

ECOWATER
S Y S T E M S[®]



ERO 300 DELUXE

**Undersink
REVERSE OSMOSIS
DRINKING WATER SYSTEM**

Tested and certified to ANSI/NSF Standard 58.
See performance data sheet for details.



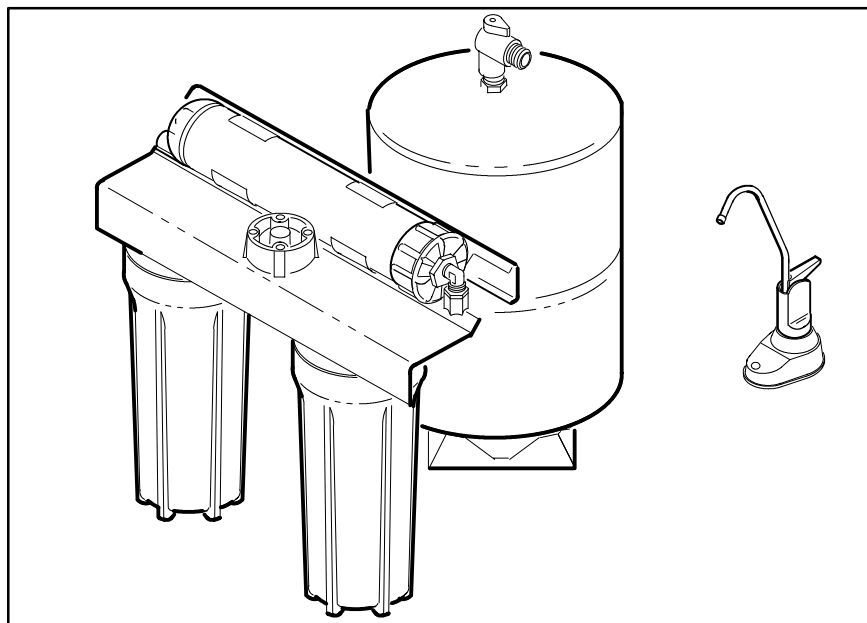
Safety Guides

Installation

Operation

Maintenance

Repair Parts



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SAFETY GUIDES

■ **Read all steps, guides and rules carefully before installing and using the Drinking Water System. Follow all steps exactly to correctly install.**

■ **BE SURE TO FOLLOW APPLICABLE STATE AND LOCAL PLUMBING AND SANITATION CODES** when installing the Drinking Water System. Using a qualified installer is recommended.

■ **The Drinking Water System works on water pressures of 40 psi minimum, to 125 psi maximum (see the table on page 3). If house water pressure is over the maximum, install a pressure reducing valve in the water supply line to the Drinking Water System.**

■ **DO NOT install the Drinking Water System outside, or in extreme hot or cold temperatures. Temperature of the water supply to the Drinking Water System must be**

between 40°F (minimum) and 80 or 100°F (maximum)...see the table on page 3. DO NOT INSTALL ON HOT WATER.

■ **Read the other limits (pH, water hardness, etc.), page 3, and be sure the water supply conforms.**

■ **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.**

■ **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 of 40 psi (280 kPa) or greater.**

WARRANTY INFORMATION

LIMITED WARRANTY

1 and 5

PLUS 3 YEAR MEMBRANE PROTECTION REVERSE OSMOSIS HOME DRINKING WATER SYSTEM

The entire drinking water system, including the reverse osmosis membrane, will be guaranteed for one year to the original owner from the date of purchase to be free from defects in material and workmanship. The RO holding tank will be guaranteed for five years from defects in material and workmanship. The sediment prefilter, and the taste and odor postfilter, which are expendable, are not covered under this warranty.

Any defective part, as described above, which fails within the one or five year period from date of purchase will be repaired or replaced, F.O.B. our plant, St. Paul, MN.

An additional 36 month prorated Performance Warranty on the reverse osmosis membrane is offered on this unit if it fails to perform to the printed specifications during this three year warranty.

The sole obligation of EcoWater Systems, Inc., under these guarantees, is to replace or repair the component or part which proves to be defective, within the specified time period, and EcoWater is not liable for consequential or incidental damages due to misuse, alteration, neglect, freezing or a force of nature. All implied warranties, including any implied warranty of merchantability or of fitness for a particular purpose, are disclaimed to the extent they extend beyond the above periods. No dealer, agent, representative, or other person is authorized to extend or expand these guarantees.

Some states do not allow limitations on how long an implied warranty lasts or exclusions or limitations of incidental or consequential damage, so the limitations and exclusions in this warranty may not apply to you. This warranty gives you specific legal rights, and you may have other rights which vary from state to state.

SPECIFICATIONS

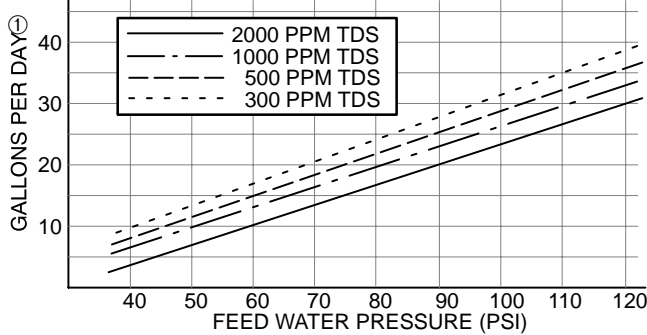
	ERO 300
Feed water pressure limits – pounds per square inch (psi)	40 – 125
Feed water temperature limits – minimum / maximum degrees F	40 – 100
Maximum total dissolved solids (TDS) – parts per million (ppm)	2000
Maximum water hardness @ 6.9 pH – grains per gallon (gpg)	10
Maximum iron, manganese, hydrogen sulfide	0
Chlorine in water supply	allowable ²
Feed water pH limits (pH)	4 – 10
Product (quality) water, 24 hours – gallons ¹	15
Waste water per gallon of product water – gallons ¹	4
Percent rejection of TDS, minimum (new membrane) ¹	90 – 95
Storage tank capacity – gallons	2.1
Automatic shutoff control	yes

Dimensions – inches	HEIGHT	WIDTH	DEPTH
	16	17	6

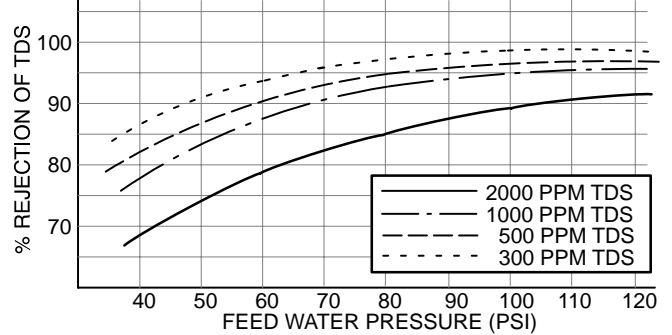
The storage tank is 11" diameter by 17" high (with top shutoff valve assembled).

1. Feed water at 50 psi and 77° F with 710 parts per million total dissolved solids. Quality water production, amount of waste water and percent rejection all vary with changes in pressure, temperature and total dissolved solids.
2. Chlorine removed (max. of 4.0 ppm) by the RO Prefilter. . .REGULAR MAINTENANCE REQUIRED. Chlorine will destroy the RO membrane . . .see page 4.

TYPICAL QUALITY WATER PRODUCTION, 24 HOURS @ 77° Feed Water Temperature



TYPICAL REJECTION PERCENTAGE OF TDS @ 77° Feed Water Temperature



① Note: To compensate for various feed water temperatures, multiply gallons per day by the correction factor in the following chart.

