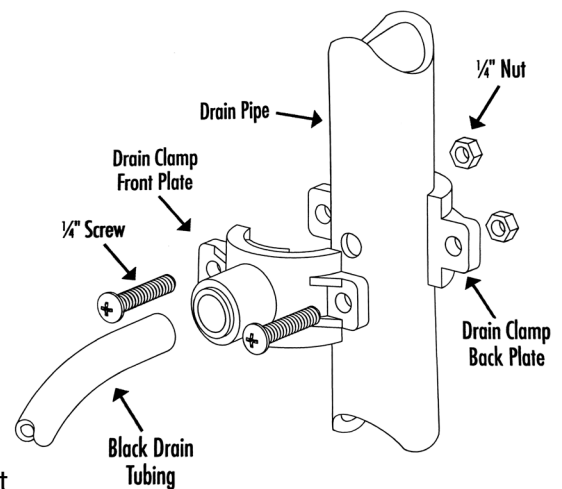
Drain Clamp Installation— Choose the drain outlet location per Sec. III, C.5. The following are instructions for discharging into the sink drainpipe.

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 $\frac{7}{32}$ " hole through the wall of the drainpipe. DO NOT penetrate the opposite side of the pipe.
3. Locate the $\frac{3}{8}$ " 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.

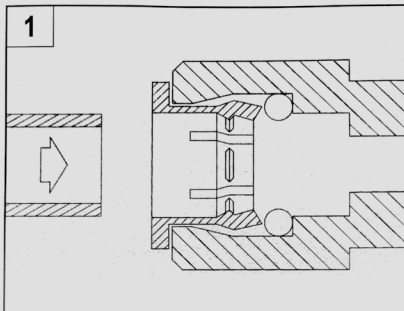
Do not drill through exterior cabinet walls or leave sharp wood screw points exposed in readily accessible cabinet interiors. The proximity of a dishwasher or a trash compactor may require special fabrication of a mounting plate.

1. The mounting bracket will accept either #10 or #12 (5mm) mounting screws spaced on $7 \frac{1}{8}$ " (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 $\frac{5}{8}$ " from the wall.

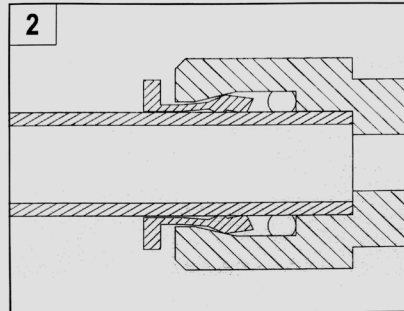
Process continued on next page

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.**

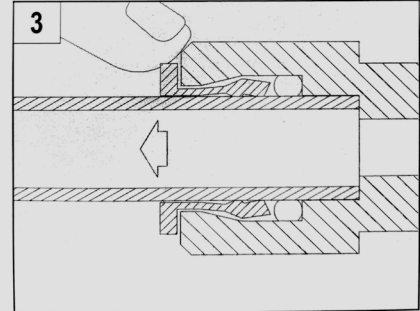
ASSEMBLY AND USE OF TUBING CONNECTORS



1 Simply push in tube to attach.

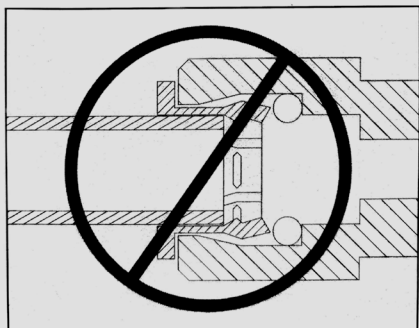


2 Tube is secured in position.



3 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-ring 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.

1. Installing The Filter Cartridges:

- Remove the plugs on the underside of the manifold labeled "SEDIMENT/CARBON." Unwrap the Sediment/Carbon cartridges (2). Make certain the module has an O-ring on its stem and within the O-ring groove of the housing. With the alignment notch facing manifold shut off (left), press module firmly into the manifold, tighten the modules ¼ turn to the right by hand and turn into its locked position.
- Remove the plug labeled "MEMBRANE" from the underside of the manifold. Unwrap the Membrane filter cartridge. Make certain there is an O-ring on its stem and within the O-ring groove of the housing. With the alignment notch facing manifold shut off (left) press module firmly into the manifold, tighten the modules ¼ turn to the right by hand and turn into its locked position.

