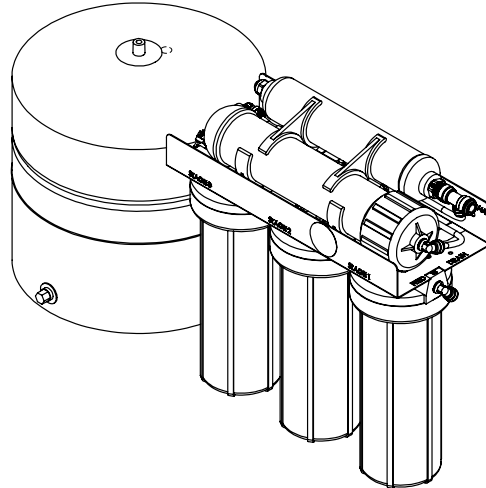




Antunes WATER



Residential Reverse Osmosis System

Model WRO-50-R Owner's Manual

Manufacturing Numbers:

9720020



System Tested and Certified by WQA
against NSF/ANSI 58, CSA B483, 1
for the reduction of:

Barium, Cadmium, Copper, Cyst,
Hexavalent and Trivalent Chromium,
Fluoride, Lead, Nitrite, Nitrate, Raduim
226/228, Selenium, TDS

RESIDENTIAL RO

Contents

Introduction..... 2
 Before Use 2
 In Case of Damage 2
Service/Technical Assistance..... 2
Safety Information 3
 Installation 3
 Operation 3
 Maintenance..... 3
Specifications 4
Performance Data Sheet..... 5
 Filter Cartridge Capacities..... 5
 Performance Claims..... 5
Overview..... 6
Unpacking 7
Equipment Setup 7
 General 7
 Plumbing 7
 Tools and Supplies for Installation..... 7
Installation..... 8
 Location of System Componets 8
 Mounting the System 8
 Mounting the Tank 8
 Attaching the Tank Valve 8
Installation..... 9
 Shutting Off the Water 9
 Supply Feed Installation..... 9
 Drain Clamp Connection 10
 Installing the RO Membrane 10
Faucet Installation 11
 Drilling the Faucet Hole 11
 Stainless Steel Sink 11
 Porcelain/Enamel Sinks 11
 Air Gap Faucet Installation..... 11
 Optional Ice Maker Hook-up 11
 Making the Tube Connections..... 12
 Activating and Rinsing the System..... 12
 Sanitizing the System and Lines 13
Maintenance..... 14
 Every 6 Months 14
 Every 6 Months 14
 Check Tank Air Pre-Charge..... 14
 Every Year..... 14
 Every 2-5 Years..... 14
Troubleshooting 15
Replacement Parts 16
 Parts List 16
Performance Verification 17
 RO Rejection Calculation 17
 RO Recovery Calculation..... 17
Notes..... 18
Notes..... 19
Limited Warranty 20

Introduction

The RO system is an innovative filtration system that uses proprietary membranes as well as a carbon element to provide the latest innovation in filtration technology.

Before Use

This manual provides the safety, installation, and operating procedures for the RO water filtration system. All information contained in this manual should be read prior to installing and operating the system. Your RO system is manufactured from the finest materials available and is assembled to strict quality standards. This system has been tested at the factory to ensure dependable trouble-free operation.

In Case of Damage

If the unit arrives damaged, contact Antunes Customer Service at +1-877-392-7856. Save all packing materials when filing a claim.

IMPORTANT

Antunes reserves the right to change specifications and product design without notice. Such revisions DO NOT entitle the buyer to corresponding changes, improvements, additions or replacements for previously purchased equipment.

IMPORTANT

Keep these instructions for future reference. If the system changes ownership, be sure this manual accompanies the equipment.

Service/Technical Assistance

If there are any problems with the installation or operation of the unit, contact Antunes Technical Service at +1-877-392-7854 (toll free).

Fill in this information and have it handy when calling for assistance. The serial number is on the specification plate located on the unit.

 Purchased from

 Date of purchase

 Model number

 Serial number

 Manufacturing number

Suggested replacement period for RO membrane is 2 years.
 (dependent on water quality).

For sales in the state of Iowa:

 Seller

 Date

 Buyer

 Date

Safety Information

Installation

- Read and understand all instructions before installing or using the unit.
- Install and locate the equipment only for its intended use as described in this manual.
- This equipment is to be installed to comply with the local plumbing code and any other applicable code.
- This equipment should be supplied with only cold water.
- Water pressure must not exceed 100 psig (690 kPa). To reduce water pressure, install a water pressure regulator and set to suit the application.
- When installed on metallic plumbing, a properly sized electrical bonding jumper must be installed across the inlet and outlet pipes serving this unit.
- For installations in Massachusetts, the Commonwealth of Massachusetts Plumbing Code 248 CMR shall be adhered to. The use of saddle valves are not permitted. Please consult your local plumber.

Operation

- DO NOT operate the unit if it has been damaged or dropped, or if it is not working properly.
- DO NOT block or cover any openings on the equipment.

Maintenance

- DO NOT use corrosive chemicals in this equipment.
- DO NOT clean the unit with a water jet or steam cleaner.

Protect from becoming dry

If the membrane dries out, irreversible damage to the membrane may result. Protect the filter from becoming dry by keeping it wet and sealed at all times.

Protect from freezing

If the membrane freezes during operation or storage, irreversible damage to the membrane and brittle cracking of the cartridge or housing may result.

Protect from direct sunlight or other UV sources

Avoid long-term exposure to direct sunlight or other UV sources. The RO should be stored in a dark location.

Protect from high temperatures or abrupt variation in temperature

The maximum operating temperature is 100°F (38°C). Avoid abrupt variations in temperature. Any temperature variation should be made slowly.

Protect from rough handling or dropping

Mechanical damage, external breakage, and/or internal breakage of the filter can result if the system is dropped or bumped. Handle with care at all times during transportation and installation.

Protect from organic solvents and concentrated acids

Prevent any and all contact of the membrane with strong solvents, solvents containing chlorine, or concentrated acids. DO NOT use strong solvents or concentrated acids on any plastic parts of the filter system. Examples of some solvents to avoid: acetone, methyl acetate (nail polish remover); hexane (spot removers); turpentine, toluene (paint thinners); dry cleaning solutions, insecticides.

Protect from abrasive material

The membranes must be protected from abrasive materials like shavings left in a pipe. Abrasive materials in contact with the membrane can cause irreversible damage to the membrane. All pipes must be flushed clean before installing the filter. All plastic parts of the filter system must be protected from sharp objects like knives, sand paper, or other tools. Cutting or nicking a plastic part can weaken it and cause a leak. DO NOT use abrasive cleansers on any plastic parts.

Protect from water hammer

The system must be protected from shock, pressure surges, or pulsation that may occur inside water pipes. Water hammer occurs in pipes when a valve or faucet shuts quickly. Install a water hammer arrestor (pressure vessel containing compressed air separated from the water by a diaphragm) to reduce pressure shock.

Caution

This equipment is to be installed to comply with the basic plumbing code of the Building Officials and Code Administrators, Inc. (BOCA) and the Food Service Sanitation Manual of the Food and Drug Administration (FDA).