FEED WATER TEMPERATURE (°F)												
45	50	55	60	65	70	75	77	80	85	90	95	100
.38	.48	.57	.67	.76	.85	.95	1.00	1.05	1.15	1.25	1.34	1.43
CORRECTION FACTOR												

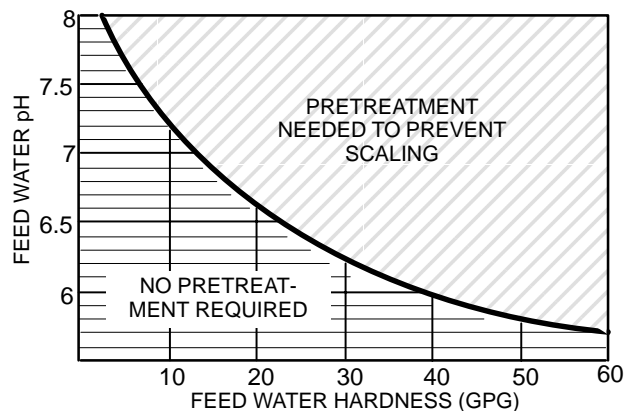
PRETREATMENT OF THE WATER SUPPLY NEEDED TO PREVENT SCALING

TO USE THE CHART...

...Locate the intersecting point of feed water **hardness** and **pH**.

If this point falls within the shaded area, pretreatment* is needed.

*Softening of the water is the suggested pretreatment.



WHAT THE DRINKING WATER SYSTEM WILL DO

The drinking water system is a REVERSE OSMOSIS (RO) water treating unit. Reverse osmosis is a way of removing dissolved solids and organic matter from water by passing it through a special membrane. The membrane separates minerals and impurities from the water, and they are flushed to the drain. Good tasting, high quality product water goes directly to the drinking water faucet, or to the storage area. The system makes a good supply of drinking water each day (see specifications). How much it will make depends on the feed water supply pressure, temperature, and quality.

The RO system includes an electronic faucet assembly with a built-in water testing feature. When water is taken from the faucet, a green indicator light means TDS remov-

al is within specified limits, and that water quality is good.

Pre and postfilters are replaceable cartridges. The carbon prefilter removes up to 4 ppm of chlorine while also filtering sediments. The postfilter removes any other undesirable tastes and odors before you use the water.

Note: A product data sheet is available listing what the system will remove (or reduce) from the water supply.

The drinking water system fits under the kitchen or bathroom sink. However, you can install it where most convenient. You do need a COLD water supply pipe and drain point within a few feet (6' tubing lengths included). You can buy longer lengths of tubing if needed to reach more distant points. *Be sure tubing is acceptable for use on potable water supplies.*

COMPONENTS OF THE SYSTEM

The RO system is shipped in 1 carton, consisting of:

- (1) Storage Tank with stand
- (2) RO Assembly, with tubing lengths attached
- (3) Parts bag containing a faucet, storage tank shutoff valve, mounting washers and screws.
- (4) Separate length of 3/8" tubing

(5) A separate bag of electronic parts. These are: electronic box, faucet base, and battery holder with batteries (4).

INSTALLER PROVIDES: (1) fittings to tap the cold water pipe for a feed water source to the RO...must adapt to 1/4" OD tubing; and (2) a drain point for RO discharge water...must adapt to 3/8" OD tubing. **Both items must comply with state and / or local codes.** Optional fittings (pages 5 and 6) are available from EcoWater for use in areas where codes permit.

THINGS TO CHECK BEFORE YOU START TO INSTALL

★ **FEED WATER** – The water supply to the Drinking Water System must have the qualities listed in the specifications. If not, it will not make product water as it should and life of the RO membrane is shortened. City water most often will have these qualities. *Well water may need conditioning.* Have the water tested by a water analysis laboratory, and get their recommendations for treatment. Observe plumbing codes when providing a water supply to the RO. A self-piercing saddle valve is available for tapping into a cold water pipe (check local plumbing codes). Refer to pages 5 and 15.

CAUTIONS:

Feed water must have all chlorine removed (prefilter removes up to 4.0 ppm). **Chlorine will destroy the RO membrane cartridge.** Be sure to service the prefilter at suggested intervals, page 11.

★ **DRAIN POINT** – A suitable drain point (**check your local plumbing codes**) is needed for reject water from the RO membrane cartridge. We suggest using the *sink p-trap* drain pipe. A drain clamp (drilling required) is available from EcoWater to use where codes permit. Refer to pages 6 and 15.

★ **RO FAUCET** – The RO product water faucet installs on the sink, or on the countertop next to the sink. Often, it's installed in an existing sink spray attachment hole. Space is required underneath for tubing to and from the faucet, and for securing it in place. *All electronic faucet connections and installation procedures are done on or above the sink or countertop.* Refer to page 7 or 8.

★ **MOUNTING SURFACE** – The RO assembly mounts on a wall surface under the sink, or you can lay it on the bottom of the cabinet. Special washers and screws are included for wall mounting.

When the storage tank is full of water, it weighs about 30 pounds. Be sure to set on a surface that will support this weight.

INSTALLATION – FEED WATER SUPPLY

Check and comply with local plumbing codes as you plan, then install a cold feed (supply) water fitting. The fitting must provide a leak-tight connection to the RO 1/4" OD tubing...see Fig. 6, page 9. A typical installation, using standard plumbing fittings, is shown in **A**. An installation, using the optional self-tapping (into copper) saddle valve is shown in **B** below.

A. STANDARD PIPE FITTINGS (compression shown)

Complying with plumbing codes, install a fitting on the kitchen cold water pipe to adapt 1/4" OD tubing. A typical connection is shown. If threaded fittings are used, be sure to use pipe joint compound or Teflon tape on outside threads.

NOTE: Be sure to turn off the water supply and open a low faucet to drain the pipe.

Do not connect the tubing to the fitting until step 1, middle of page 8.

NOTE: Codes in the state of Massachusetts require installation by a licensed plumber, and do not permit the use of the saddle valve. For installation, use plumbing code 248-CMR of the Commonwealth of Massachusetts.

B. OPTIONAL SADDLE VALVE

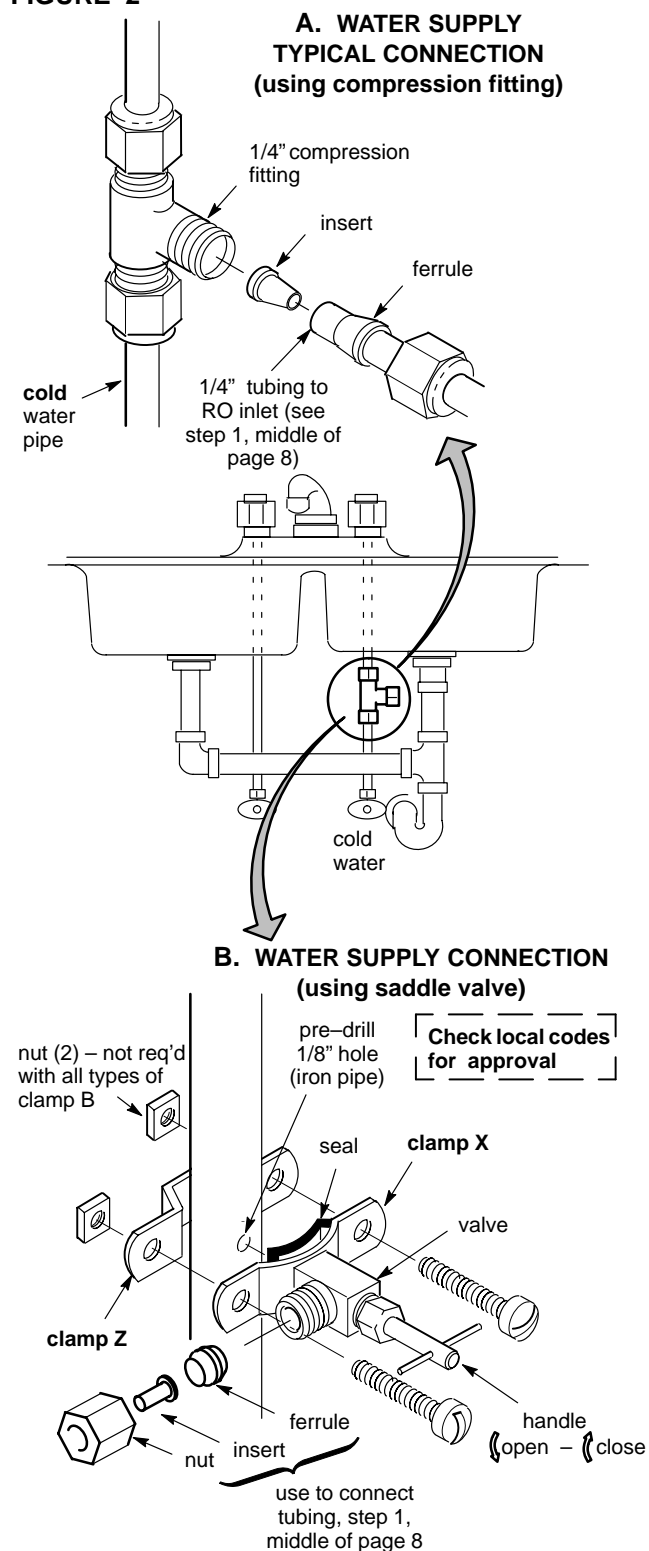
NOTE: This valve will pierce a hole in copper tubing or plastic pipe. If installing on iron pipe, you must drill a 1/8" hole for the piercing pin (READ THE FOLLOWING DANGER NOTE). **Be sure to turn off water to the pipe and to drain water from it before drilling.**

