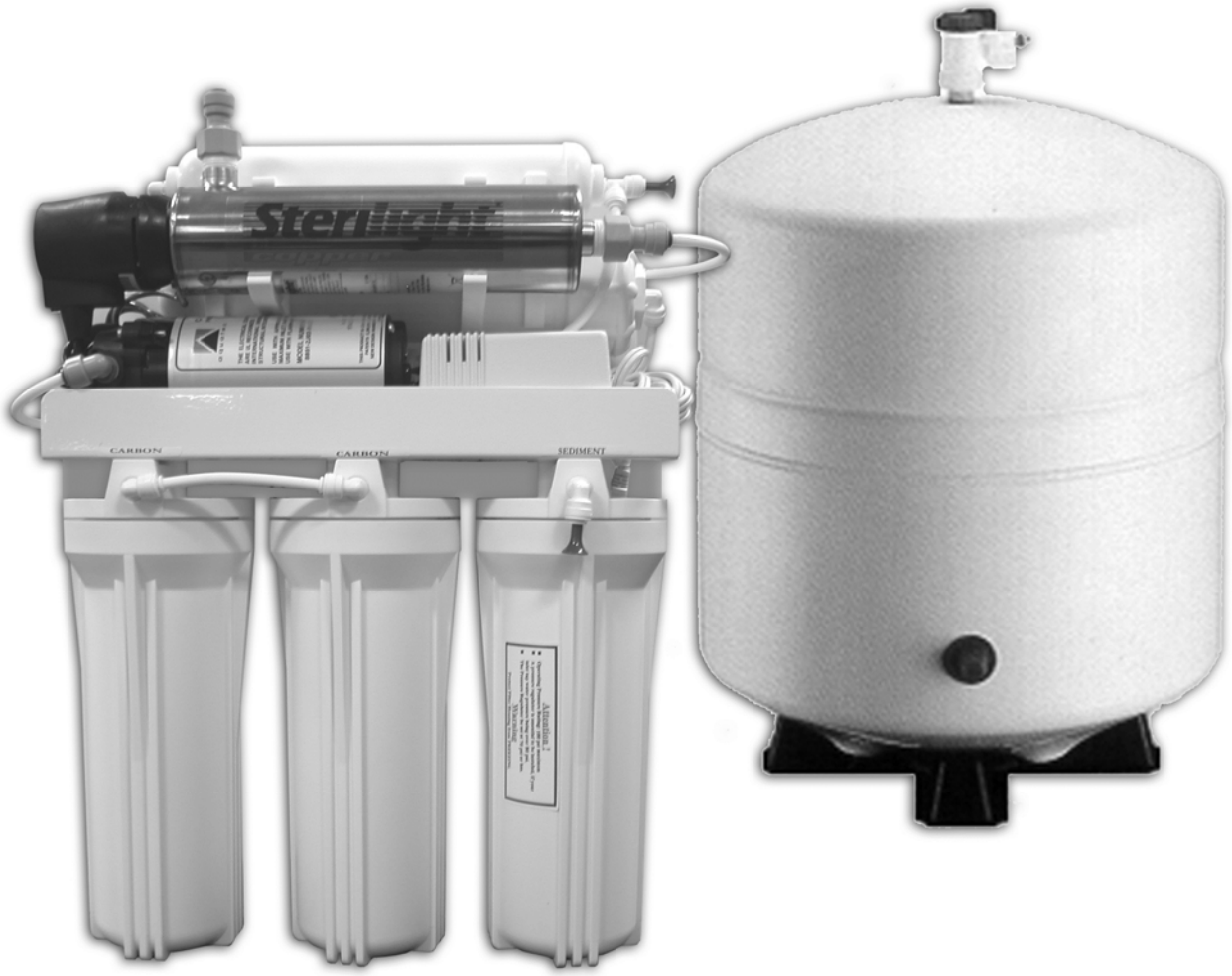
# Installation and Service Manual Under-The Counter 6 Stage Reverse Osmosis System With Booster Pump & UV




| System Flow Rate | Model Number |
|---|---|
| 12 Gallons Per Day | AAA-125P*-UV |
| 24 Gallons Per Day | AAA-245P*-UV |
| 36 Gallons Per Day | AAA-365P*-UV |

| System Flow Rate | Model Number |
|---|---|
| 50 Gallons Per Day | AAA-505P*-UV |
| 75 Gallons Per Day | AAA-755P*-UV |
| 100 Gallons Per Day | AAA-1005P*-UV |

**A voltage code is added to the end of the model number. Example: AAA-125PU-UV*
***U** = USA: 110-115v/ 60Hz, **J** = Japan: 100v/50-60Hz, **E** = Europe: 230v/50Hz*


APPLIED MEMBRANES INC.®
***Industry Leader in RO Expertise and Membrane Applications Since 1983™***
2325 Cousteau Ct., Vista, CA 92081, USA • www.appliedmembranes.com

# Introduction

**Please read this entire service guide prior to beginning installation.**

The Applied Membranes reverse osmosis drinking water system has been designed for quick and simple installation and maintenance. By carefully reading this instruction manual and following the operational guidelines you will ensure a successful installation and reliable operation. Routine maintenance is essential to the longevity and performance of the system. Filters should be changed every three to six months depending on the quality of the feed water supply.

# Conditions for Operation

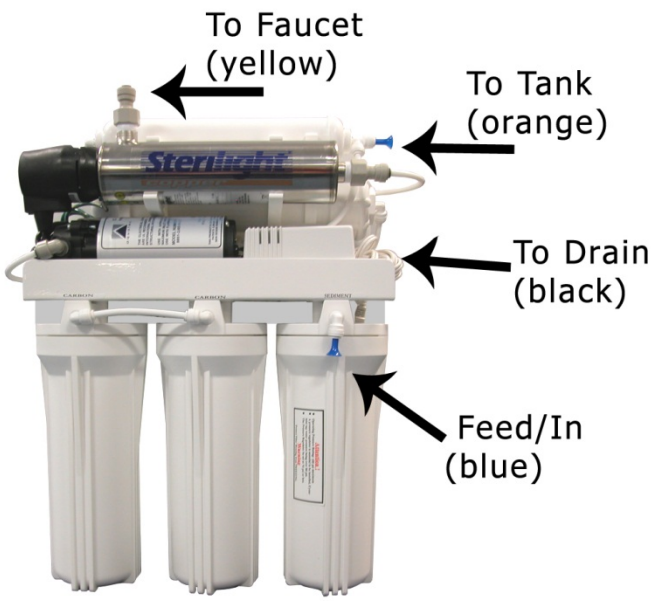
| Source Water Supply | |
|---|---|
| Community/Private | Non-Chlorinated – or chlorinated as long as the carbon filter is in place and replaced every 6 months. Membranes will be damaged by chlorine. |
| System Pressure | 40 psi minimum -100 psi maximum |
| Temperature | 4º-38º C (40º-100º F) |
| Maximum Supply TDS Level | 1500 ppm (mg/L) |
| Turbidity | <1.0 Net Turbidity (NTU) |

| Chemical Parameters | |
|---|---|
| Hardness (CaCO3) | <175 mg/L (<10 gpg) |
| Iron (Fe) | <0.1 mg/L |
| Manganese (Mn) | <0.05 mg/L |
| Hydrogen Sulfide (H2S) | 0.00 mg/L |
| Chlorine (CL2) | 0.00 mg/L |