Caution

Water Flow Regulator Assemblies are NOT interchangeable. Operating the system with the wrong Water Flow Regulator or without a regulator can damage the system, cause personal injury, and voids the warranty!

RESIDENTIAL RO

Specifications

System Dimensions			
Model	Width (A)	Depth (B)	Height (C)
9720020	14" (36 cm)	6" (15 cm)	16" (41 cm)

Model	Drain must accommodate flow up to:
9720020	0.125 (1/8) gpm

Replacement Cartridges				
Model	Sediment Prefilter	Carbon Prefilter	RO Membrane	Post Filter
9720020	7010021	7010022	7010023	7010024
Recommended Replacement	6 months	6 months	2 to 5 years	6 months

Daily Production Rate	29.8 gpd
Recovery Rate	36.5%
Pressure Drop at Rated Flow	5psi
System Weight	30 lbs
Efficiency Rating	18.6%
Mix./Max. Pressure	40/100 psi
Min. / Max. Temperature	4°/38°c (40°/100°F)
Production Storage Capacity	2.7 gallons

Test parameters: 25° ± 1°C, 50 psi and pH of 7.5

Conditions for Operation of TFC - Thin Film Composite Membrane Used in the RO System	
Source Water Supply - TFC	
Community / Private	Bacteriologically Safe
System Pressure min/max	40 / 100 psi
Temperature	40° / 100°F (4° / 38°C)
pH Range	3.0 to 11.0
Maximum supply TDS level	1800 mg/L
Turbidity	< 1.0 net turbidity (NTU)
Chemical Parameters - TFC	
Hardness (CaCO ₃)	< 170 mg/L (< 10 gpg)
Iron (Fe)	< 0.1 mg/L
Manganese (Mn)	< 0.05 mg/L
Hydrogen Sulfide (H ₂ S)	0.00 mg/L
Production Rate	
¹ Efficiency Rate	18.6%
² Recovery Rate	36.5%
Daily Production Rate	29.8 gpd
Test parameters: 25° ± 1°C, 50 psi and pH of 7.5	
¹ 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.	² 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.

Hardness of more than 7 gpg may shorten membrane life.

Chlorine in the influent water may affect the RO membrane polymers. Replacement of the carbon prefilters per the schedule is required.

This system is acceptable for treatment of influent concentrations 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 40 psi or greater. It is recommended that a Nitrate/Nitrite test be conducted every six months.

This RO system contains a replaceable treatment component critical for effective reduction of total dissolved solids. It is recommended that a TDS test be conducted every six months to verify that the system is performing satisfactorily.

CAUTION: 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.

Performance Data Sheet

Filter Cartridge Capacities

Maximum Operating Pressure	100 psig (690 kPa)
Minimum Operating Pressure	40 psig (276 kPa)
Maximum Operating Temperature	100°F (38°C)
Minimum Operating Temperature	40°F (4°C)
Daily Production Rate	29.8 gpd
Recovery Rate	36.5%
Pressure Drop at Rated Flow	5 psi
Efficiency Rating	18.6%
Production Storage Capacity	2.7 gallons

Test Parameters: 25° +/- 1°C, 50 psi and pH of 7.5



System Tested and Certified by WQA against NSF/ANSI 58, CSA B483.1 NSF/ANSI reduction claims specified here.

This system conforms to NSF/ANSI 58 for the specific performance claims as verified and substantiated by test data.

While testing was performed under standard laboratory conditions, actual performance may vary.

This system has been tested according to NSF/ANSI 58 for reduction of the substances listed below. The concentration of the indicated substances in water entering the system was reduced to a concentration less than or equal to the permissible limit for water leaving the system, as specified in NSF/ANSI 58.

WQA certified for the reduction of:
Barium, Cadmium, Copper, Cyst, Hexavalent and Trivalent Chromium, Fluoride, Lead, Nitrite, Nitrate, Radium 226/228, Selenium, TDS

Performance Claims for Percent Reduction

Substance	Maximum permissible product water concentration mg/L
barium	2.0
cadmium	0.005
chromium (hexavalent)	0.1
chromium (trivalent)	0.1
copper	1.3
fluoride	1.5
lead	0.010
nitrate plus nitrite (both as N)	10
Nitrate (as N)	10.0
Nitrite (as N)	1.0
radium 226/228	5 pCi/L
selenium	0.05
total dissolved solids (TDS)	187

Substance	Reduction requirement
cyst	99.95%

A performance indicator will monitor the performance of the RO membrane, a critical component for the reduction of the above contaminants.

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 waters that may contain filterable cysts.

RESIDENTIAL RO

Overview

The Antunes reverse osmosis drinking water system is designed for easy installation and maintenance.

You will insure a successful installation as well as reliable operation by carefully reading this manual and following the operational guidelines.

Routine maintenance is essential to the longevity and performance of the system. Filters should be changed every six months, depending on the quality of the feed water supply.

The RO installation should comply with all state and local laws and regulations. The manufacturer recommends a TDS test, and a Nitrate/Nitrite test, every six months.

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.

This system is acceptable for treatment of influent concentrations 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 supplier with a pressure of 40 psig or greater.

During normal operation, the drain line has continuous water flow as the system is making water for the storage tank. This drain line flushes the minerals removed by the RO membrane.

When the tank is full, the water flow to drain will stop.

NOTE: Do NOT plug or stop the water flow from the drain line. If this flow is stopped, water will continued to be filtered, but the system will not flush. This will cause the RO membrane to plug prematurely and reduce the life of the RO system.