DANGER (IF DRILLING METAL PIPE): To protect yourself from serious injury or fatal shock, use a battery powered hand drill only to make the hole. Do not use an electric drill.

1. Looking at figure 2B, turn the valve into clamp X and tighten (may be preassembled). Turn the valve handle all the way outward or open.
2. Place the seal on the inside of clamp X as shown. **Be sure the piercing pin does not stick out beyond the seal.**
3. Place clamp X and Z around the pipe and secure in place with 2 screws. Tighten both screws evenly, but **do not overtighten**. Clamp Z will either have threaded screw holes, or 2 nuts are included.
4. Carefully turn the handle inward to pierce a hole in the copper or plastic pipe.

Do not connect tubing to the fitting until step 1, middle of page 8.

FIGURE 2



INSTALLATION – REJECT WATER DRAIN FITTING

Check and comply with local plumbing codes as you plan, then install a drain fitting for RO reject water. This fitting is usually installed about 3" above the sink p-trap. It must provide a leak-tight connection to 3/8" OD tubing from the RO product water faucet airgap...see Fig. 6, page 9. Typical drain fitting installations are shown below. The drain clamp, shown in Fig. 3B, is an option available from EcoWater.

A. "Y" BRANCH TAIL PIECE, OR OTHER APPROVED P-TRAP DRAIN

Reject water from the RO is routed to the RO faucet airgap (1/4" tubing), then to the drain point with 3/8" OD tubing. **Complying with plumbing codes**, install a fitting to accept the 3/8" tubing. Figure 3 shows typical p-trap and "Y" branch tail piece type drains. *Be sure the connection you make does not restrict water flow from the faucet drain tubing.*

Do not connect drain tubing until step 2, middle of page 8.

NOTE: Codes in the state of Massachusetts require installation by a licensed plumber, and do not permit the use of the optional drain clamp. For installation, use plumbing code 248-CMR of the Commonwealth of Massachusetts.

B. DRAIN CLAMP

Note: The drain clamp fits up to 2" diameter drain pipes.

1. Open the clamp and place around the drain pipe. If not already in place, position the gasket as shown. **Be sure the gasket does not block the hole in the clamp.**
2. Engage the clamp and tighten the screw. Tighten until the clamp is held firmly in place against the drain pipe. **Do not overtighten and crush the drain pipe.**

NOTES:

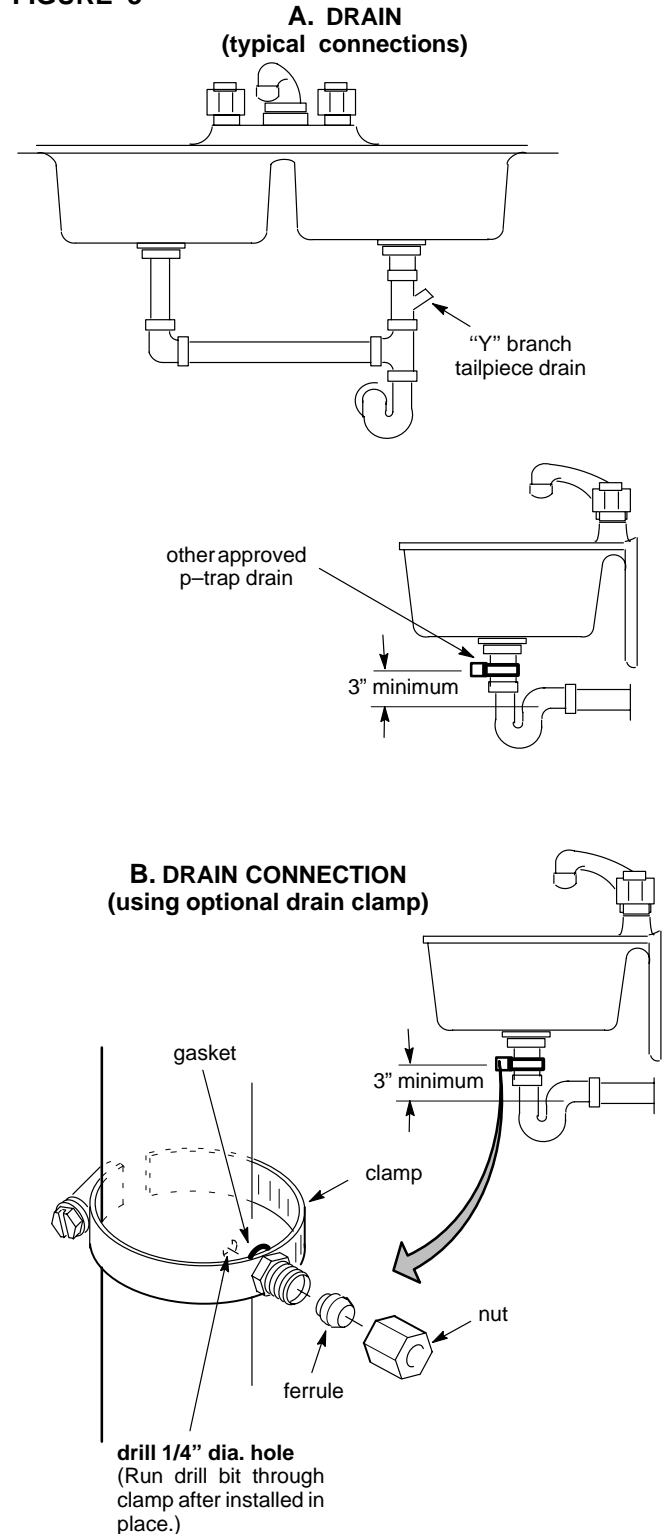
Be sure the pipe is clean and smooth where the gasket will seal.

To reduce running water noise, locate the clamp about 3" above the standing water level in the drain pipe.

3. Using a 1/4" drill, make a hole in the drain pipe, going through the fitting on the clamp.

Do not connect drain tubing until step 2, middle of page 8.

FIGURE 3



INSTALL THE FAUCET

Select one of the following places to install the faucet. Be sure there's room underneath so you can make the needed connections.