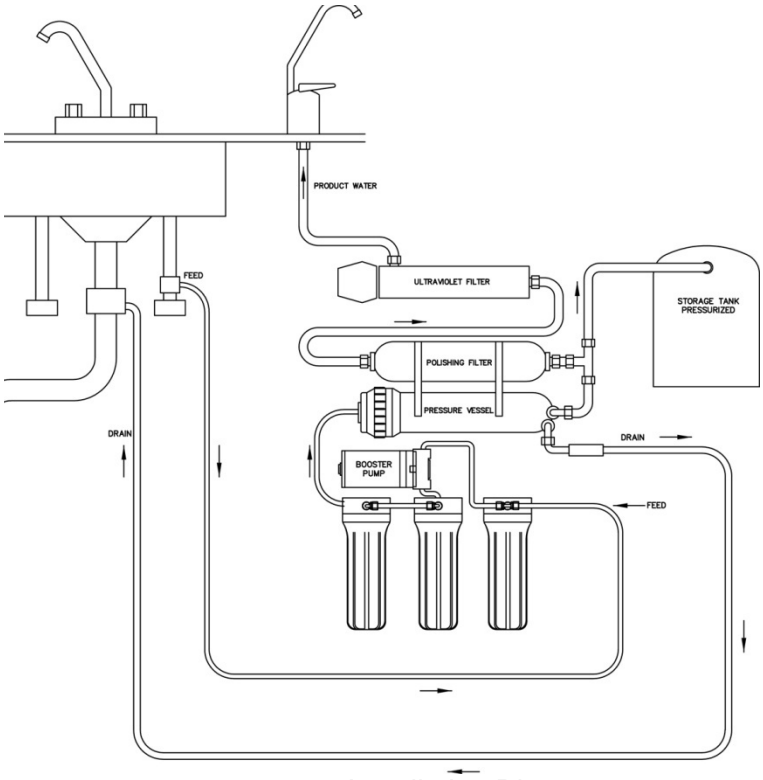
# Warnings

- Only use this system on potable water supplies. Do not use this system where the water is microbiologically unsafe or of unknown quality.
- Never use hot water or allow the unit to freeze.
- Incorrect installation or operation will void the warranty.

# About Your RO System




Connection Points




Installation Diagram

**5 Stage Reverse Osmosis Water System**

| Stage | Description | Replacement Schedule |
|---|---|---|
| 1st Stage | Sediment pre-filter | Every 3-6 months |
| 2nd Stage | Carbon block pre-filter | Every 3-6 months |
| 3rd Stage | Carbon block pre-filter | Every 3-6 months |
| 4th Stage | Reverse osmosis membrane | Every 12 months |
| 5th Stage | Post carbon filter | Every 3-6 months |
| 6th Stage | Ultraviolet sterilization unit (UV) | Every 12 months (lamp) |

| Connection | Location | Tubing Color |
|---|---|---|
| System Feed (IN) | From feed line to fitting at the entrance of the first filter housing. | Blue |
| Reject Water | From the flow restrictor to the drain saddle. | Black |
| Product Water – Tank | From the tee on the post-carbon inlet to the tank inlet/outlet. | Orange |
| Product Water – Final | From the post-carbon outlet to the faucet. | Yellow |

# Preparing For Installation

Check the following list of components to ensure that all parts are packed with your system.

| | | | |
|---|---|---|---|
|  RO System |  Storage Tank |  Faucet Kit |  Feed Adapter Kit |
|  Drain Saddle |  Tank Valve |  Filter Wrench |  Tubing: Blue, Yellow, Orange & Black |

## Recommended Tool List:

Have the below tools on hand before beginning installation. These are not included with the system.

- Variable speed drill with ⅛", ¼" & 7/16" drill bits
- ½" and 7/16" open-end wrenches (or adjustable)
- Phillips screwdriver
- Utility knife
- Teflon tape

# Check Location:

Determine the location for the installation of the RO system. Avoid locations where the system might come in contact with hot water pipes or other hazards. Two electrical outlets are needed for the pump and UV power supplies.

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 tank to faucet of 15 feet is possible (additional tubing may be needed). The system will produce a faster flow at the faucet with the shortest tubing run from tank to faucet.

## System Mounting

Determine whether mounting the system to the wall is necessary or desired. This can be optional.
Dry wall anchors and screws may be necessary (not included with the system).

1. Mark screw locations at the desired positions. Use the two holes on the back of the RO System mounting bracket for marker guides.

2. Screw the screws into the mounting wall on the marked positions. Use an anchoring device appropriate for the type of material you are screwing into.

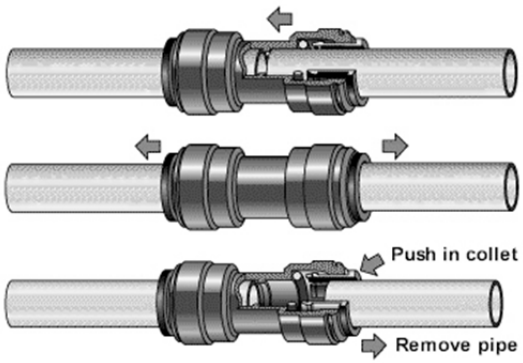
3. Hang the purification system onto the screws by the holes on the back of the unit.