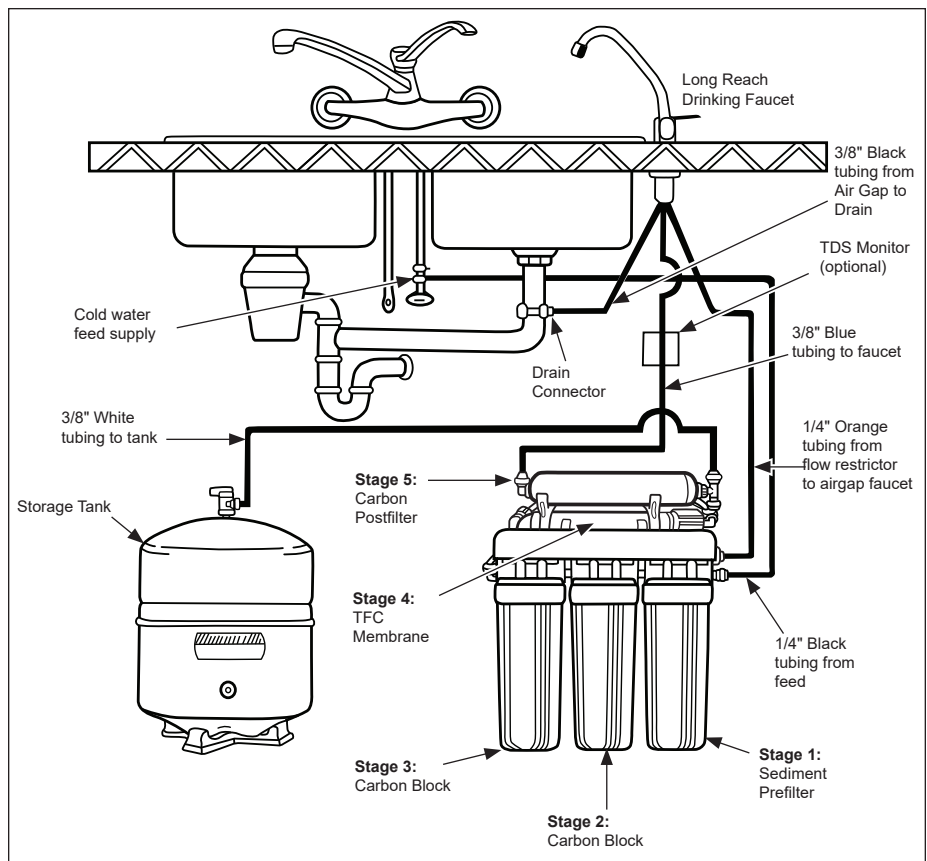


Figure 1. System Components

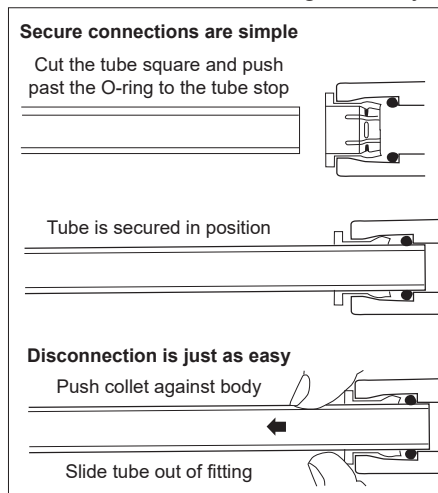


Figure 2. Push to Connect Fittings

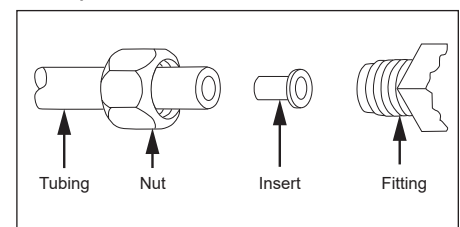


Figure 3. Compression Fittings

Compression fittings are used on the supply feed and drain connector. To insure an optimal seal, tubing should be cut with the end square. An angled cut or distortion of the tubing will not provide an efficient seal and may cause leaks.

Unpacking

- Open the large box. It should contain:
 - Panel Mounted RO system with Prefilter Cartridges installed.
 - Tank
 - Fittings pack:
 - RO membrane
 - Air gap faucet
 - Drain clamp assembly
 - Tank ball valve
 - Supply feed fitting
 - Tubing
 - Fittings
 - Installation / Owner's Manual
- Remove all packing materials and protective coverings from the system.
- Remove the information packet. Fill out and mail the warranty card immediately to prevent any delay in obtaining warranty coverage.

NOTE: If any parts are damaged, contact Antunes Technical Service at +1-877-392-7854.

Equipment Setup

General

When placing the system into service, pay attention to the following guidelines:

- Avoid locating the RO system where the system might come in contact with hot water pipes or other hazards.
- Determine the location for the faucet. Check to see that drilling the faucet hole will not damage pipes or wires running underneath the sink.
- Determine the location for the storage tank. A maximum distance from the tank to the faucet is 15 feet; the system will produce a faster flow at the faucet with the shortest tubing length from the tank to the faucet.
- Check to see that no damage has occurred during shipment, all connectors are secure, and there are no leaks once the system is hooked up and operating. Close inspection of the system should be performed during the first week of operation.

Plumbing

NOTE: The system must be connected to the COLD water line. DO NOT connect the system to the hot water line.

NOTE: Do not use copper tubing on the RO outlet (permeate) water line. Objectional taste and corrosion can occur if copper tubing is used.

The RO system uses the following connections:

System Inlet	1/4" OD tube
System Outlet (Product Water)	3/8" OD tube
Drain	3/8" OD tube

When making a plumbing connection to the system, make sure the tubing is cut with the end square and no burrs are present. An angled cut or distortion of the tubing will not provide an efficient seal and may cause a leak.

To install a tube, push it through the collet until it seats firmly past the o-ring seal in the fitting (approximately 1/2 inch inside the fitting).

When making a threaded pipe connection, use a back-up wrench on the supporting plumbing. Always use a quality, approved pipe sealant or thread seal tape on pipe threads. DO NOT allow pipe sealant inside pipes.

DO NOT over tighten the connections. Use plastic fittings when connecting to the plastic connections of the system.

If soldered plumbing is used, DO NOT apply heat to, or near, the filtration system. Use union (O-Ring seal) connections for ease of installation and future servicing.

Suggested Tools and Supplies for Installation

The following tools and supplies are suggested to help with the installation:

- Phillips Screwdriver
- Small Knife or Tubing Cutter
- Variable Speed Drill
- 1" Hole Saw or Drill Bit (Stainless Steel Sink)
- Relton Cutter (Porcelain/ Enamel Sink)
- Adjustable Wrenches
- Misc. Drill Bits (1/8", 1/4")
- Bucket
- Fresh, Unscented Liquid Chlorine Bleach
- For Optional Ice Maker Hook-up:
 - 1/4" or 3/8" Polypropylene Plastic Tubing
 - Tee Fitting for Tubing
 - Ball Valve

RESIDENTIAL RO

Installation

⚠ Caution

Avoid locations where the system might come in contact with hot water pipes or other hazards. Do not mount above an electrical outlet.

Location of System Components

Determine the location of the RO system, tank and faucet.

Most customers mount the system and tank under their kitchen sink. The system and/or tank can be mounted in different locations, but should not be far from each other or from the faucet.

A maximum distance from tank to faucet of 15 feet is possible. The system will produce a faster flow at the faucet with the shortest tubing run from tank to faucet.

The preferred tank mounting is with the valve on top. If necessary, the tank can be mounted horizontally. If mounted horizontally, trapped air in the tank may take longer to be removed during operation.

The tank has formed feet on the bottom. The optional tank stand can be used to help stabilize vertical or horizontal mounting.

Mounting the System

The RO system comes with a Mounting Bracket. When mounting the system, pay attention to the following guidelines:

- Allow sufficient access for cartridge replacement. The RO system should be mounted with 2 inches to the bottom of the system.
- Access to the post filter and RO membrane housing (on top of the mounting bracket) will be necessary for future servicing.
- Use proper hardware to mount the system. The system may weigh up to 30 lbs. when operating.

The prefilters come already installed in the system bowls. Make sure the prefilter bowls are fully tightened onto the system after mounting.