NOTE: Looking at Fig. 4D, **be sure the faucet base will fit flat against the surface**, at the selected location, so the gasket will seal.

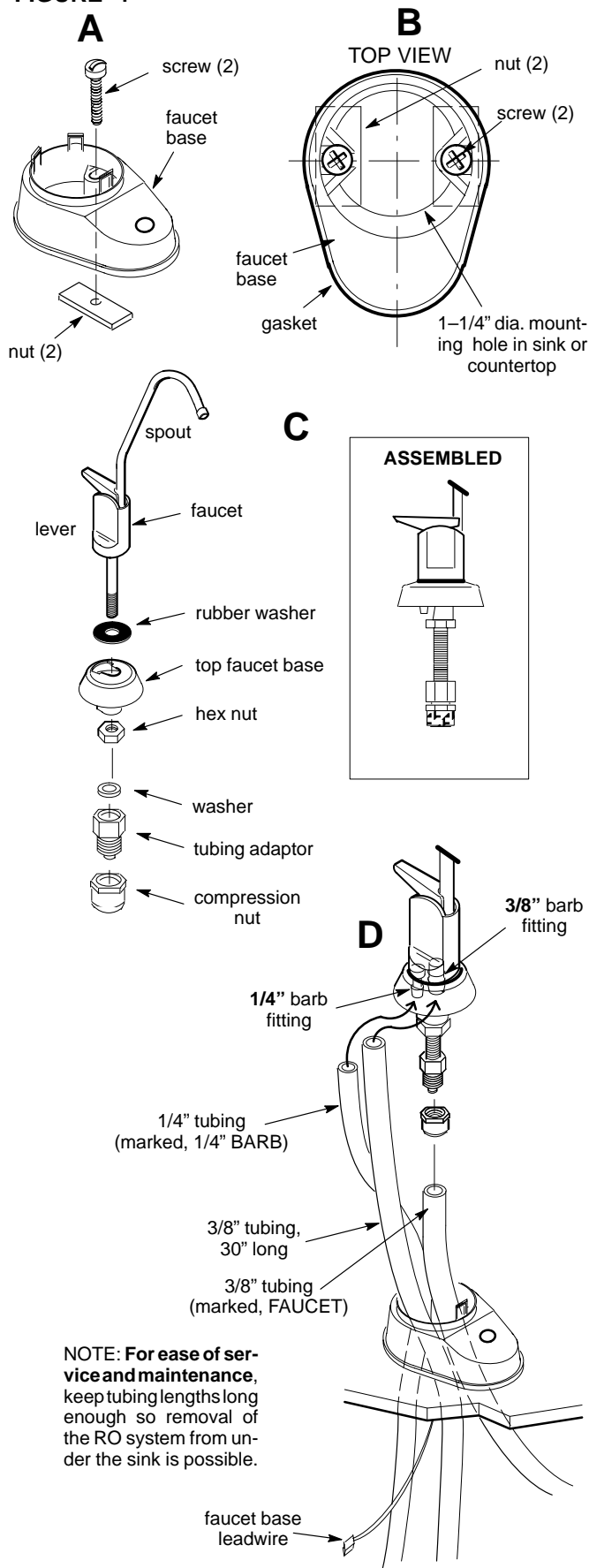
- In an existing sink spray attachment hole.
- Drill a hole in the sink top.
- Drill a hole in the countertop, next to the sink.

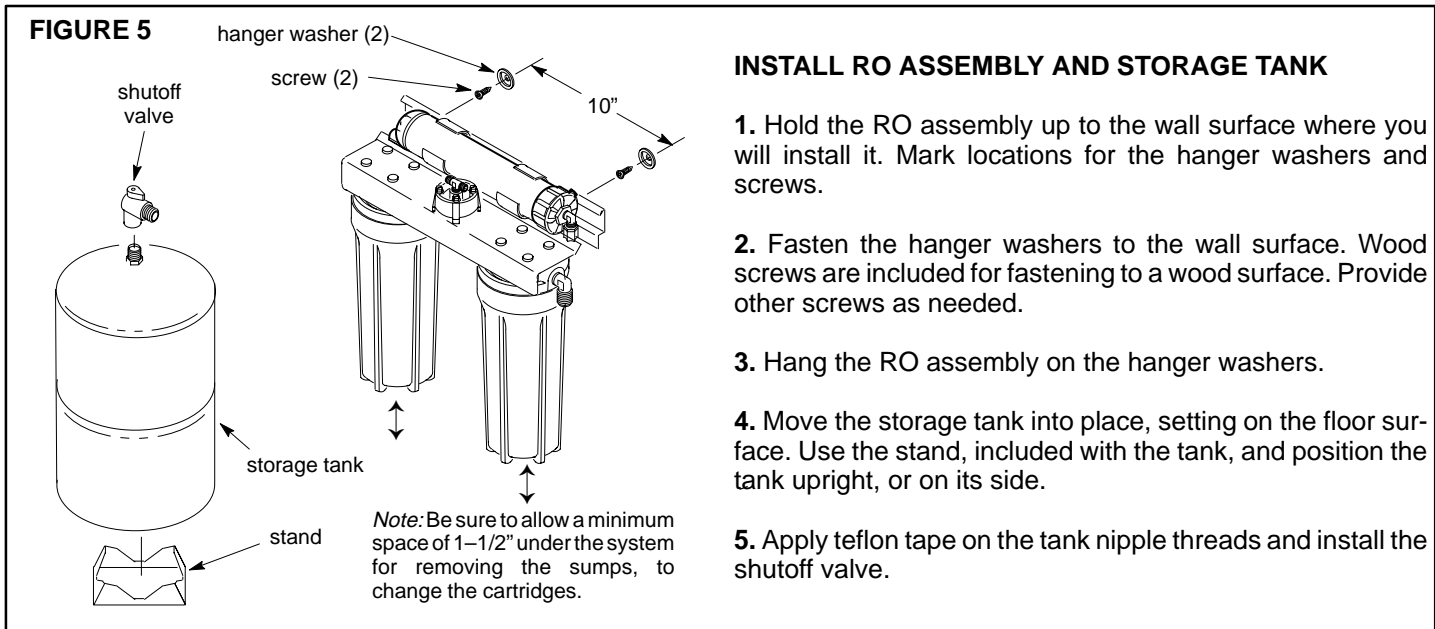
1. If drilling is needed, make a 1–1/4" dia. hole (minimum). **Be sure to use proper procedures for drilling porcelain or stainless steel.**
2. Place plumbers putty around the drilled hole.
3. Looking at Fig. 4A, insert a screw into the NON-SLOTTED base mounting hole. Turn a flat nut a few turns onto the screw.
4. Position the base gasket over the mounting hole. Set the base on the gasket, routing the leadwire through the mounting hole. Holding the flat nut under the sink with 1 finger, tighten the screw until just snug.
5. Turn the remaining flat nut a few turns onto the other screw. Position the screw in the slotted base mounting hole, and tighten until snug. **Carefully tighten both screws** until the base is held firmly in place. **Do not overtighten** and break the base.

NOTE: If the faucet is unassembled, slide the lever over the small cylindrical nut. Then, push or turn the spout into the faucet body.

6. Assemble the top gasket, top faucet base, and hex nut onto the faucet stud...Fig. 4C. Tighten the nut until snug. *Other small parts included with the faucet are not used.*
7. Using the plastic washer, Fig. 4C, turn the tubing adaptor onto the faucet stud and tighten securely.
8. Take the 30" length of 3/8" tubing and push 1 end onto the 3/8" faucet barb fitting...Fig. 4D.
9. **Move the RO system into position, under the sink.** Referring to figure 5, page 8, hang the system on cabinet wall or lay on the floor surface, as desired.
10. Route the 1/4" tubing (marked "1/4 barb on faucet"), and the 3/8" tubing (marked "faucet"), from the bottom, up through the mounting hole and faucet base. Connect to the faucet as follows...see Fig. 4D:
 - a. Push the end of the 1/4" tubing onto the 1/4" barb on the faucet.
 - b. Using the tubing adaptor nut, fasten the 3/8" tubing to the tubing adaptor, and tighten the nut.
11. Lower the faucet assembly and lock into place on the faucet base.