2. Disconnect the yellow product water tubing that runs from the holding tank to the manifold (see plate top view on Page 6). Put 50 drops (½ tsp. or 3 ml) of bleach into the tubing and reconnect to the manifold plate.

3. Start Rinsing the System:

- Slowly open the feed water saddle valve counter-clockwise to its fully open position.
- Open the faucet to allow air to escape while system is filling the housings and tubing.
- Check the air gap window on the dispensing faucet to be sure that the drain water is flowing.
- RO should be filling and purging air, when water starts dripping consistently from faucet spout, close faucet handle.
- **Do not re-open the faucet for at least 3-4 hours, or when auto shutoff valve closes (no water to drain).**
- **Do not use the first 3 full tanks of water, open faucet to drain tank empty.**

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 value 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.

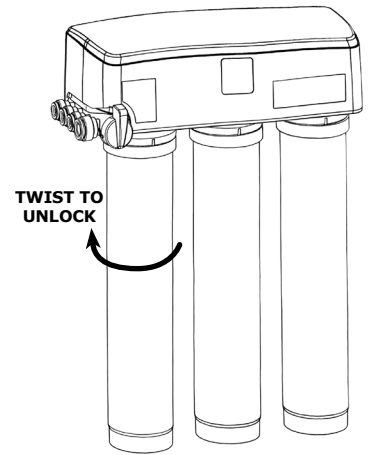
- For replacement cartridges, contact your local dealer who installed your RO system or contact the distributor to find the nearest recommended professional.
- The recommended interval for changing the Pre- and Post- filter modules is every 6-12 months depending on the raw water quality (not the RO membrane 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 12 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.

Process continued on next page

1. Close the manifold shut off valve by turning ¼ turn clockwise and open the dispensing faucet. This will allow the manifold to be de-pressurized so you can safely remove the old modules.

2. For Sediment/Carbon Cartridges:

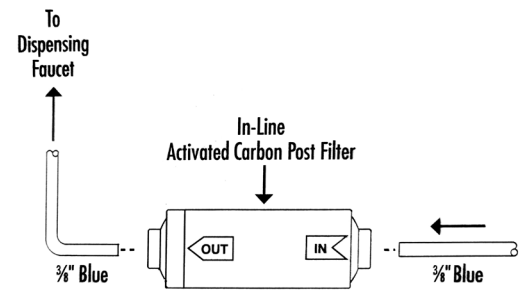
- Grasp the cartridge and press upward while twisting ¼ turn to the left to release cartridge from its locked position. Properly discard the old/used cartridges.
- Unwrap the new Sediment/Carbon cartridge and remove dust cover from the top.
- Check the O-ring on its stem and within the O-ring groove of the housing is in proper position.
- With the alignment notch facing the manifold shut off valve (left), press cartridge firmly into the manifold and tighten by turning a ¼ turn to the right. The cartridge is now locked into the manifold.



3. Open the manifold shut off valve by turning handle ¼ turn counter-clockwise to its fully open position.
4. With dispensing faucet open, allow water to run to the drain to purge the air from your new cartridges. This will also rinse any carbon fines from the new cartridges. Discard the first 3 full tanks of water produced; the RO system is now ready for regular use.

CHANGING THE IN-LINE CARBON FILTER

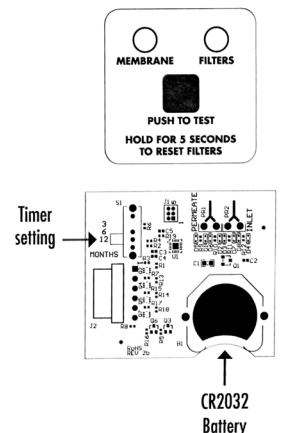
1. Close the feed water saddle valve by turning fully clockwise.
2. Close the holding tank valve and then open the dispensing faucet to release the pressure.
3. Remove the in-line activated carbon post filter. Disconnect the used post filter by pressing the connector's collar while pulling the tube out 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 12).
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 can carbon fines from the new in-line filter to be released. This is normal for the first tank of water used.



RO MONITOR FUNCTION

For models that are equipped with a monitor, this offers dual function. The monitor is designed to be able to monitor your membrane rejection and there is a multi-function time for the filter cartridges. You will be alerted by an amber LED light when the membrane drops to 75% rejection or less. You will be alerted when your filter time ends. This can be set to 3, 6, or 12 months.