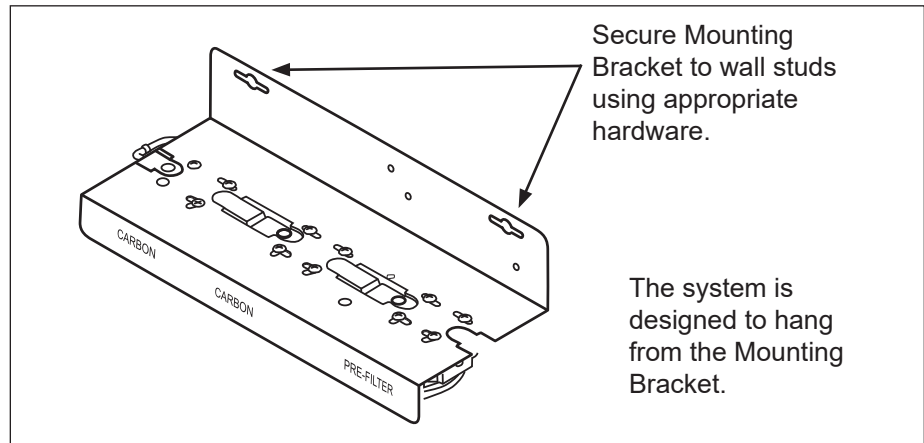


Figure 4. Mounting the System

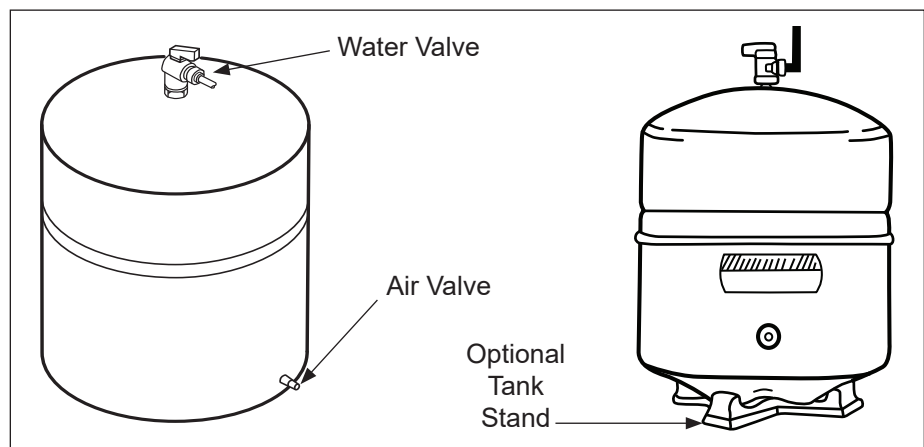


Figure 5. Mounting the Tank

Mounting the Tank

When mounting the tank, pay attention to the following guidelines:

- The storage tank must be mounted on a stable surface. When full of water, the tank may weigh up to 30 lbs.
- Allow access to the tank air valve and water shut off valve. Access will be necessary for future servicing.

Attaching the Tank Valve

The water valve needs to be attached to the tank before locating the tank.

1. Wrap the threads on the top of the water storage tank 3 times with thread seal pipe tape. Make sure the tape is tight to the threads, but not over tight.
2. Use a thread seal tape approved for use on drinking water.
3. Attach the tank valve to the top of the tank threads. Be careful not to cross-thread the valve on the tank. Hand tighten, with no more than one turn with a wrench. Do not overtighten the valve on the tank.

NOTE: Do not tamper with the air valve on the storage tank. It has been preset, and is protected by a blue cap attached by the manufacturer.

Installation

Shutting Off the Water

Locate the water shut-off valve for the cold water feed line you choose to use for the supply. Accidentally hooking up the system to the hot supply line will permanently damage the membrane.

CAUTION

Do not hook up the RO system to the hot water line. Hooking up to the hot water supply will permanently damage the RO membrane and other components.

To assure you are using the cold water line, turn on both the hot and cold faucet. After the water is warm to the touch, feel the pipes under the sink. It will be easy to identify the hot and cold pipes. Close both valves.

Make sure the cold water valve is closed, and turn on the cold water faucet only to assure that the line is completely shut off and the line is drained. If no shut off valve is located under the sink, turn off the main supply at the entry to the house.

Supply Feed Installation

(A) **Flex Line:** Loosen nut and separate cold water riser tube from faucet shank. Gently bend riser tube so that slip joint fits onto faucet shank. Replace the existing cone washer with new washer provided in installation kit onto cold water riser tube. Reinstall riser tube onto slip joint adapter and tighten.

(B) **Solid Copper Riser Tube:** Same procedure as flex tubing except you must cut a piece of the riser tube about 3/4" to 1" so the slip joint adapter can fit between faucet and riser tube (Teflon tape must be used on slip joint adapter to prevent leaks).

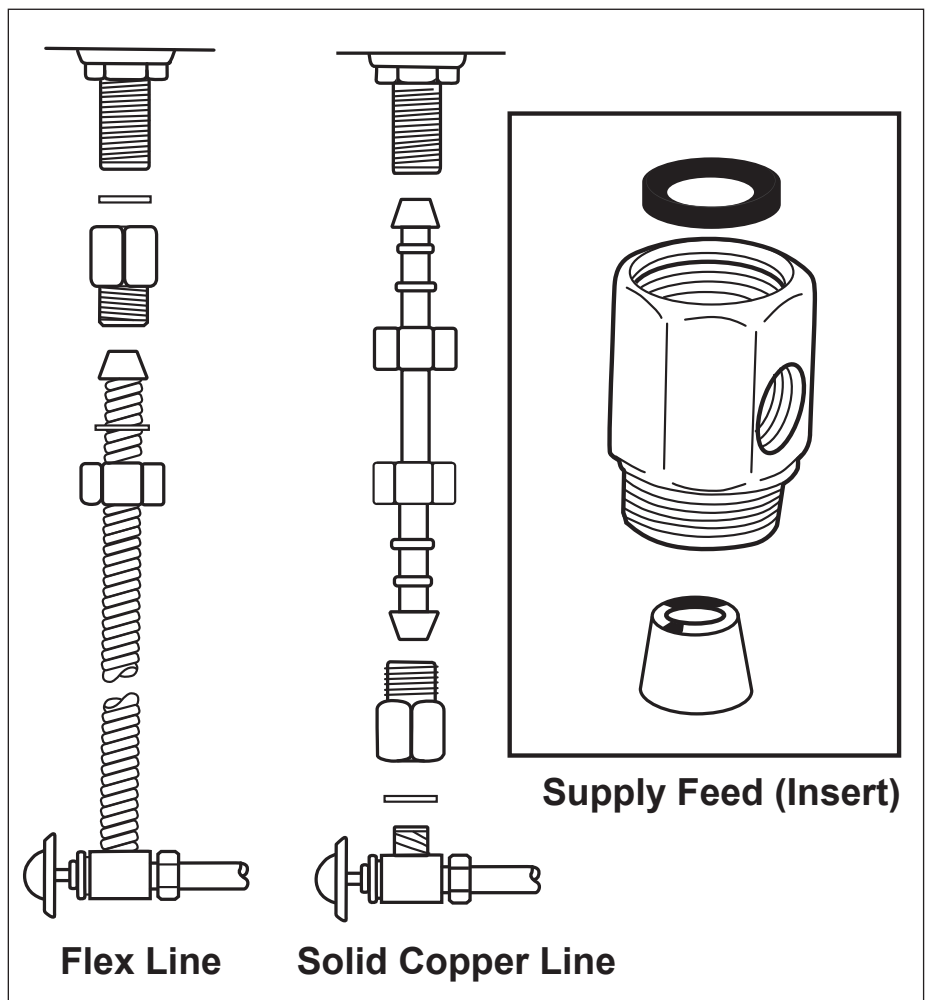


Figure 6. Supply Connection

RESIDENTIAL RO

Drain Clamp Connection

The drain is for flushing mineral buildup out of the system when operating.