FIGURE 4





INSTALL RO ASSEMBLY AND STORAGE TANK

1. Hold the RO assembly up to the wall surface where you will install it. Mark locations for the hanger washers and screws.
2. Fasten the hanger washers to the wall surface. Wood screws are included for fastening to a wood surface. Provide other screws as needed.
3. Hang the RO assembly on the hanger washers.
4. Move the storage tank into place, setting on the floor surface. Use the stand, included with the tank, and position the tank upright, or on its side.
5. Apply teflon tape on the tank nipple threads and install the shutoff valve.

CONNECT WATER SUPPLY AND FAUCET DRAIN TUBING, ELECTRONIC BOX

1. Connect faucet drain tubing: Run the 3/8" tubing from the 3/8" faucet barb, to the drain fitting installed on page 6. Keep this tubing run as straight as possible, **without loops, dips or low-spots**. Cut the tubing as needed and fasten to the drain fitting (Fig. 3A or 3B), securing as required.

2. Connect "water supply" tubing, Fig. 2 and 6: A length of 1/4" tubing (marked "water supply") is attached to the RO inlet. Connect this 1/4" tubing to the feed water supply fitting, installed on page 5. Connect the tubing as applies (Fig. 2A or 2B) and tighten the nut securely.

3. Connect electronic box: Referring to Fig. 6, connect the *supply* and *product* water tubing to the electronic box exactly as follows.

A. Cut the 3/8" product water tubing (RO to faucet) as typically shown, and connect to the top and bottom of the elec-

tronic box, *product water* side. Be sure to use tubing inserts and 3/8" nuts at each connection.

B. Cut the 1/4" supply tubing and connect to the top and bottom of the electronic box *feed water* side. Again, be sure to use tubing inserts and 1/4" nuts at each connection.

4. Connect tubing to storage tank: Run the length of 3/8" tubing, marked "storage tank" from the tee fitting on the RO module, to the shutoff valve at the top of the storage tank.

5. Remove the electronic box back cover and, looking at Fig. 6, **fasten the battery connector to the battery pack** (be sure batteries are installed correctly). Put the battery pack in the electronic box and replace the back cover.

Fasten the electronic box leadwire to the faucet base leadwire...Fig. 6.

SANITIZING THE RO SYSTEM

Refer to pages 12 and 14 for parts identification.

Sanitizing is recommended upon installation of the RO system, and after servicing inner parts. **It is important for the service person to have clean hands while handling inner parts of the system.**

CAUTION: Be sure to remove all cartridges as follows, before sanitizing. **Chlorine will destroy all cartridges.**

1. Be sure the water supply to the RO is turned off, and the RO faucet is open.

2. Turn off the RO housing inlet cover. Remove (use pliers) the RO cartridge from the housing. Place the cartridge in a **clean** plastic bag.

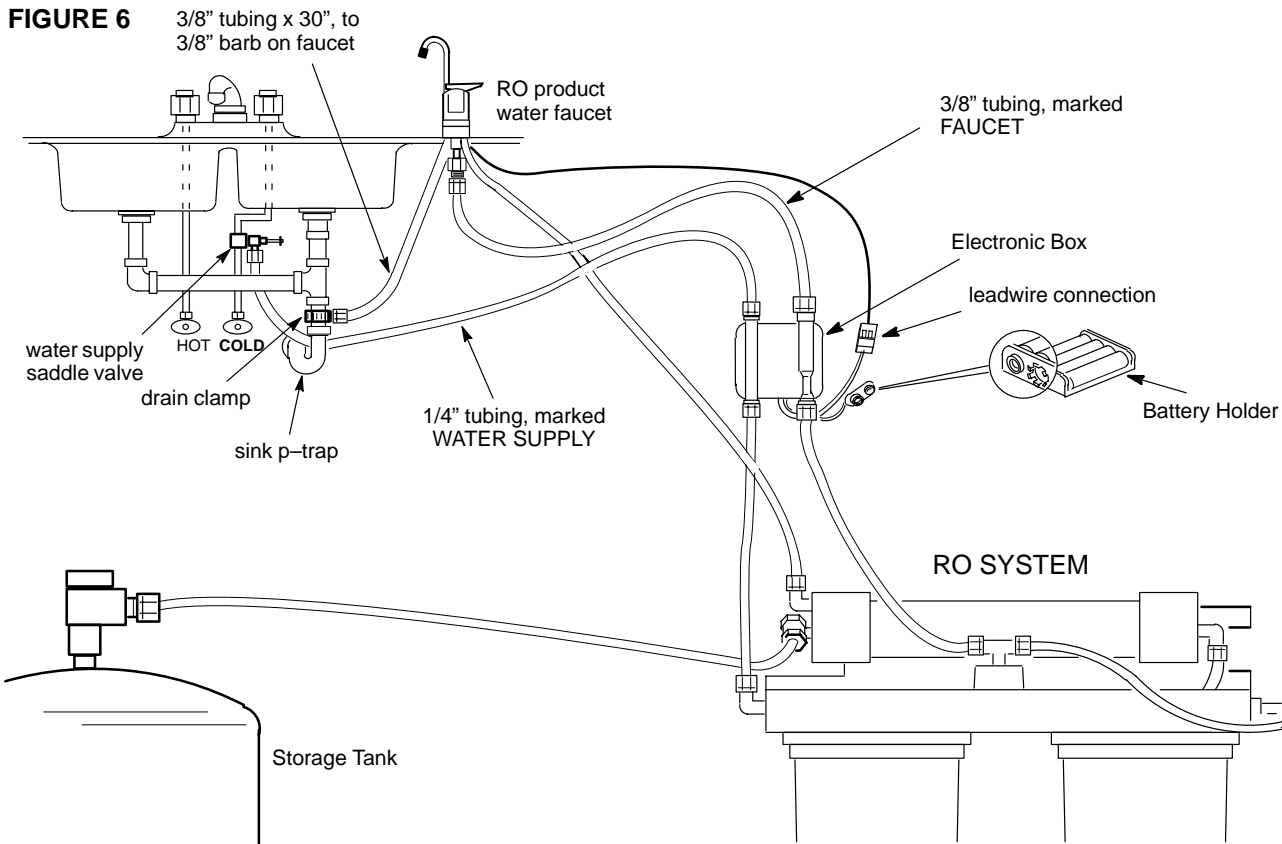
3. Replace the inlet cover and tighten.

4. Remove the POSTFILTER sump, turning to the left. Take the cartridge from the sump and place in the plastic bag. Replace the sump and **tighten securely**.

5. Remove the PREFILTER sump and cartridge. Also place this cartridge in the clean bag.

continued

TYPICAL INSTALLATION



SANITIZING, continued

6. If needed, flush the prefilter sump with fresh water. Then, fill with water to about 1" from the top. Add 1.0 ounce of chlorine (ordinary 5.25% household bleach ...Hilex, Clorox, etc. brands) and mix in the water. **Do not add chlorine first.** Concentrated, chlorine will attack plastics.

7. Carefully replace the sump on the prefilter head and tighten securely.

8. Open the tank shutoff valve and the water supply to the RO. Open the RO faucet, locking the lever upward, against the spout.

9. Allow water to circulate through the RO system until the bleach odor is gone.

10. After the bleach odor is gone, turn off the water supply to the RO. Then, close the RO faucet after water flow stops.