- **Push To Test Button**— When the LED lights are green, everything is performing well. When the “MEMBRANE” indicator light is amber, it is time to change the membrane cartridge. When the “FILTERS” light is amber, it is time to change the Pre- and Post- Sediment/Carbon filter cartridges.
- **Resetting The Timer**— Once you have serviced your system and have the new filters in place, **PRESS and HOLD** the “PUSH TO TEST” button to reset the filter timer.
- The circuit board is powered by a lithium coin cell battery, model CR2032. It is recommended that the battery be changed when the Pre- and Post- filter cartridges are changed. Battery life could last up to 2 years, depending upon frequency of testing.



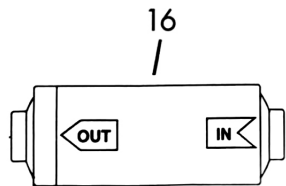
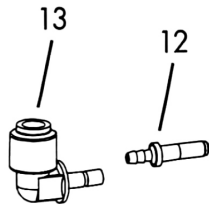
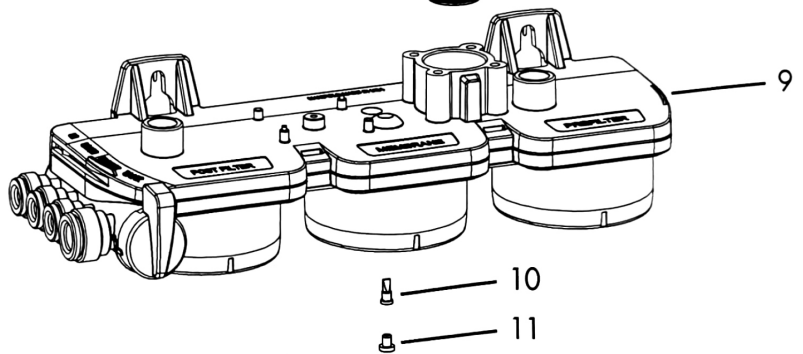
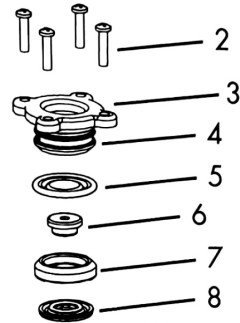
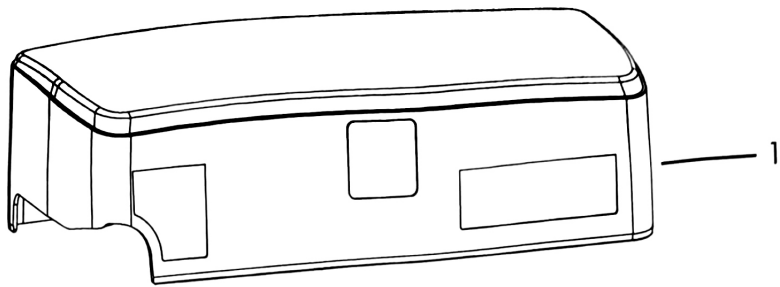
IN-FIELD RESOLUTION GUIDE

Service Issue	Recommended Solution
<p>Low volume of product water (permeate) from holding tank</p>	<p>Please review all of the following scenarios:</p> <ul style="list-style-type: none"> ▪ 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.
<p>Low pressure at the dispensing faucet</p>	<p>Please review all of the following scenarios:</p> <ul style="list-style-type: none"> ▪ 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.
<p>High Total Dissolved Solids (TDS) in the product water</p>	<p>Please review all of the following scenarios:</p> <ul style="list-style-type: none"> ▪ 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

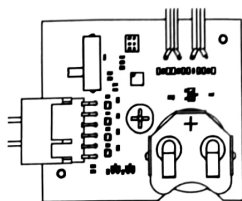
Service Issue	Recommended Solution
Tastes and odors in the product water	<p>Please review all of the following scenarios:</p> <ul style="list-style-type: none"> ▪ The in-line post carbon filter is exhausted and needs to be replaced. ▪ There is a foreign matter in the holding tank. Clean, flush, and sanitize 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)	<p>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.</p>
Drain water overflows at the dispensing faucet	<p>Please review all of the following scenarios:</p> <ul style="list-style-type: none"> ▪ 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	<p>The delivery tube is leaking due to a bad O-ring and it needs to be replaced.</p>
Fitting leaks in general	<p>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.</p>