- The drain used must not be blocked or restricted.
 - This system is designed for use with the air gap faucet provided. The air gap protects the system from back contamination in the event of a backed-up drain.
 - The drain line leading out of the faucet air gap should be as short as possible and slope downwards without any kinks or loops.
1. Select a location for the drain hole based on the design of the plumbing.
 2. Position the drain outlet saddle on the drain pipe. Allow adequate space for drilling.
 3. Tighten the bolts evenly on both sides. Avoid overtightening the bolts.
 4. Using the opening in the drain outlet saddle as a guide, drill a 1/4" hole in the drain pipe. Clean debris from the saddle and threads.

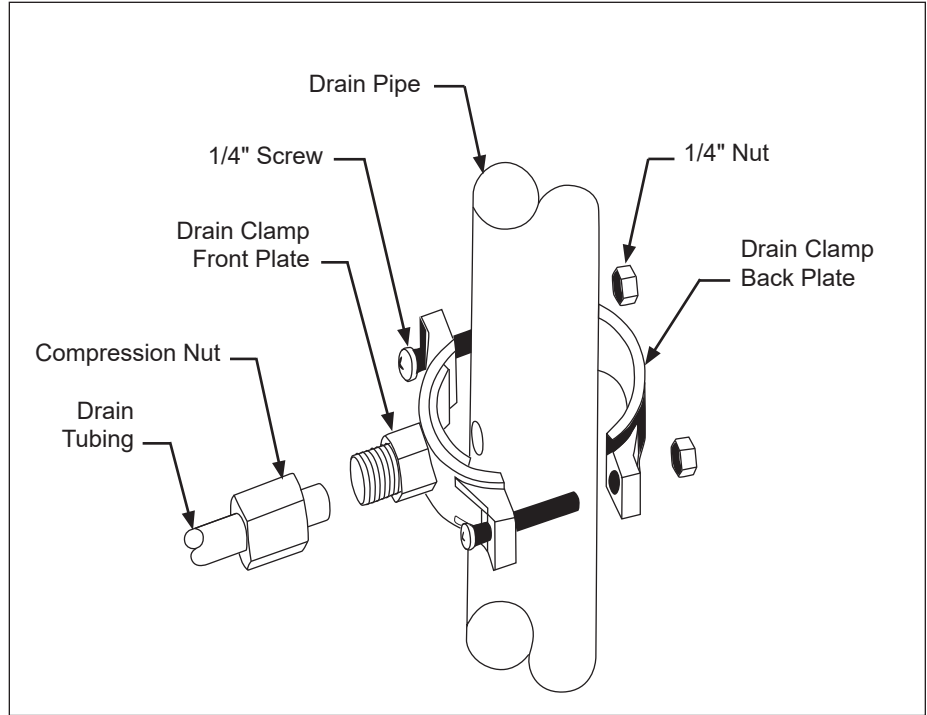


Figure 7. Drain Clamp Connection

Installing the RO Membrane

1. Disconnect the push-to-connect tube connections on the RO membrane housing and remove the housing.
2. Remove the RO membrane housing head by unscrewing the head from the housing.
3. Remove the RO membrane from its packaging. Make sure all o-rings are in place and are lubricated. If not, lubricate with a food grade lubricant.
4. Insert the RO membrane into the housing as shown (Figure 8). Make sure to insert the membrane black seal into the housing last.
5. Make sure the RO membrane is fully inserted into the housing, and that the bottom o-ring is engaged with the membrane housing. Reattach the housing head.
6. Reinstall the membrane housing on the system and reconnect the tube connections.

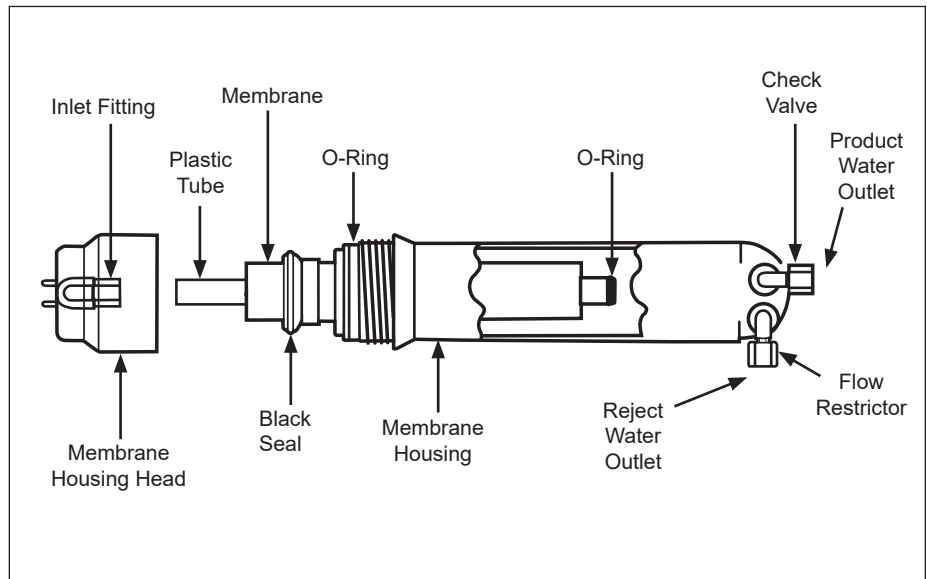


Figure 8. Installing the RO Membrane

Faucet Installation

Drilling the Faucet Hole

The product water faucet may be installed on any flat surface at least 2" in diameter. Check the underside of the location for interference.

Stainless Steel Sink

Make a small indent to mark the desired drilling location using a center punch. Drill a pilot hole with a 1/8" metal drill bit. Enlarge the hole using a 1" metal drill bit.

Porcelain/Enamel Sinks

A 1" variable speed drill is recommended for this procedure. A spring loaded Relton style drill set is strongly recommended to prevent chipping. The plastic sleeve supplied on the pilot drill is to be positioned on the drill bit against the drill chuck. This prevents the chuck from contacting the porcelain after the pilot hole has been completed. Avoid high motor RPM during the initial cutting of the porcelain as this can cause chipping.

Using a carbide tipped drill bit, drill a pilot hole completely through the porcelain and the material underneath. Place the spring loaded porcelain saw into the drill chuck. Make sure the pilot guide is inserted tightly. Insert the pilot guide into the pilot hole. Push down gently on the drill motor to apply light pressure to the porcelain surface.

Start the drill motor turning as slowly as possible. After the initial cut has started, motor speed may be gradually increased. The cut may require three to four minutes to complete. Going faster could result in excessive chipping. This saw is used to cut the porcelain only. Be sure a complete ring has been cut through the porcelain to the metal underneath.

Place the finish hole saw into the drill chuck. Make sure the pilot guide is inserted tightly. Insert the pilot guide into the pilot hole. Begin cut using a slow speed and light pressure until the metal has been penetrated.

Air Gap Faucet Installation

Once the hole has been drilled place the chrome washer under the faucet body. Next, insert the rubber gasket under the chrome washer and locate the RO faucet in the hole. Install the lock washer and nut and then tighten firmly while aligning the faucet in the desired direction. Finally, connect the Easy Fit 3/8" fittings (in the installation kit) on the faucet shank using teflon tape.

Optional Ice Maker Hook-up

If your refrigerator is less than 25 feet to your R.O. unit, 1/4" polypropylene plastic tubing is recommended.