11. Be sure your hands are clean. Then, repeat steps 1 – 5 and 7, only **replace all cartridges.**

PRESSURE TESTING

DO THE PRECEDING SANITIZING PROCEDURES BEFORE PRESSURE TESTING.

1. Open the water supply shutoff valve to the RO.

2. Open the **main** water supply valve and several house faucets to purge air from the system. Close faucets when water runs smooth.

3. Open the shutoff valve on the RO water storage tank.

4. *In about 2 hours*, pressure will start to build in the RO system. **Then**, carefully check all fittings and connections for water leaks. Correct leaks if any are found.

5. Important purging instructions: The RO cartridge contains a *food grade preservative* that you should clean from it before using water from the system. The preservative will give product water an unpleasant taste and odor. After the storage tank has filled (takes about 4 hours), open the RO faucet until the tank is empty and flow stops. Close the RO faucet and allow the tank to fill again for 4 hours. Then, open the RO faucet and empty again. After purging 4 times, the system is ready to make product water for use.

HOW THE UNDERCOUNTER RO SYSTEM WORKS

PREFILTER

Water from the cold supply pipe enters the RO assembly prefilter first (Fig. 6).

The prefilter is a replaceable sediment cartridge with activated carbon in its composition. The 10 micron cartridge removes sand, silt, dirt, other sediments, and up to 4.0 ppm of chlorine from the feed water. **Chlorine will destroy the RO membrane.** Filtered, clean, chlorine-free water flows from the prefilter, to the RO membrane cartridge. **IMPORTANT: See prefilter maintenance, page 11.**

REVERSE OSMOSIS (RO) CARTRIDGE

The cartridge, inside the RO housing, includes a tightly wound, special membrane. Water is forced through the cartridge and the membrane removes the dissolved solids and organic matter. High quality product water exits the RO housing and goes to the storage tank, or to the postfilter and RO faucet. Reject water, with the dissolved solids and organic matter, is routed through the flow control and to the drain.

STORAGE TANK

The storage tank holds up to 2.1 gallons of product water. A diaphragm inside the tank keeps water pressurized to about 30 psi, when the tank is full, to provide fast flow from the RO faucet. The tank is pressurized to 5 psi.

POSTFILTER

After leaving the storage tank, but before going to the RO faucet, product water goes through the postfilter. The postfilter is an activated carbon type sediment filter. Any remaining tastes, odors and sediments are removed from the product water. Taste-free, odor-free, clean, high quality drinking water is available for use.

FAUCET AND ELECTRONICS

The sink or countertop faucet vends the drinking water when opened. It has a hand operated, spring-loaded *closed* lever to prevent waste. You can also keep the faucet open by pushing upward on the lever and locking it against the faucet spout.

To comply with plumbing codes, an air-gap is built into the faucet drain water connection.

The electronics provides a built-in water quality tester. As water is taken from the faucet, indicator lights show the

status of the system to assure high quality water at all times. Indicator lights are:

FLASHING GREEN— This flashing light indicates the RO system is providing high quality drinking water.

FLASHING RED “FILTER” – The prefilter and postfilter cartridge require replacement at least every 6 months. The amber filter light begins to flash at the end of a 6 month period, or 900 gallons of product water use, to show you replacement of the filters is needed. (Also replace the electronic box batteries . . .see page 12.)

FLASHING AMBER “RO” – When the RO cartridge no longer removes at least 75% of the total dissolved solids from the supply water, the amber RO light flashes as water is drawn from the faucet.

Note: Disregard initial or occasional short periods of the flashing RO light.

SHUTOFF ASSEMBLY

To conserve water, the drinking water system has an automatic shutoff system. When the storage tank has filled to capacity, *and* the drinking water faucet is closed, pressure closes the shutoff to stop flow into the RO. After drinking water is used, and pressure in the system drops, the shutoff opens to allow water flow again.

CHECK VALVE

A check valve (Fig. 8 and 9) is located in the tee fitting at the outlet end of the RO housing. The check valve prevents a backward flow of product water from the storage tank. A backward flow could rupture the RO membrane.

FLOW CONTROL

Water flow through the RO membrane is regulated by the flow control. It maintains the desired flow rate to obtain the highest quality drinking water. The flow control is located in the elbow fitting at the RO housing drain port. A small cone-shaped screen fits over the end of the flow control to help prevent plugging with drain water sediments.

This reverse osmosis system contains a replaceable treatment component critical for effective removal of total dissolved solids. The water should be tested periodically to verify the system is performing satisfactorily.

MAINTENANCE

To keep the undercounter water system operating and making high quality water, the RO cartridge, prefilter and postfilter cartridges need replacement at regular intervals. Be sure to replace them when the indicator lights show the need.

When replacing parts, simply lift the RO assembly from the mounting washers and lay on the cabinet floor. You can remove the RO housing from the bracket by pulling out of the mounting clamps.

Note: To prevent spillage, place the RO assembly in a container to catch the water.

CAUTION: Before disconnecting parts, be sure to close the **water supply valve** to the RO, and the **shutoff valve** on the storage tank.

PREFILTER AND POSTFILTER CARTRIDGES

You must replace the prefilter cartridge often to protect the RO membrane from being destroyed by chlorine, and/or from plugging with sediments in your water supply. If the water supply contains both chlorine and sediments, replace the prefilter cartridge at least every 6 months. Replace more often than 6 months if it begins to plug with sediments.

If the water has sediments only, with no chlorine, you may notice a slower making of product water as the prefilter collects the sediments. When this occurs, replace the prefilter cartridge. *Also replace the postfilter cartridge.*

The red “**filter**” light, on the faucet base, begins to flash to indicate replacement of the filter cartridges is needed. The light starts to flash after 6 months, or 900 gallons of product water use, whichever occurs first.

When replacing the filter cartridges, also replace the batteries in the electronic box (see page 12). Replacing the batteries resets the 6 month/900 gallon counter, and assures proper operation of the faucet indicator lights.

To replace the filter cartridges:

1. Remove (turn to the left, or counterclockwise) both sumps from the filter heads. **Be careful . . .**the sumps are full of water.
2. Remove and discard the inner cartridges in a proper manner, complying with local codes or regulations. Flush the insides of the sumps with fresh water. **Do not lose the large o-ring seals.**
3. Insert new cartridges, and with the properly lubricated* o-rings in place, turn on and tighten the sumps.

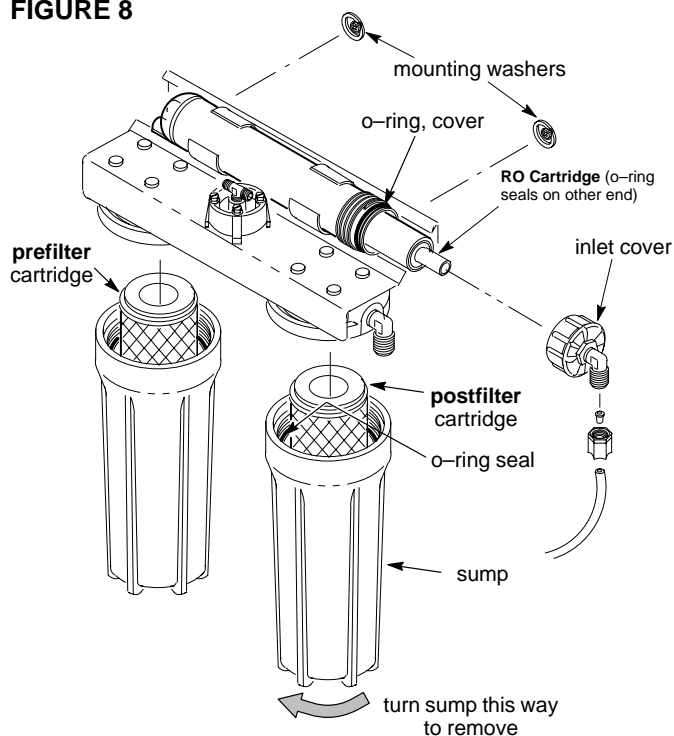
*Note: Use a lubricant approved for use on a potable water supply.