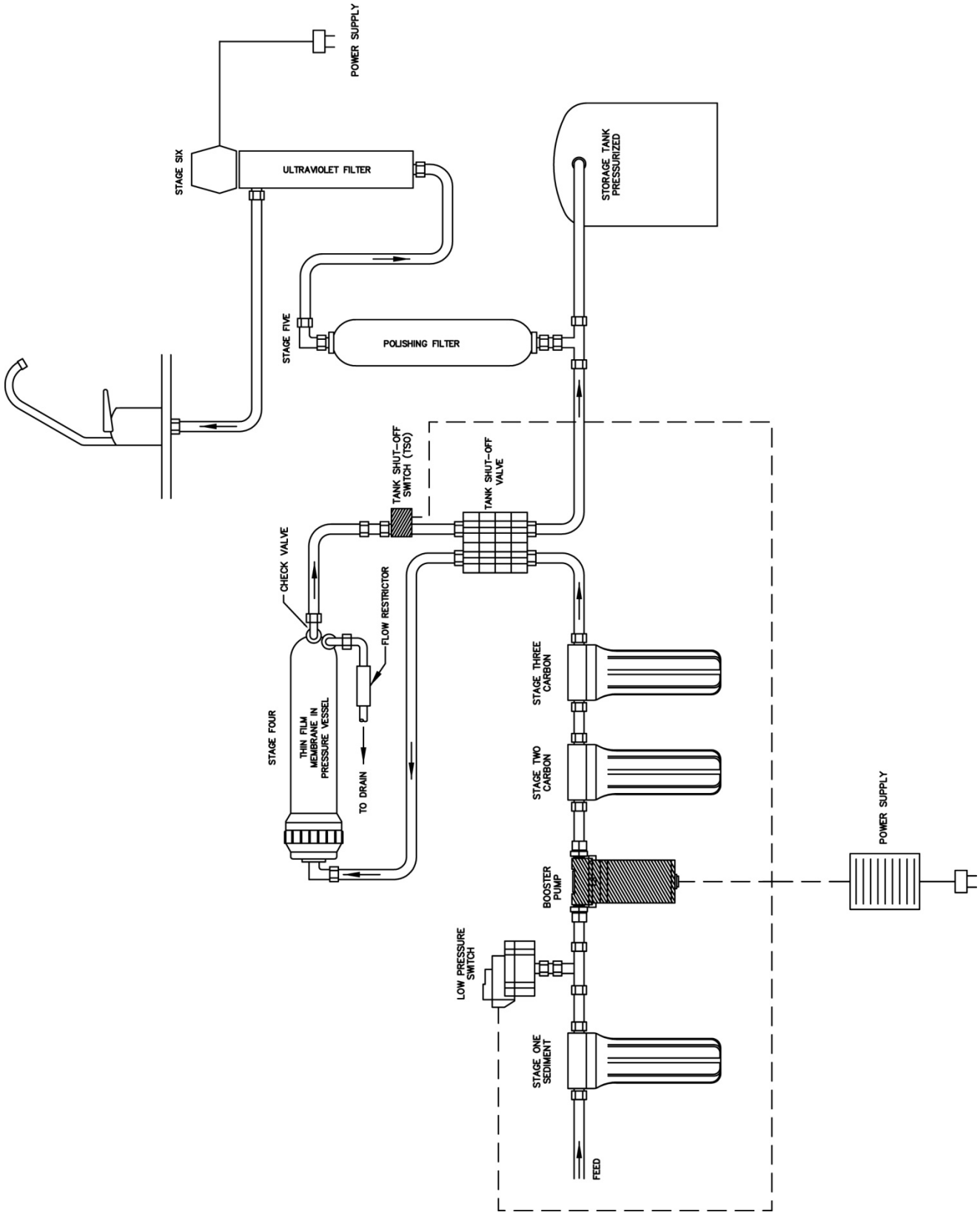
## Fittings and Tubing:

Compression fittings are used throughout the system. To ensure 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. Determine the length of tubing needed for each connection and cut each segment of tubing to the appropriate length.

**To ensure a secure seal using quick connect fittings:**

- Push the tubing into the fitting, to the pipe stop. The collet (gripper) has teeth which hold the tubing firmly in position while the 'O' Ring provides a permanent leak proof seal.
- **Check the Seal:** Pull on the tubing to check it is secure. It is good practice to test the system prior to leaving site and/or before use.
- **To Disconnect:** Ensure system is depressurized before removing fittings. Push in the collet against the face of the fitting. With the collet held in this position the tube can be removed. The fitting can then be re-used.





# Starting Your Installation

**1. Shut Off the Water**

a. Locate the valve in the cold water feed line you use for the supply.

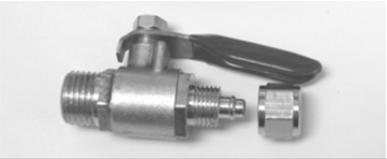
*Accidentally hooking up the system to the hot water supply line will permanently damage the membrane (see conditions for operation). To assure you are using the cold water line, turn on both the hot and cold faucet. After the water is warm to the touch, feel the pipes under the sink. It will be easy to identify the hot and cold pipes.*

b. Close the cold water valve. 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, or if water continues to come out of the faucet, turn off the main supply at the entry to the house.

# Feed Adapter Installation

**For this, step, you will need:**

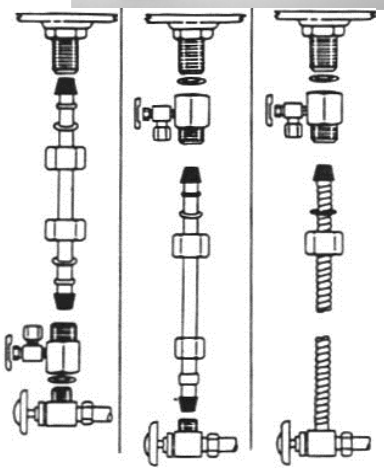
- Wrench
- Teflon Tape

| **Feed Adapter Kit** | | Blue Tubing |
|---|---|---|
| Slip Joint Adapter (with washer) | Ball Valve (with nut) | |
|  |  |  |

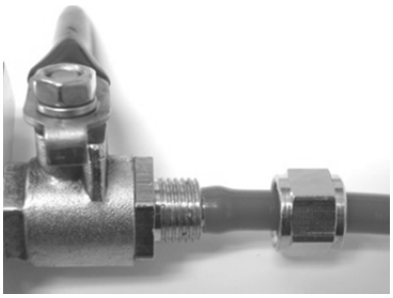
1. **Install the ball valve into the slip joint adapter.**
   Wrap the threads on the ball valve with Teflon tape, approximately 3 wraps. Screw the ball valve into the slip joint adapter.

2. **Install the Supply Feed**
   Wrap the slip joint adapter with Teflon tape, approximately 3 wraps.
   a. **<u>Flex Line</u>**: Loosen nut and separate cold water riser tube from faucet shank. Gently bend riser rube so that slip joint fits onto faucet shank. Make sure the flat washer is on top and the cone washer is on the bottom. Reinstall riser tubes onto slip joint adapter and tighten.

   b. **<u>Solid Copper Riser Tube</u>**: Same procedure as flex tubing except you must cut a piece of the riser tube about ¾" to 1" so the slip joint adapter can fit between faucet and riser tube

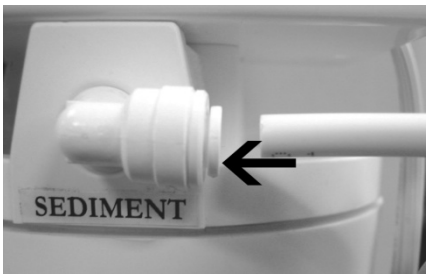


3. **Connect the feed line to the ball valve.**
   Unscrew the nut from the ball valve. Slide the nut onto the tubing, threaded sides facing the end of the tubing. Feed the nipple on the ball valve into the tubing, pushing the tubing until it slides over the lip. Slide the nut to the threads on the ball valve, and tighten the nut down over the tubing. Use a wrench to tighten ¼ turn past finger-tight.



4. Connect the other end of the tubing to the feed port on the RO System.

| | |
|---|---|
|  *Feed Valve OPEN Position* |  *Feed Valve CLOSED Position* |




## Drain Saddle Installation

For this step you will need:

- Variable speed drill w/ ⅛" and ¼" drill bits
- Phillips Screwdriver

| Drain Saddle Assembly | Black Tubing |
|---|---|
|  |  |

1. **Drill a ¼" hole in the drain pipe**
   a. Select a location for the drain hole based on the design of the plumbing. It should be installed above the trap and on the vertical or horizontal tail piece. Locate the drain connection away from the garbage disposal to prevent potential contamination and system fouling.

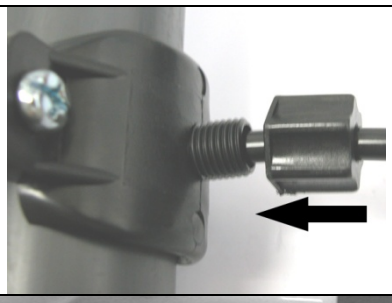
   b. Starting with the ⅛" drill bit, drill a ⅛" hole in the drain pipe. Use the ¼" drill bit to enlarge the hole. Clean the debris from the pipe and the hole before continuing.