If your refrigerator is greater than 25 feet from your R.O. unit, 3/8" tubing is recommended. Do not use copper tubing as an objectionable ice cube taste can result.

To begin, install a tee in the blue tubing between the final filter and the faucet. Next, it is recommended to install a ball valve in the line to the ice maker. This will allow storage tank pressure to increase sufficiently for the ice maker solenoid to operate properly. Leave the ball valve in the closed position until the tank is full after start up procedure is completed, open ball valve.

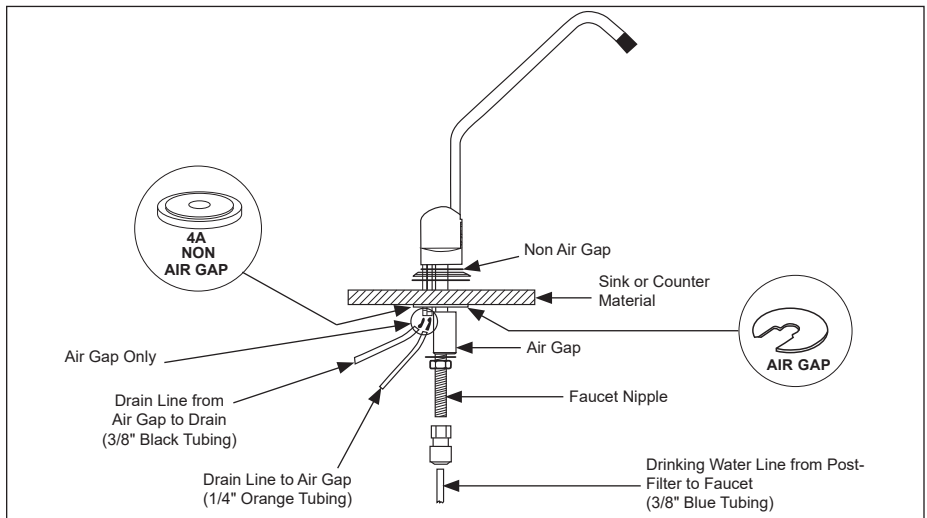


Figure 9. Air Gap Faucet Installation

Drilling with the recommended Relton cutter

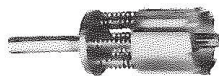
EASY AS ...

1



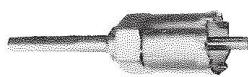
The Pilot Drill is used to drill a hole completely through to provide a guide for both the Porcelain Saw and Finish Hole Saw.

2



The Porcelain Saw is used to cut through the porcelain surface only. This saw cuts a smooth, chip-free, beveled groove through the porcelain to the metal base.

3



The Finish Hole Saw is used to cut the remaining metal through to create the hole of the desired finish size.

Figure 10. Drilling holes

RESIDENTIAL RO

Making the Tube Connections

Connect the system components using the supplied tubing. Follow the connection guideline below.

It is recommended that you follow the tubing color chart in Table 1. This will make it easier in the future to service and troubleshoot the system.

Tubing	Directions
1/4" Black	Feed water supply line to inlet on sediment filter elbow labeled feed.
3/8" Blue	Carbon post filter elbow labeled faucet to center threaded shank of faucet to faucet connector.
3/8" White	Carbon post filter tee labeled tank to valve on storage tank.
1/4" Orange	Flow restrictor labeled drain to airgap faucet 1/4" barbed connector.
3/8" Black	Airgap faucet 3/8" barbed connector to waste water drain connector.

Table 1. Color Coded Tubing Connections

Activating and Rinsing the System

1. Slowly open the supply feed valve counterclockwise until fully open. Check that the stem seal on the valve does not leak. If necessary, tighten the stem nut lightly.
 2. Make sure all water supply and drain lines are secure and free from leakage.
 3. Turn the storage tank valve one quarter turn counterclockwise to open the valve. The valve is open when the valve handle is in line with the tubing as it enters the connection.
 4. Open the RO faucet and let water flow out until all air has been expelled from the system. This may take a few moments.
 5. After the air has been removed, close the faucet.
 6. Check all connections for leaks and correct if necessary.
 7. Allow the system to flush and the tank to fill for 12 hours. At the end of 12 hours, empty the tank by opening the faucet and letting the water come out until the flow becomes a drip. Close the faucet.
 8. Repeat Step 7 by allowing the system to flush and the tank to fill for another 12 hours. Drain this second tank of water to complete the rinsing procedure.
- NOTE:** Do not use the first two tanks of water. This water must be discarded down the drain and not consumed.
9. Allow the tank to fill again. The system is now ready for use.

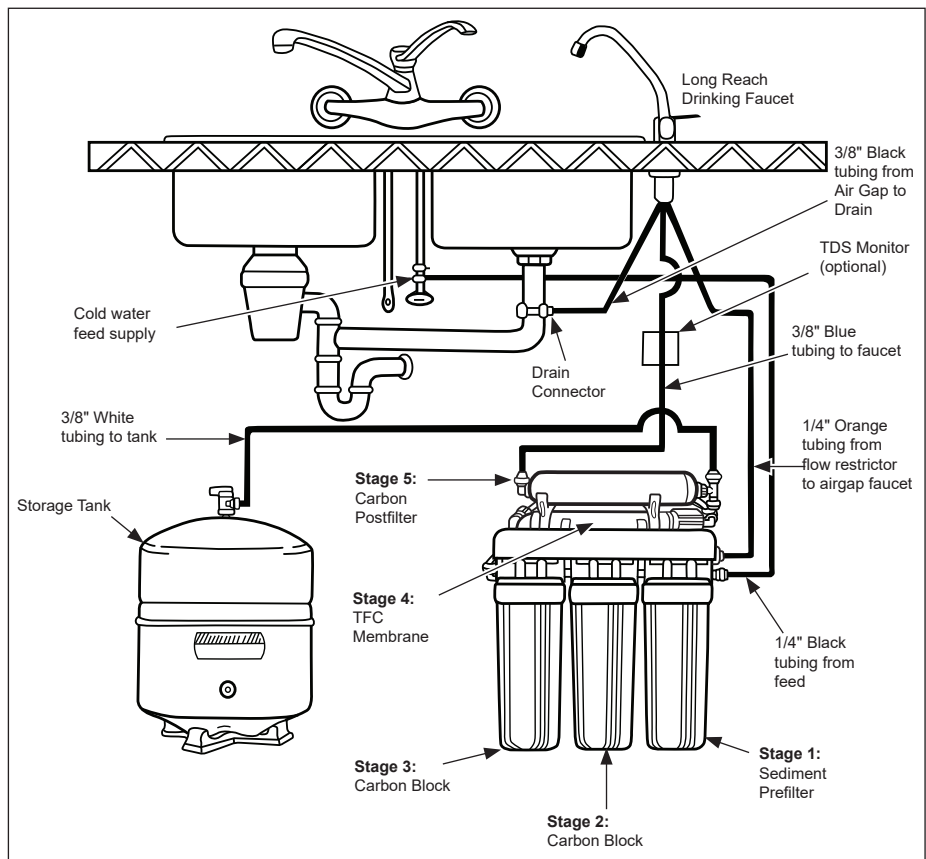


Figure 11. Making Tube Connections

Sanitizing the System and Lines

The plumbing and system should be sanitized to eliminate possible contamination that may have occurred during the installation process.