RO CARTRIDGE

The life of the RO cartridge depends mostly on the pH of properly treated supply water to the RO system (see

pages 3 and 4). The higher the pH the shorter cartridge life is. *For example, if supply water pH varies from 6.8 to 7.7, the cartridge may last for well over 1 year. However, if the pH is as high as 8.5 to 10, cartridge life may be as short as 6 months.* Higher pH weakens the cartridge membrane and causes pin-hole leaks.

FIGURE 8



Replace the RO cartridge when the production rate and/or quality of product water drops. Product water may begin to taste different or bad, indicating solids and organics are passing through the RO membrane. To be sure it is the RO cartridge, always replace the prefilter and postfilter cartridges first.

The amber “**RO**” light, on the faucet base, begins to flash as water is used to indicate replacement of the cartridge is needed.

To replace the RO cartridge:

1. Turn off the water supply (see the preceding caution note above, left column).
2. Disconnect the tubing at the inlet cover. Turn the cover off of the RO housing.
3. Use a pliers to pull the RO cartridge from the housing.
4. Install the new cartridge, **end with o-ring seals inward.** Lubricate the o-ring seal if dry, and replace and tighten the inlet cover.
5. Remove the flow control and replace with a **new** control (see next page). Refer to the repair parts pages to order.
6. *Purge the cartridge as instructed on page 9.*

MAINTENANCE

BATTERIES IN ELECTRONIC BOX

Always replace the batteries in the electronic box when changing the prefilter and postfilter cartridges. Good batteries are needed to assure proper indicator light operation. Weak batteries can give a false indication. Changing the batteries also resets the 6 month (or 900 gallons) time period for filter change indication. **Use 4, "AA" alkaline batteries** and install as shown on the battery holder.

FLOW CONTROL AND SCREEN

The flow control is vital for proper operation of the RO cartridge. The control keeps water flow through the cartridge at the needed rate to obtain the best quality product water.

Whenever servicing the RO system, check the flow control to be sure the small tube through it is clean and unrestricted. Also check and clean the cone-shaped screen in front of the control, the elbow and the drain tubing. The RO cartridge cannot discharge minerals and impurities to the drain if the flow control plugs with foreign material. If this happens, it only takes a short time for the membrane to foul and become useless.

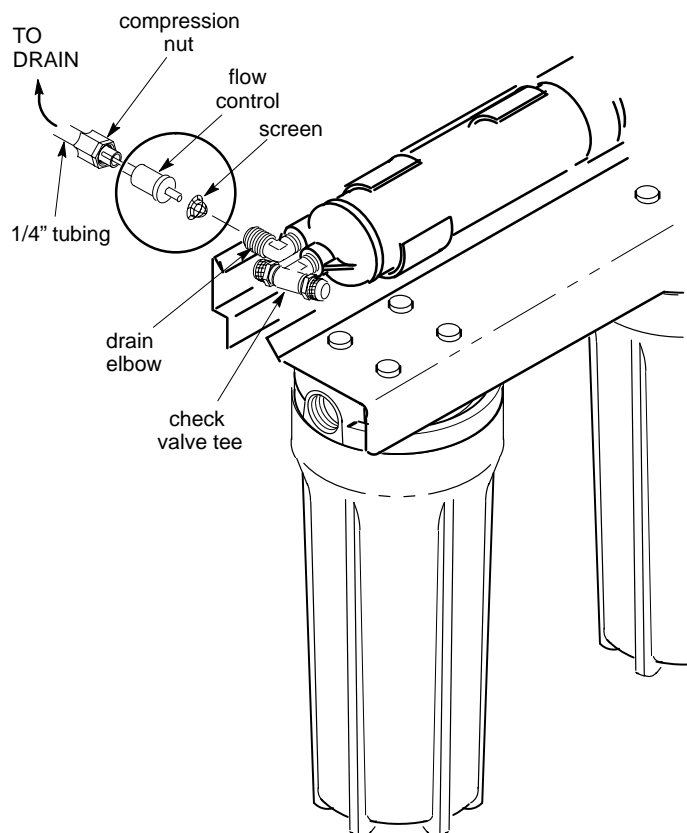
To replace the flow control:

1. Referring to Fig. 9, remove the compression nut from the elbow fitting at the end of the RO housing.
2. Remove the flow control from the end of the drain tubing.
3. Check to be sure the drain tubing is clean. Then, install a new flow control.
4. Carefully remove the screen from the drain elbow. Thoroughly clean, or replace with a new screen.

Note: To install the screen, place the cone end into the elbow. Carefully, use the end of the drain tubing to push it into place. Visually check to be sure it is positioned correctly.

5. Reconnect the drain tubing and **carefully tighten** the compression nut. Tighten by hand, then another 1/4 to 1/2 turn with a pliers. **Do not overtighten** and *crush or distort the tubing and flow control.*

FIGURE 9



FILTER – CARTRIDGE REPLACEMENT GUIDE

ELECTRONIC INDICATOR

AT LEAST EVERY 6 MONTHS OR 900 GALLONS OF RO PRODUCT WATER USE...RED “FILTER” LIGHT FLASHES . . .

▶ Replace the prefilter cartridge, postfilter cartridge, and batteries in the electronic control box.

WHEN THE AMBER “RO” LIGHT FLASHES . . .

▶ Replace the RO cartridge, flow control and screen.

ALTERNATE GUIDE

AT LEAST EVERY 6 MONTHS

▶ Replace sediment–carbon prefilter and postfilter cartridges. Also see Electronic Indicator, below.

– Make replacements indicated if any of the following occur before the 6 months.–

CHLORINE TASTE AND/OR ODOR

▶ Replace prefilter and postfilter cartridges, RO cartridge, flow control and screen.

OTHER TASTE AND/OR ODOR

▶ Replace the postfilter cartridge.
▶ If taste and odor persists, replace prefilter cartridge, RO cartridge, flow control and screen.