**2. Install the drain clamp**

a. Remove the black plastic nut from the front of the drain saddle assembly and set aside.
b. Place one half of the plastic drain saddle assembly on each side of the drain pipe with the fitting, and clamp loosely using the nuts and bolts included.
c. Align the hole drilled in the drain pipe with the hole in the drain saddle. A drill bit or other long narrow object may be used to help align correctly.
d. Use Phillips screwdriver to tighten the clamp. Avoid over-tightening.

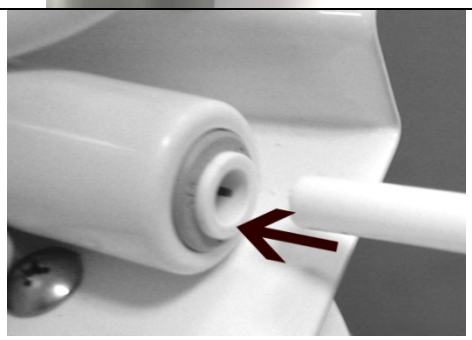

**3. Install the drain tubing.**

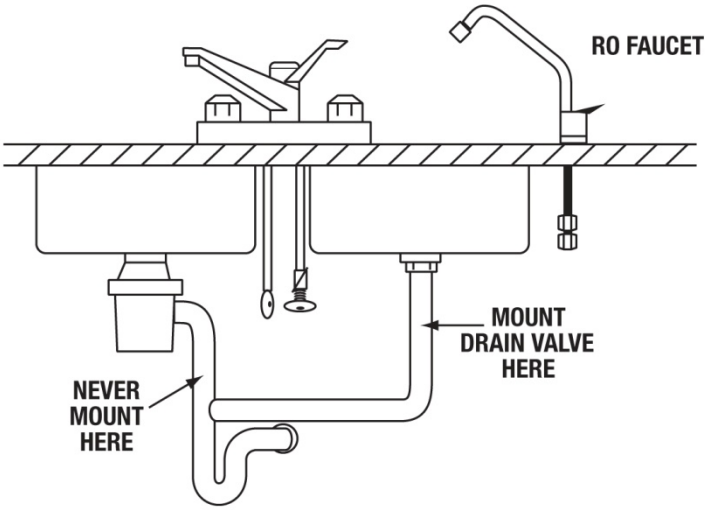
a. Slide the black nut onto the end of the black plastic tubing, threads facing outward.
b. Insert the end of the black tubing into the fitting on the drain saddle.
c. Secure the connection by tightening the nut onto the threaded fitting.



**4. Connect to the RO System**

Connect the other end of the tubing to the 'out' side of the flow restrictor on the RO System.






*NOTE: Some states require the use of an air gap faucet. Check your local plumbing code to assure compliance.*

## Mounting the Tank Ball Valve & Connecting the Tank

For this step you will need:

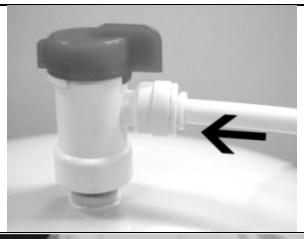
- Teflon Tape

| Tank Valve | Storage Tank | Orange Tubing |
|---|---|---|
|  |   |  |

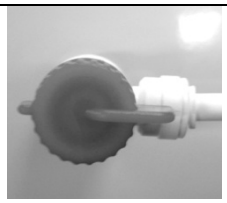
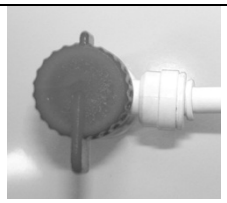
Note: Do not tamper with the air valve on the low side of the storage tank. It has been factory charged and covered with a blue cap.

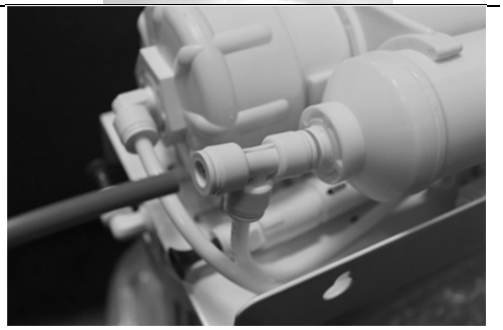
1. Locate the in/out port on the top top of the tank. Wrap the threads with Teflon tape, approximately 3 wraps. Connect the tank ball valve by threading onto the fitting. Do not over-tighten.

2. Insert the tubing into the quick connect fitting on the ball valve.



**3.** Connect the other end of the tubing to the tee on the inlet of the post-carbon filter.

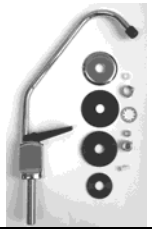
| | |
|---|---|
|  **Tank Valve in OPEN Position** |  **Tank Valve in CLOSED Position** |



## Faucet Installation

**For this, step, you will need:**

- Wrench
- Variable speed drill w/ ⅛" and 7⁄16" drill bits

| **Faucet Assembly Kit** | Yellow Tubing |
|---|---|
|  |  |

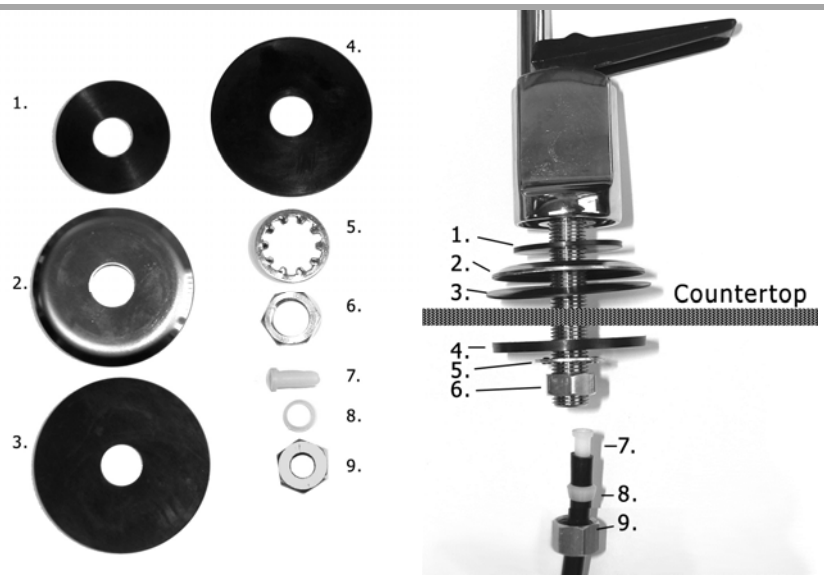
## 1. Determine the desired location for your RO Faucet

The product water faucet may be installed on any flat surface at least 2" in diameter. Check the underside of the location for interference. The standard faucet that is supplied with the system requires a ½" diameter hole. The optional air-gap faucet requires a larger hole of ¾" to allow for the additional tubing connections required.

- **Stainless Steel Sinks**
  Begin by placing a piece of masking tape or duct tape on the determined location where the hole is to be drilled. Make a small indent to mark the desired drilling location using a center punch. Drill a pilot hole with a ⅛" metal drill bit. Enlarge the hole using a ¼" metal drill bit, using factory approved method or approved plumbing practice.