One half (1/2) teaspoon (~3 ml) of liquid chlorine bleach (regular bleach, unscented 5.25 % - 6 % sodium hypochlorite) can be used to sanitize the plumbing.

NOTE: Follow the handling and safety instructions supplied with the bleach.

1. Turn off the water supply to the system.
2. Drain the storage tank by turning on the RO faucet. The tank is drained when the flow of water out of the faucet stops. Make sure the tank valve remains open.
3. Remove the RO membrane from its housing. Reinstall the RO membrane housing without the membrane.
4. Remove the carbon filters from their bowls and reattach.
5. Add the 1/2 teaspoon of bleach to the sediment filter housing and reattach. Be sure to wear protective gear and be careful not to spill the bleach onto clothing or skin.
6. Slowly turn on the water supply to the system.
7. Allow water to flow through the system and out of the open faucet.
8. Close the faucet as soon as water comes out. This will allow the bleach to remain in the system.
9. Let the system stand without water flow for at least 15 minutes to allow the bleach to sanitize the pipes.
10. After 15 minutes without water flow, open the faucet or tap.
11. Allow water to flow through the system until the presence of bleach is gone.
12. Turn off the water supply to the system and allow the system to drain.
13. Reinstall the sediment and carbon filters, and the RO membrane.

RESIDENTIAL RO

Maintenance

Every 6 Months

Replace Filters

The sediment, carbon prefilters, and carbon postfilter should be replaced every 6 months.

1. Shut off the water supply to the system and drain the storage tank by opening the faucet. Let water flow out the faucet until it stops.
2. Close the tank valve.
3. Remove each prefilter housing by turning counter clockwise. Remove the old filters.
4. Wash out the inside of each housing with mild soap and a few drops of household bleach. Rinse thoroughly.
5. Inspect the housing o-rings for cuts, splits, or twisting. Replace if necessary. Lube the housing o-rings with a food-grade silicone lubricant.
6. Insert the new filters into the housings and reattach the housings by turning clockwise.
7. Remove the carbon postfilter from the tubing at each end by pushing in the collet and, while holding the collet against the filter, pull the tubing out. Remember to note the direction of the arrow on the postfilter.

Every 6 Months

Check Permeate Tank Air Pre-Charge

It is recommended the permeate tank air charge be checked every six months.

CAUTION

Air pre-charge should only be checked and adjusted under zero system pressure. The system must be depressurized before checking the tank pre-charge. DO NOT adjust the tank air pre-charge with the system under pressure.

CAUTION

Be careful when adding air to the tank. DO NOT add too much air pressure to the tank.

Tools and supplies required:

- Air Pressure Gauge, 5-40 psi range (0.3-2.7 bar) with tire valve (Schrader Valve) connection.
 - Source of compressed air (manual bicycle tire pump or air compressor)
1. Depressurize the system by closing the inlet valve and opening the faucet. Make sure the storage tank is fully drained.
 2. Unscrew the protective cap from the air valve on the tank.
 3. Use the pressure gauge to check the tank pre-charge for pressure.
- NOTE: If any water come out the air valve, the tank bladder has ruptured and the tank needs to be replaced.**
4. The storage tank should have an air pressure of about 8 psi.
 - To add pressure to the permeate tank, use a manual bicycle tire pump or other source of compressed air.
 - To release pressure from the permeate tank, press the center pin on the air inlet valve.
 5. Once the tank is set at 8 psi, replace the protective cap on the air valve.
 6. Pressurize the system by closing the faucet and opening the inlet valve.

Every 6 Months

It is recommended that a TDS test should be conducted every 6 months.

It is recommended that a Nitrate/Nitrite test should be conducted every 6 months.

Contact the factory for more information on these tests.

Every Year

Sanitize the System

The system should be sanitized once per year. Follow the procedure on Sanitizing the System on page 14.

Every 2-5 Years

Replace RO Membrane

The RO Membrane should be replaced every 2-5 years. The quality of the water coming out of the system, and the water going into the system, will determine this time period.

1. Shut off the water supply to the system and drain the storage tank by opening the faucet. Let water flow out the faucet until it stops.
 2. Disconnect the push-to-connect tube connections on the RO membrane housing and remove the housing.
 3. Remove the RO membrane housing head by unscrewing the head from the housing.
 4. Remove the RO membrane from its packaging. Make sure all o-rings are in place and are lubricated. If not, lubricate with a food grade lubricant.
 5. Insert the RO membrane into the housing as shown in Figure 8. Make sure to insert the membrane black seal into the housing last.
 6. Make sure the RO membrane is fully inserted into the housing, and that the bottom o-ring is engaged with the membrane housing. Reattach the housing head.
 7. Reinstall the membrane housing on the system and reconnect the tube connections.
 8. Allow the system to flush and the tank to fill for 12 hours. At the end of 12 hours, empty the tank by opening the faucet and letting the water come out until the flow becomes a drip. Close the faucet.
 9. Repeat Step 8 by allowing the system to flush and the tank to fill for another 12 hours. Drain this second tank of water to complete the rinsing procedure.
- NOTE: Do not use the first two tanks of water. This water must be discarded down the drain and not consumed.**
10. Allow the tank to fill again. The system is now ready for use.