In-Line Activated Carbon Post Filter

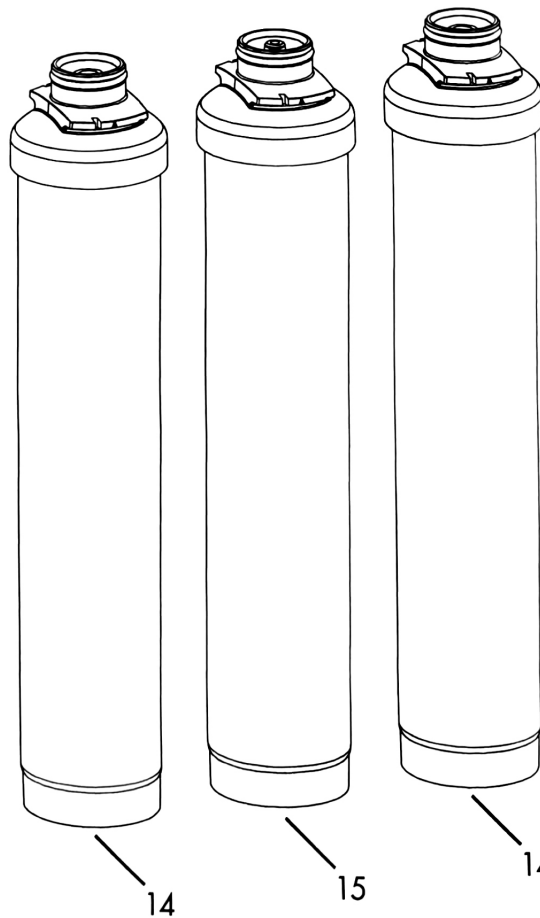
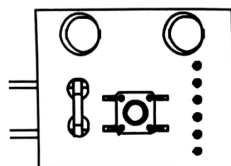
For systems with Monitor:

S3519 Monitor Board QC RO



S3525

Board 22 LED w/Cable QC RO



REPLACEMENT PARTS

RO DRINKING WATER SYSTEM			
Drawing #	Part Number	Description	Quantity
1	S3504-01	Cover Top Load White QC RO/CS	1
2	S2009	Self Tapping Screws	4
3	S2005-01	Auto Shut Off Cap White QC/CS	1
4	S2013	Auto Shut Off Cap O-ring	1
5	S2011	Auto Shut Off Diaphragm Large	1
6	S2007-01	Auto Shut Off Piston White QC/CS	1
7	S2006-01	Auto Shut Off Piston Ring White QC/CS	1
8	S2010	Auto Shut Off Diaphragm Small	1
9	S3841-01	Manifold White 4-Stage with Monitor - 60 GPD	1
	S3842-01	Manifold White 4-Stage without Monitor - 60 GPD	
10	S1276	Check Valve	1
11	S1277	Check Valve Retainer	1
12	S2116-6	Drain Restrictor Natural 60 GPD/227 LPD	1
13	PK-A6TEU4-MG	Elbow 1/4 Stem x 3/8 QC	1
14	MVP-CARB-CART	Sediment/Carbon Filter CS Cartridge A	2
15	MVP-RO-CART	Membrane 50 GPD CS Cartridge A	1
16	MVP-INL-FILT	In-Line Activated Carbon Post Filter	1
For Systems with Monitor	S3519	Monitor Board QC RO	1
	S3525	Board 22 LED w/Cable QC RO	

ADDITIONAL COMPONENTS INCLUDED			
Drawing #	Part Number	Description	Quantity
See Page 6 Diagram	C200f	FRO-122 Tank White	1
	JGPPSV501222W	JG Tank Shutoff Valve	1
	R7100-CR	Chrome Faucet with Air Gap	1
	S1117-01	Drain Clamp Assembly 3/8"	1
	S1118-01	Self-Piercing Feed Water Saddle Valve	1
See Page 12	S1405	Wrench for Collars	1
Not Shown	S1447	Nitrate/Nitrite Test Kit - 6 tests	1
Not Shown	S1580	Water Sampling Kit RO System*	1

*Only included with non-monitored RO models.

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	38-57 gpd	143-214 lpd
Membrane TDS Reduction ¹	94%	94%
Drain Flow (reject water)	3-5 times product flow	3-5 times product flow
Empty Storage Tank Pre-Charge	5-7 psig air	35-48 kPa air
Efficiency Rating (percentage of the influent water to the system that is available to the user as RO treated water under operating conditions that approximate typical daily usage)	26%	26%

¹Industry 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.

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.	