- **Porcelain/Enamel Sinks or Tile Countertop**
  Sinks of this type are very easy to damage due to the nature of the materials of construction. A successful installation into these sinks requires a knowledgeable technician with the proper cutting tools. We strongly recommend the use of a "Relton" type device. Follow the directions that accompany the tool carefully.

## 2. Faucet Installation

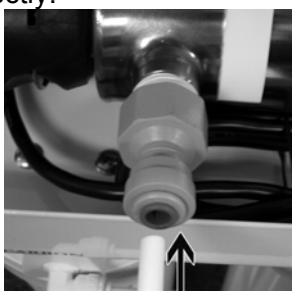



*Above the Countertop*
1. Small Rubber Washer
2. Metal Faucet Hole Cover
3. Large Rubber Washer

*Below the Countertop*
4. Plastic Locating Washer
5. Metal Lock Washer
6. Securing Nut

*Installed in/on tubing:*
7. Plastic Tubing Insert
8. Plastic Ferrule
9. Compression Nut

- Slide the small rubber washer, then the metal cover, then the large rubber faucet over the mounting tube onto the faucet base, in that order so that the small rubber washer is on top.
- Insert the mounting tube into the hole in the sink and position the faucet correctly.
- From under the sink, install the plastic locating washer followed by the metal lock washer onto the threaded mounting tube, and secure them with the securing nut. Screw on the nut and tighten.
- Feed the compression nut onto the tubing, threaded side facing the end, then feed the plastic ferrule and install the tubing insert into the end of the tubing. Insert the end of the tubing into the faucet mounting tube as far as it will go then tighten the nut with a wrench.
- The other end of the tubing should then be connected to the outlet on the UV.



**Note:** Non-Air Gap Faucet – Comes with the system. (Air Gap may be purchased separately - part number H-T5022.) Some states require the use of an air gap faucet. Check your local plumbing code to assure compliance.

**Note:** The plastic faucet bracket (included) may be used in locations where there is no countertop to install the faucet onto.

### Additional Point of Use Connection (Optional)

**Note:** To connect an additional point of use (icemaker, extra faucet, etc.), place an additional "T" connector in the ¼" line between the faucet and the RO system. Ensure that all tubing and fittings used for RO product water are poly material, and not copper. Due to RO product water being very pure, it can leach the minerals from copper tubing which will cause a metallic taste in the water or ice and cause the copper tubing to develop pinhole leaks over time.

## Turning the System On for the First Time

Make sure all water supply /drain lines are secure and free from leaks.

Slowly turn the feed valve counterclockwise until fully open (the handle should be in line with the tubing as it enters the connection). Check the stem seal for leakage. If necessary, tighten stem nut lightly.

Turn storage tank valve one quarter turn counterclockwise to open the valve (the handle should be in line with the tubing as it enters the connection).

Open the product water faucet and let the water flow until all the air has been expelled from the system. This will take about an hour.

Close the product water faucet. In 30 minutes, check the connections for leaks and correct if necessary.

**Do Not Use the First Two Reservoirs of Water**

Allow the reservoir to fill for 4-6 hours. Dispense this water to drain. This process removes the factory installed sanitizing solution from the entire system and sends it to the drain. Repeat this process one more time. Allow the tank to fill for 4-6 hours and dispense this water to the drain. Do not drink this water!

Note: Air bubbles may be present in the product water after initial system startup, causing a milky color in the water. This is normal and safe to drink. The air bubbles will disappear within a few days of regular use.

# System Maintenance

**CAUTION**
Unplug the pump and ultraviolet unit before performing any maintenance to the system.

## Membrane Replacement Instructions

*The membrane should be replaced every 1-2 years, depending on the water quality.*

Before starting, shut off the cold water supply to the unit. Lift the handle on the faucet to drain out the storage tank completely and allow the system to stand for 10 minutes in order to fully decompress the tank. Leave the faucet open until the membrane change is complete.

1. Unscrew the fitting to the cap of the membrane housing.
2. Using pliers, pull out the old membrane from the housing.
3. Remove the new membrane from its bag.
4. Insert the membrane in the housing in the same direction as the old membrane.
5. Push the membrane firmly into the housing until it seats on the far end.
6. Screw the housing cap back on, making sure the o-ring is positioned correctly.
7. Screw the fitting (with tubing) back onto the housing.
8. The system is ready. Turn on the water supply. Check for any leaks.
9. Drain the first two tanks of water before drinking.

## Filter Replacement Instructions

*All pre-and post filters should be replaced every 6 months.*

Before starting, shut off cold water supply to unit. Lift the handle on the faucet to drain out the storage tank completely and allow the system to stand for 10 minutes in order to fully decompress the tank, reserving some of the RO water to use to rinse the filter housings. Leave the faucet open until the filter change is complete.

1. Remove pre-filters from filter housings. Use a filter wrench if the housings are too tight.
2. Discard used filters, but save o-rings for re-use.
3. Clean inside of all housings with a mild soap solution, and then rinse with RO water.
4. Lubricate the o-ring and replace in filter housing.
5. Insert the new filters into the appropriate housings and replace the housings onto the system.
6. Disconnect the post-filter by removing the fittings on either end. Replace with new post-filter and re-use the existing fittings. *(Feed end tee is connected by a short length of tubing, remove this and use to connect to new filter.)*
7. Follow the normal Start-up Procedures. (Drain the first tank of water after changing the filters before drinking.)

## UV Lamp Replacement Instructions

*UV lamps should be replaced every 12 months. There is no need to disconnect the UV from the water supply before replacing the lamp. The quartz sleeve can be re-used, but is very fragile. It is recommended to have a spare quartz sleeve on hand in it is broken during the lamp change.*

1. Disconnect the main power source and allow the unit to power down.
2. Remove the ballast/connector by sliding the metal ring away from the body of the connector (Figure1). Do not twist the lamp from the connector, simply slide the two apart. Fully remove the lamp from the reactor chamber, being careful not to angle the lamp and damage the quartz sleeve (Figure 2).
3. Remove the new lamp from the protective packaging. Handle the lamp by the ceramic ends, avoid touching the glass. If you must touch the glass, use gloves or a soft cloth.

4. Carefully insert the lamp into the reactor vessel (inside the quartz sleeve). Leave about two inches of lamp protruding from the chamber (Figure 3).
5. Attach the ballast/connector onto the UV lamp. The connector is "keyed" and will only allow correct installation in one position. Ensure the connector is fully seated onto the UV lamp (Figure 4).
6. Once the lamp is fully seated on the connector, slide the ballast/connector over the aluminum retaining nut. Make sure the metal retaining ring on the ballast/connector is pulled out, allowing the connector to slide completely over the retaining nut. Slide the metal ring back in to lock the connector into place (Figure 5). As the ballast/connector is keyed to the reactor chamber, make sure the depression on the connector is located over the ground lug located on the reactor chamber (Figure 1).