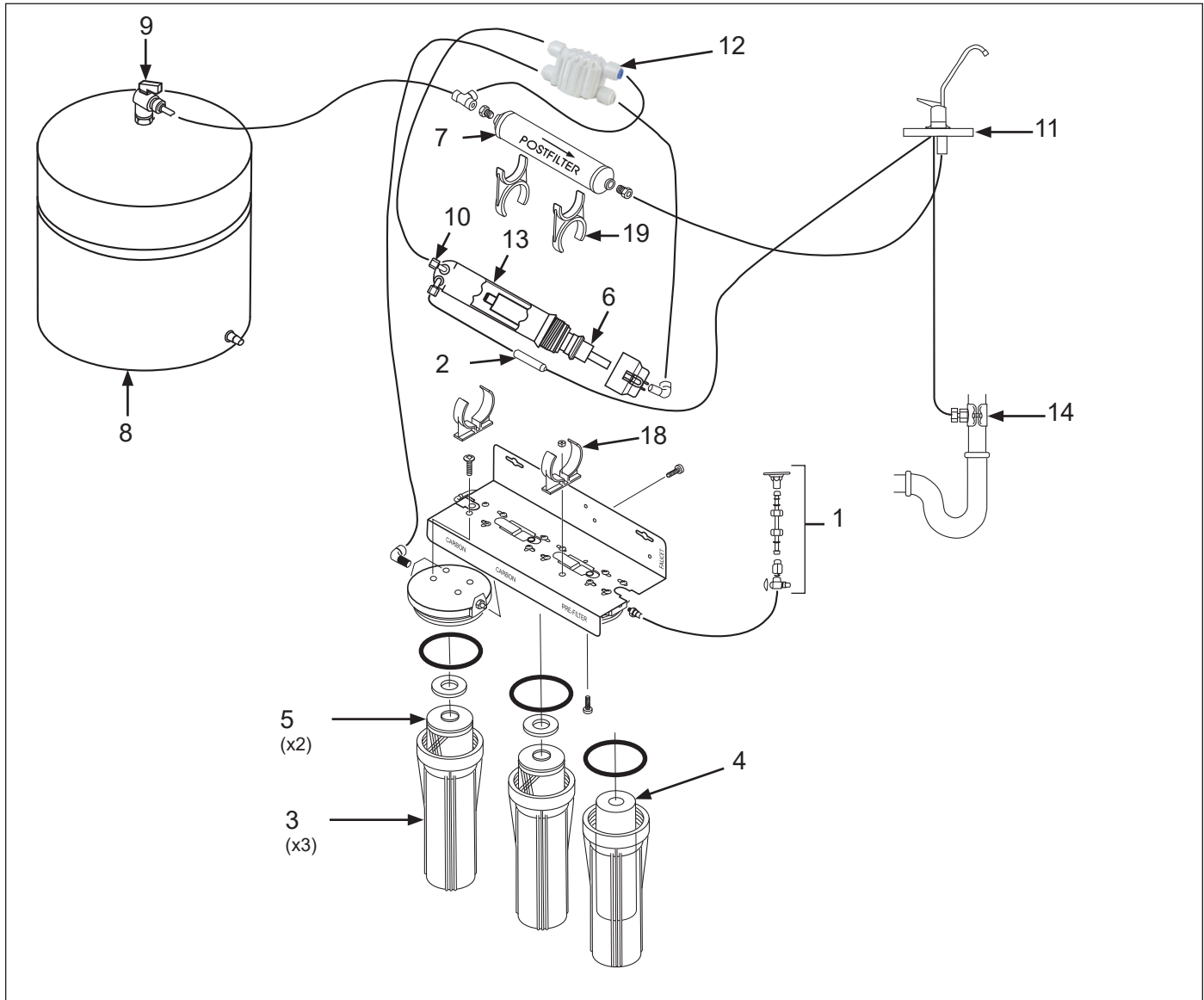
Troubleshooting

Problem	Possible Cause	Corrective Action
No water.	Inlet valve closed / water supply is turned off.	Open inlet valve / turn on water supply.
Not enough water.	Low water pressure.	If line pressure is below 30 psi install a booster pump.
	Water supply is blocked.	Clear restriction, rotate valve on feed water.
	Storage tank depleted.	Consider an increase in tank or membrane capacity.
	Clogged prefilter cartridge.	Replace prefilter, drain tank and sanitize system.
Low water flow comes out of the filter system.	See above.	See above.
	Storage tank air pressure is low.	Empty storage tank and set air pressure to 8 psi (55 kPa).
Water tastes bad.	Carbon post filter is depleted.	Drain storage tank and replace post filter.
	Filters are depleted.	Replace filters and sanitize system.
	Water condition changed.	Consider installing additional filtration.
	Broken RO membrane.	Replace RO membrane and sanitize system.
Flush runs continuously.	ASO Valve stuck open.	Clean, rebuild, or replace ASO.
	Water use higher than storage tank capacity.	Consider an increase in tank or membrane capacity.
Water splashes at drain during flush.	Drain line not positioned properly.	Reposition the end of the drain line.
Under sink is wet.	Filter housing is loose.	Tighten filter housing.
	Filter housing o-ring is split, cut, or twisted.	Replace o-ring and lubricate with food grade lubricant.
	Leak from valve, faucet, or fitting.	Dry everything with towels to isolate leak, identify and fix.
No drain water.	Clogged flow restrictor.	Replace flow restrictor, check TDS.

RESIDENTIAL RO

Replacement Parts

Parts List



Item No.	Part #	Description	Qty.
1	7010027	Supply Feed Assembly	1
2	7010032	Flow Restrictor	1
3	7010020	Filter Housing w/ O-ring	1
4	7010021	5 Micron Sediment Filter	1
5	7010022	Carbon Blocks (pk of 2)	1
6	7010023	Membrane, 50 GPD	1
7	7010024	In-Line GAC Postfilter	1
8	7010026	Tank, 4.4 Gallon	1
9	7010030	Ball Valve	1
10	7010035	Check Valve	1

Item No.	Part #	Description	Qty.
11	7010028	Air Gap Faucet	1
12	7010029	ASO Valve	1
13	7010025	Membrane Housing	1
14	7010031	Drain Connector Assembly	1
15	7010033	Tube Fitting Kit (not shown)	1
16	7010034	Tubing Kit (not shown)	1
17	7010036	TDS Monitor (not shown)	1
18	7010061	RO Clamp	2
19	7010062	Post Filter Clip	2

Performance Verification

RO Rejection Calculation

After initial flush, a TDS (Total Dissolved Solids) measurement can be taken and recorded. This data can be used to compare to future system data. Some deviations may occur due to differences in feed water TDS and temperature.

Use a TDS meter to measure the TDS in both the feed water and product water. Calculate the percent rejection using the formula below.

$$100 \times (\text{Feed TDS} - \text{Product TDS}) / (\text{Feed TDS}) = \% \text{ Rejection}$$

Example:
 Feed TDS = 500ppm
 Product TDS = 25 ppm
 $100 \times (500 - 25) / (500) = 95\%$
 Rejection

RO Recovery Calculation

Using a stop watch and graduated cylinder (or other calibrated volume), measure the product water flow rate and the drain flow rate. The product water flow rate should be the flow coming directly from the RO System, not from the tank. Close the tank valve to make this measurement. Calculate the percent recovery using the formula below:

Recovery is dependent on feed water temperature and pressure. Measure and record the feed water temperature and pressure whenever measuring the percent recovery.

$$100 \times (\text{Product Flow Rate}) / (\text{Product} + \text{Drain}) = \% \text{ Recovery}$$

Example:
 Product Flow Rate = 25ml/min
 Drain Flow Rate = 200 ml/min
 $100 \times (25) / (25 + 200) = 11.1\%$
 Recovery

Date	Feed Temperature (F°)	Feed Pressure (psig)	Product Flowrate (ml/min)	Drain Flowrate (ml/min)	Percent Recovery (%)	Product TDS (ppm)	Feed TDS (ppm)	Percent Rejection (%)

Limited Warranty

Equipment manufactured by Antunes has been constructed of the finest materials available and manufactured to high quality standards. These units are warranted to be free from defects in materials and workmanship for a period of one year from date of purchase under normal use and service, and when installed in accordance with manufacturer's recommendations*.

*To ensure continued proper operation of the units, follow the maintenance procedure outlined in the Owner's Manual.

1. This warranty does not cover failures due to improper system installation, defects caused by improper storage or handling prior to placing of the equipment into service.
2. Antunes reserves the right to make changes in design or add any improvements on any product. The right is always reserved to modify equipment because of factors beyond our control and government regulations. Changes to update equipment DO NOT constitute a warranty charge.
3. THIS WARRANTY IS EXCLUSIVE AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OR MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, EACH OF WHICH IS HEREBY EXPRESSLY DISCLAIMED. THE REMEDIES DESCRIBED ABOVE ARE EXCLUSIVE AND IN NO EVENT SHALL ANTUNES BE LIABLE FOR SPECIAL CONSEQUENTIAL OR INCIDENTAL DAMAGES FOR THE BREACH OR DELAY IN PERFORMANCE OF THIS WARRANTY.
4. Prices and specifications are subject to change without notice.



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