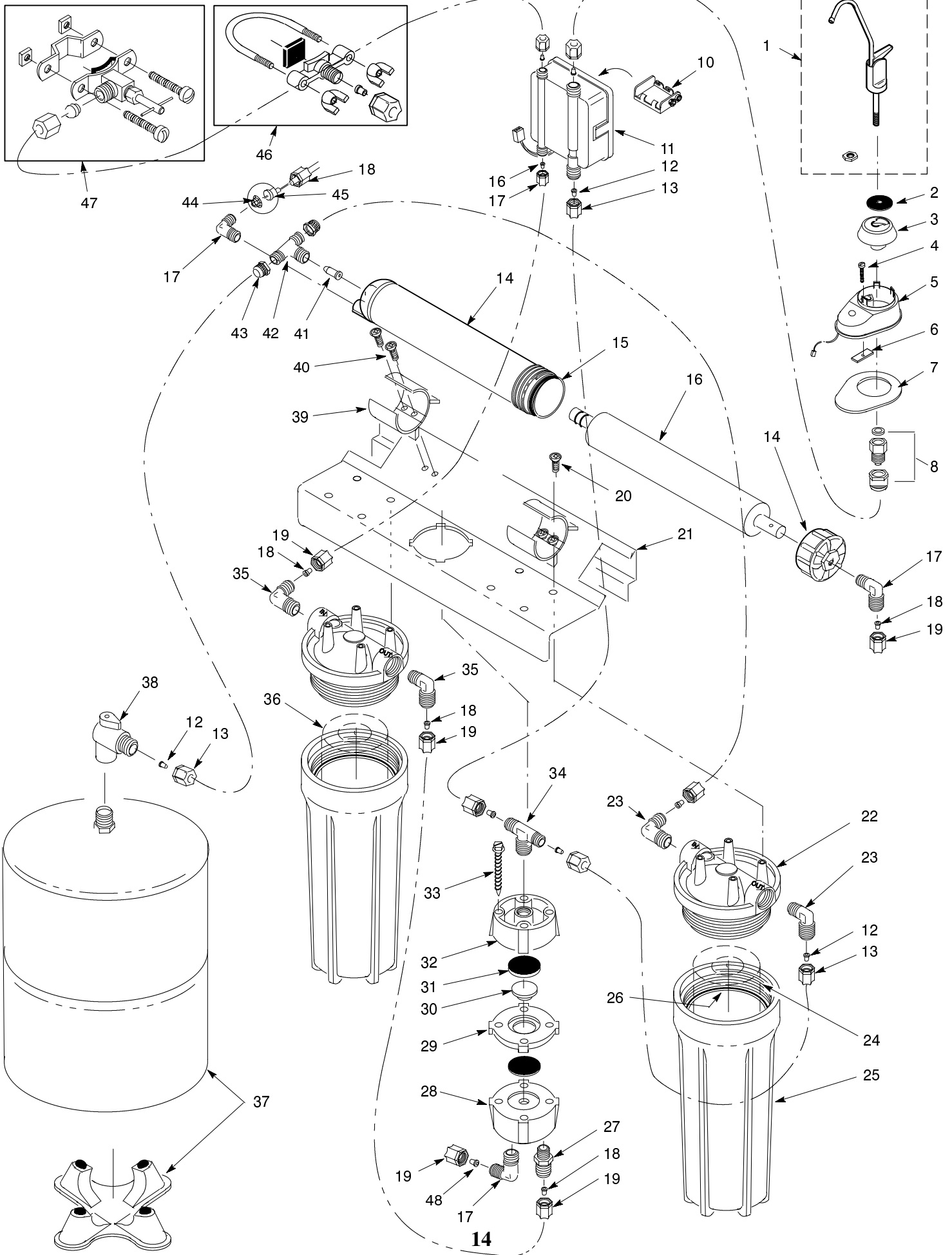
SLOW PRODUCTION RATE

▶ Replace prefilter cartridge.
▶ If rate does not increase, replace postfilter cartridge, RO cartridge, flow control and screen.

HIGH TDS

▶ Replace prefilter cartridge, postfilter cartridge, RO cartridge, flow control and screen.

REPAIR PARTS



KEY NO.	PART NUMBER	DESCRIPTION
1	7142829	Faucet – black tip and handle
2	7051206	Top Gasket
3	7112248	Top Faucet Base – black
4	0900713	Screw, #6–32 x 1–3/8" (2)
5	7115686	Base, Faucet – black ①
6	7115725	Nut (2)
7	7114614	Gasket
8	7207734	Adaptor, 7/16" – 24 ◆ incl. the following
◇	1260600	Compression Washer
◇	9043201	Nut
10	7115822	Battery Holder (batteries not included)
11	7170880	Electronic Box
12	7131349	Insert, 3/8" Tubing (7)
13	9003203	Nut, 3/8" Tubing (7)
14	7170911	RO Housing and Cover
15	7170929	O–ring, 2–1/4" I.D. x 2–7/16" O.D.
16	7210046	RO Cartridge
17	9004504	Elbow, 1/8" NPT x 1/4" Tubing (3)
18	7131331	Insert, 1/4" Tubing (7)
19	9003204	Nut, 1/4" Tubing (8)
20	7185788	Screw, #10 – 3/4" (8)
21	7168639	Bracket
22	7156535	Head (2)
23	9004503	Elbow 3/8" NPT x 3/8" Tube (2)
24	7190288	Sediment–Carbon Cartridge (post)
25	7156577	Sump (2)
26	7170246	O–ring, 3 – 3/8" I.D. x 3 – 5/8" O.D. (2)
27	7167683	Connector, 1/8" NPT x 1/4" Tube
28	7112442	Valve Top

KEY NO.	PART NUMBER	DESCRIPTION
29	7112434	Valve Center Body
30	7014979	Plunger
31	7099296	Diaphragm (2)
32	7112426	Valve Bottom
33	7030721	Screw, #10 – 14 x 1 – 3/4" (4)
◇	7133838	Shutoff Assembly ◆ incl. 28 through 33
34	7105160	Tee, 1/8" NPT x 3/8" Tubing
35	9004505	Elbow, 3/8" NPT x 1/4" Tubing (2)
36	7190288	Sediment–Carbon Cartridge (pre)
37	7175482	Tank, 2.1 gal. with stand
38	7179258	Tank Shutoff Valve
39	7112523	Clip (2)
40	9006029	Screw (4)
41	7170864	Check Ball Assembly
42	7180005	Tee, 3/8" Tubing ◆ includes 41
43	9043201	Nut, 3/8" Tubing –brass– (2)
44	7095030	Cone Screen
45	7167764	Flow Control, 1–3/4" long
46	7079791	Drain Clamp ②
47	7011272	Saddle Valve ②
48	7199494	Flow Insert
◇	9041700	Hanger Washer (2) – not illustrated
◇	9006062	Woodscrew (2) – not illustrated
◇	7157280	Tubing, 3/8" x 20' – white
◇	7161823	Tubing, 1/4" x 20' – white
◇	7093290	Faucet Repair Kit
◇	7126506	Cable Extension, 15 ft

① Includes key nos. 2, 3, 4, 6 and 7.

② Not included with RO – **Not allowed in all areas (check your local codes).**

Note: For replacement parts, contact your local Eco Water Systems dealer, or call 1–800–545–1780 for the name of the authorized dealer nearest you.

PERFORMANCE CHARTS

The following results are from tests conducted on RO membranes, using a 1–3/4” long flow control, at a 15% product water recovery rate, and a feed water temperature of 77 °F. You can use the following charts to determine RO performance for specific water pressures and TDS combinations. To compensate for different water supply temperatures, multiply figures in the charts by correction factors in the “Feed Water Temperature” table.

PRODUCT WATER GALLONS PER DAY (PRODUCT WATER OUTLET OPEN)						PERCENT REJECTION OF TDS (PRODUCT WATER OUTLET CLOSED)						
120	46	42	39.5	38.5	31	120	98	97.9	97.5	97.5	96.2	
110	42	38	35	34	29.5	110	97.4	97.8	97.2	97.3	95.8	
100	37.5	35	31	30	25	100	97.2	97.6	97.1	97	95.1	
90	32.5	31	28.5	27.5	20.5	90	97	97.2	97	96.8	94.5	
80	29	26.5	24	23.5	18.5	80	96.8	97	96.8	96.5	93.8	
70	25.5	22.5	20	19.5	12	70	96.7	96.7	96.4	95.8	92.5	
60	22	19	16	15.5	BOOSTER PUMP REQUIRED*	60	96	96	96.5	95	BOOSTER PUMP REQUIRED*	
50	17.5	14.5	12	11		50	94.2	95	94.8	93.8		
40	15	10	9	8		40	92.4	93.3	93.3	90.8		
	300	500	750	1000	2000		300	500	750	1000	2000	
	TOTAL DISSOLVED SOLIDS (TDS)						TOTAL DISSOLVED SOLIDS (TDS)					

* On water pressure 60 psi and below, with over 2000 ppm of TDS. A booster pump may be needed on lower TDS water, depending on variable conditions.

FEED WATER TEMPERATURE (°F)												
45	50	55	60	65	70	75	77	80	85	90	95	100
.38	.48	.57	.67	.76	.85	.95	1.00	1.05	1.15	1.25	1.34	1.43
CORRECTION FACTOR												