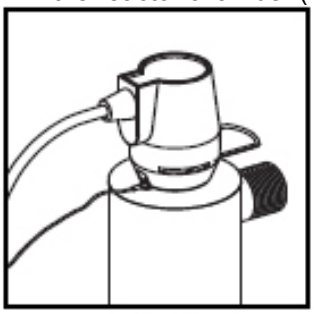


FIGURE 1

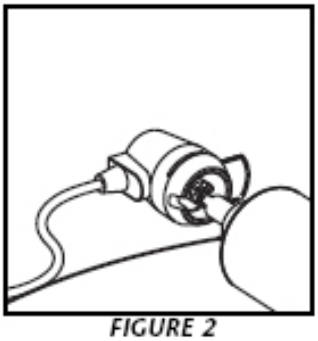


FIGURE 2

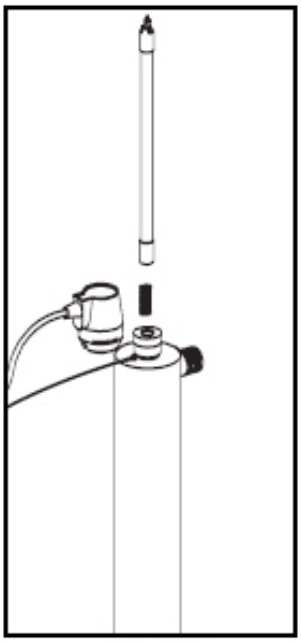


FIGURE 3

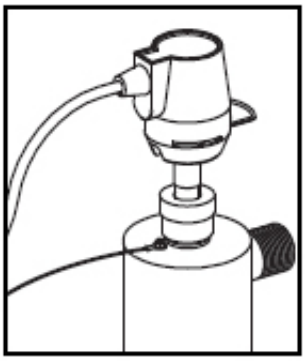


FIGURE 4

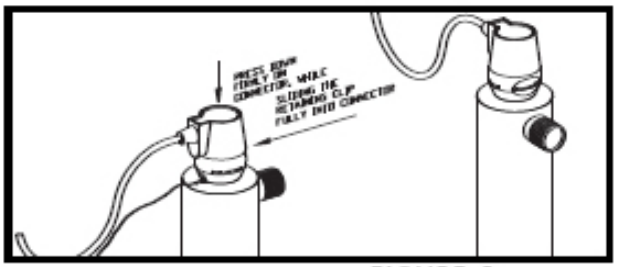


FIGURE 5

## UV Quartz Sleeve Cleaning & Replacement Instructions

1. To remove the quartz sleeve, first remove the UV lamp as outlined in the UV Lamp Replacement Instructions on the previous page.
2. Perform Disconnect the main power source and allow the unit to power down.
3. Shut off water supply and isolate flow to reactor.
4. Remove aluminum gland nut from the chamber.
5. Carefully remove the o-ring from the quartz sleeve. As the o-ring may tend to adhere to the quartz sleeve, it is recommended to replace the o-ring annually.
6. Clean the outside of the quartz sleeve with a cloth soaked in CLR™ or Limeaway™. Repeat the process as often as necessary to keep the quartz sleeve clean. Be sure to remove all traces of cleaning fluid from the sleeve before it is reinstalled into the reactor (be sure not to allow liquid inside the sleeve).
7. Reassemble the quartz sleeve into the UV chamber.
8. Wet the o-ring and slide onto the end of the quartz sleeve and reassemble the gland-nut (hand tight is sufficient).
9. Re-install the UV lamp and lamp connector as per prior instructions.
10. Plug in ballast and verify the lamp/power LED is illuminated.

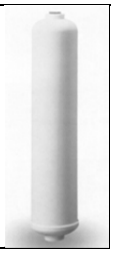
## Sanitizing the RO System

We recommend sanitizing the system at least once a year. This can be done while changing your filters. Shut down the system. If you have an icemaker hook-up installed, be sure the ball valve in the line to the refrigerator is in the closed position during this procedure. Open the faucet to drain the system, including the tank. Remove the pre-filter cartridges and RO Membrane from the system, leaving the old post-filter cartridge in place. Wash the internal filter housing & membrane housing areas with warm soapy water and rinse well to remove the soap. Pour about ¼ teaspoon of Hydrogen Peroxide or household bleach into each filter housing and replace housings on the RO system. Open the feed water valve and open the RO faucet until water flows freely from the spout. Close the faucet and hold the solution in the system for a minimum of 10 minutes.

Drain the tank completely, close the faucet to allow tank to fill again, and then drain again. Replace filters and membrane as indicated in the replacement instructions. The post filter should be changed after sanitizing the system.

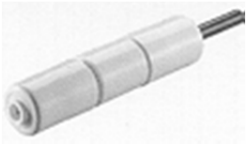
# Replacement Parts

## Replacement Filter Cartridges

| | | | | | |
|---|---|---|---|---|---|
| Sediment Pre-Filter,<br>5 Micron.<br>Stage 1<br><br>**Model: H-F1005CF**<br>Qty. 1 Per System<br>*Replace every 3-6 months* |  | Carbon Pre-Filter,<br>Extruded Carbon<br>Stage 2 & 3<br><br>**Model: H-F2510AC**<br>Qty. 2 Per System<br>*Replace every 3-6 months* |  | Carbon Post-Filter,<br>GAC Inline<br>Stage 5<br><br>**Model: H-F1032-43QC**<br>Qty. 1 Per System<br>*Replace every 3-6 months* |  |

## Replacement Membranes & Flow Restrictors

| System Flow Rate | Model Number | Replacement Membrane Model | Replacement Flow Restrictor |
|---|---|---|---|
| 12 GPD | AAA-125P*-UV | M-T1512A12 | H-R2051QC |
| 24 GPD | AAA-245P*-UV | M-T1812A24 | H-R2062QC |
| 36 GPD | AAA-365P*-UV | M-T1812A36 | H-R2064QC |
| 50 GPD | AAA-505P*-UV | M-T1812A50 | H-R2068QC |
| 75 GPD | AAA-755P*-UV | M-T1812A75 | H-R2069QC |
| 100 GPD | AAA-1005P*-UV | M-T1812A100 | H-R1000QC |



## Replacement UV Components

| Part #/ Description | Image |
|---|---|
| **S212RL**<br>Replacement Lamp for UV |  |
| **QS-212D**<br>Replacement Quartz Sleeve for UV |  |

| Part #/ Description |
|---|
| **SC1**<br>Replacement UV System (Complete) |
| **BA-C1**<br>Replacement Ballast (power supply) for UV |

## Other Replacement Components

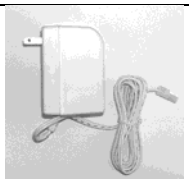
| Part #/ Description | Image |
|---|---|
| **H-H14FWW33** Filter Housing, White |  |
| **OR-H10F** O-Ring for Filter Housing |  |
| **PV2012PME** Membrane Housing |  |
| **H-S4010ANW** Storage Tank, White, 4.4 Gallon (3.2 Gal Usable) Bladder Tank |  |
| **H-J2021KW** Clip - Membrane Housing to Inline Filter |  |
| **H-J2028PW** Membrane Housing Clip |  |

| Part #/ Description | Image |
|---|---|
| **H-T5019** Faucet, Non-Airgap, Long- Reach, Chrome |  |
| **H-V1050W-QC** Shut-Off Valve, QC Connection |  |
| **PPSV500822W** Tank Shut-Off Valve |  |
| **H-D3000M** Drain Saddle |  |
| **H-V1003** Check Valve, in elbow fitting (membrane reject) |  |
| **H-C9200** Filter Wrench |  |
| **H-B2044W** Filter Bracket |  |

| Part #/ Description | Image |
|---|---|
| **PE-08-EI-0500FW** (white)<br>**PE-08-BI-0500FY** (yellow)<br>**PE-08-BI-0500FO** (orange)<br>**PE-08-BI-0500FB** (blue)<br>**PE-08-BI-0500FE** (black)<br>*Sold in 500' Rolls Only* | **¼" Tubing**  |
| **PN-4-P** ¼" Hex Nipple (connects filter housings) |  |
| **CI0208W** ¼"Union Tee Fitting (for feed end of post filter) |  |
| **PI220808S** ¼"Stem Elbow Fitting (for filtrate end of post filter) |  |
| **PI480821S** ¼"Tx ⅛"M Elbow Fitting For Membrane Housing (Membrane Housing) |  |
| **PI480822S** ¼"T x ¼"M Elbow Fitting, Quick Connect (Filter In/Out) | |

## Replacement Pump & Pump Components

| System Flow Rate | System Model Number | Replacement Pump Model | Replacement Power Supply | | | Tank Shut-Off (TSO) | Low Pressure Switch |
|---|---|---|---|---|---|---|---|
| | | | USA (U) | Japan (J) | European (E) | | |
| 12 GPD | AAA-125P* | 6840-2J03-B221 | TAS114-19EP | TAS104-19 | TAS234-19EP | PSW240 | LPS340G |
| 24 GPD | AAA-245P* | 6840-2J03-B221 | TAS114-19EP | TAS104-19 | TAS234-19EP | PSW240 | LPS340G |
| 36 GPD | AAA-365P* | 6840-2J03-B221 | TAS114-19EP | TAS104-19 | TAS234-19EP | PSW240 | LPS340G |
| 50 GPD | AAA-505P* | 8851-2J03-B423 | TACS114-48 | TACS104-48 | TACS234-48RF | PSW240 | LPS340G |
| 75 GPD | AAA-755P* | 8851-2J03-B423 | TACS114-48 | TACS104-48 | TACS234-48RF | PSW240 | LPS340G |
| 100GPD | AAA-1005P* | 8851-2J03-B423 | TACS114-48 | TACS104-48 | TACS234-48RF | PSW240 | LPS340G |

| | | | | | |
|---|---|---|---|---|---|
|  |  |  |  |  |  |
| **6840-2J03-B221** (6800 Series Low Flow Pump) | **8851-2J03-B423** (8800 Series High Flow Pump) | **TAS114-19EP** (6800 Power Supply) | **TACS114-48** (8800 Power Supply) | **PSW240** (Tank Shut Off Switch) | **LPS340G** (Low Pressure Switch) |

# Troubleshooting Chart

| Symptom | Possible Cause | Remedy |
|---|---|---|
| No water in the storage tank | Filter Cartridges have failed. | Replace filter cartridges as indicated in maintenance section. |
| | Cartridges are out of sequence. | Install cartridges in proper sequence as indicated in system components. |
| | Cartridges are upside-down. | Install carbon block filter right-side-up as indicated on the filter. |
| | No pressure in storage tank. | Check pressure with gauge. Refill or reduce pressure to max 8 psi. |
| | Automatic shut-off valve malfunctioning. | Check lines to valve for correct hook-up and check water running into the drain. Replace if necessary. |
| | Kinked lines. | Straighten lines if necessary. |
| Getting low flow | Incoming water pressure too low. | Check source of feedwater (city water, well water, etc.) for pressure. A booster pump may be required. |
| | Change in feedwater temperature. | The reverse osmosis membrane used in your unit is rated at 77ºF and 60psi. Water production will decrease approximately 1.5% for each degree that your incoming water is below 77ºF. It may be necessary to change to a higher flow membrane (and flow restrictor). |
| | Storage tank pressure is too low. | Check pressure with gauge and refill to maximum 8 psi. |
| | Filters are clogged. | Replace Filters. |
| Water leakage at filter bowls | Filter bowls are loose. | Retighten. |
| | Burr on edge of filter bowl. | Remove burr with emery cloth or sand paper. |
| | O-Ring in filter bowls is missing, damaged, or not sealed properly | Replace or position correctly. |
| Water backing up to air gap in faucet (Systems w/ air gap faucets only) | Line is clogged. | Clean out the line. |
| | Line is too long. | Must be as short and straight as possible. |
| | Drain line is clogged. | Disconnect 3/8” dia. Line and clean out with probe or by flushing. |
| Faucet spout is dripping | Handle sticking or worn. | Replace the faucet |
| Milky colored water | Air in the system | Air in the system is normal after startup of the RO. Water should lose the milky look within a few days of normal usage. |

# Pump Troubleshooting Information

**1) <u>The pump will not run:</u>**

a) Start at the source to determine where the electrical current flow has been interrupted. Use a multi-meter to check the line voltage, and the transformer output. If the transformer is not functioning properly its current capacity may have been exceeded. Replacement may be necessary.

b) If the transformer is properly sized, and is delivering the correct voltage to the system, remove the holding tank pressure switch (PSW) from the system by disengaging both connectors, and connecting the pump directly to the transformer.

i) If the pump now runs, the pressure switch is faulty, and needs adjusted or replaced.

ii) If the pump still fails to run, the electrical path has been interrupted within the motor, and should be replaced.

2) **The flow and/or pressure is too low:**
Most Aquatec boost pumps are designed to limit the maximum output pressure to 110 psi, to protect the membrane and other components from damage. The normal operating pressure as measured after the pump, and before the membrane, will be approximately 80 psi. The flow rate of the 6800 series pump during operation is about 500 ml/min. The 8800 is double that flow. If these parameters are not being met, please check the following:

a) Is the pump properly sized to handle the production rate of the membrane, plus the brine flow allowed by the restrictor (usually 4 or 5 times the permeate production)?

b) Is the system receiving adequate feed water? The pump's inlet chamber must be flooded to prevent performance robbing air ingestion into the compression chambers.

c) Debris entering the pump may restrict the pumping operation. Consult the factory for valve cleaning instructions.

3) **The pump will not shut off:**
This is usually caused by the system shut off switch shutting off at a lower pressure than the tank high pressure switch is set at. If the shut off valve stops the flow of feed water before the storage tank reaches the shut off pressure setting of the switch, the switch will remain closed, and the pump will run continuously. The switch can be adjusted to open at a lower pressure by using an Allen wrench to turn the set screw counterclockwise until the pump stops running.


4) **The pump operation is too noisy:**
Boost pumps operate at relatively slow speeds, accounting for their quiet operation. Pumps that exceed expected noise levels usually have one of the following problems:

a) Entrapped air (which will eventually dissipate). Make sure air is not being drawn into the pump.

b) Water may have damaged the bearings, or other motor components. Check for internal leaks, as well as water entering the motor from an external source.

c) Squeaking may be associated with the by-pass mechanism; brush contact with the commutator surface; or inadequate lubrication in the rear bearing. Consult the factory.

**5) The pump is causing electrical noise interference:**

a) Try locating the pump on a dedicated electrical circuit, separate from the device that is being interfered with.

b) Consult factory for pumps available with electronic noise suppression.

**6) Can a Permeate Pump and a Booster Pump be used together in an R.O. system?**

a) Yes. The Booster Pump increases the feed water pressure to the membrane, while the Permeate Pump is located after the membrane and eliminates the performance robbing back pressure created by a full, or filling, air charged storage tank

# 6800 Series Pump (for 10-36 GPD) Specifications

**Model No: 6840-2J03-B221**

**Distinguishing Features:**

- Toughest, most durable pump on the market
- Adjustable max. outlet psi(regardless of feed pressure)
- Expels trapped air (no more air locks)
- Can be mounted with pump head up or down
- More flow at extremely low inlet pressures
- New motor venting system to remove moisture
- EMI/RFI electronic noise suppression
- 100% final performance tested

The 6800 series pump is intended for use with RO membranes rated up to 50 GPD. The pump incorporates a unique, fully adjustable, by-pass valve which controls the maximum allowable outlet pressure (70 to 110 psi, or a fixed by-pass of 70, 90, or 110 psi. regardless of variation in feed water pressure. Its new innovative patented design allows mounting in several positions without entrapping air, including pump head down and pump head up. Close tolerances within the pump head and motor, give a lower amp draw; lower operating temperatures; smoother running; longer life; lower maintenance; and greater efficiencies.

The 6800 series pump incorporates powder coated die cast alloy and a unique label sealing process to reduce exposure to moisture which is the major cause of motor failure. The pump is available with optional EMI/RFI electronic noise suppression to reduce TV

reception interference. The 6800 series pump is capable of operating in a warm, humid hostile environment where other pumps have been known to fail.

**Key Optional Benefits:**

- Boosts pressure 40 to 120 psi (adjustable)
- Fixed pressures to 160 psi
- Up to 30,000+ operating hours
- Whisper quiet — less than 45 DBA
- Can run dry without damage
- Self-priming — 60" lift
- Low voltage (12-24V) for maximum safety
- Corrosion resistant exterior
- Continuous or intermittent operation

**Technical Specifications:**

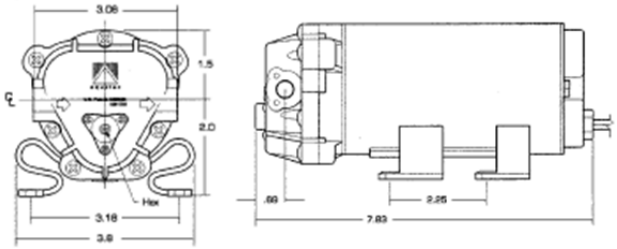
**Operation:** The 6800 is designed to operate with a PSW tank shut-off switch for hydro-pneumatic storage systems. The PSW, when used with a typical under-the-counter R.O. system, can be augmented with an ESO, Electronic Shut-off Valve. It is also compatible with most hydraulic shut-off valves. For counter-top systems, Aquatec's TLC, Tank Level Controllers, shut off feed water and the pump when the product water storage tank is full.

**Mounting:** The "flexible or steel" base plates are included at no extra cost. The "Universal" base plate is available optionally at additional cost.

**Power:** Pumps operate with low energy (only 14 watts), low voltage (12-24 volt) motors, powered with compatible transformers with world wide primary voltages available (100 VAC, 120 VAC, 230 VAC).
Transformers are optional and must be ordered in addition to the pump.

**Fittings:** Built-in 1/4" John Guest half cartridge fittings eliminate need for external fittings (unless elbows are required)

**Schematic of 6800 Series Pump**




# 8800 Series (High Flow for 50-100 GPD) Specifications

**Model No: 8851-2J03-B423**

8800 Series pumps are compatible with most hydraulic shut-off valves. These pumps are designed for optimal operation with a tank shut-off switch (PSW) for hydro-pneumatic storage systems. When used in typical under-counter R.O. systems, this switch can be augmented with an electronic shut-off valve (ESO). When used in counter-top R.O. systems, a tank level control switch (TLC) will shut off feed water when the water storage tank is full.

**Distinguishing Features:**

- Adjustable pressure boost between 40-120 PSI
- EMI/RFI electronic noise suppression
- Expels trapped air, eliminates “air locks”
- Pumphead can be mounted up or down
- Self-priming, 60 inch lift
- Improved venting system removes moisture
- Corrosion resistant exterior
- Designed for 15,000+ operating hours
- Outlet pressures up to 160 PSI
- Extremely quiet operation, less than 52 DBA
- Runs dry without damage
- Low voltage (12-24V) for maximum safety

**Power:** The 8800 Series pumps operate safely with low energy (24 watts), low voltage (12-24V) motors. They can be used with compatible transformers offered in the most popular worldwide voltages (100 VAC, 120 VAC, 230 VAC). All transformers are optional and must be ordered separately.

**Mounting:** A steel mounting base plate is included at no additional cost. A “universal” base-plate (P/N 51-104) is optionally available at no additional cost.

**Fittings:** Built-in 3/8” John Guest half-cartridge fittings eliminate the need for external fittings (unless elbow fittings are required). Optional fittings, available at no additional cost, include: 3/8” Jaco straight fittings, 3/8” Jaco elbow fittings, or 8mm stem adapters for metric tubing. Note that the location and positioning of these pumps may affect their performance.

# Product Warranty

- SELLER hereby warrants to CUSTOMER that the goods herein described will be free from any liens or encumbrances, that good title to said goods will be conveyed to CUSTOMER by sale of same.

  SELLER warrants materials of its own manufacture against defects in material and workmanship under normal conditions of usage and service as specified in this manual for one year from whichever of the following events occur first:

  - First use of the system
  - Three (3) months following date of shipment from Vista.

  Materials not manufactured by SELLER receive only such warranty, if any, of the manufacturer thereof and which are hereby assigned to CUSTOMER without recourse to SELLER.

  SELLER'S obligation under this warranty is limited to and shall be fully discharged by repairing or replacing any defective part FOB its works. SELLER shall not be liable for repair or alterations made without SELLER'S prior written approval; for membrane elements becoming plugged by suspended matter, precipitates, or biological growth; or for failure to properly maintain the element. SELLER shall not be liable for damages or delay caused by defective material. Products returned to SELLER for warranty examination must be shipped freight prepaid.

- **SELLER'S Liability.** SELLER SHALL NOT BE LIABLE FOR PROSPECTIVE PROFITS OR SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES, NOR SHALL RECOVERY OF ANY KIND AGAINST SELLER BE GREATER IN AMOUNT THAT THE PURCHASE PRICE OF THE SPECIFIC GOODS SOLD AND CAUSING THE ALLEGED DAMAGE, WHETHER SUCH CLAIM BE BASED ON CONTRACT OR TORT; provided, however, the aforesaid to the contrary notwithstanding, SELLER shall not be liable for any bodily injuries or property damage directly caused by its willful, wanton or negligent acts.

- **All Other Warranties and Damages.** THERE ARE NO WARRANTIES ESTABLISHED, EXPRESS OR IMPLIED OR STATURTORY, INCLUDING THE WARRANTY OF MERCHANTABILITY, EXCEPT THOSE SET FORTH ABOVE OR ANY PERFORMANCE WARRANTY WHICH IS ATTACHED TO THIS ORDER.

- **Permits, Ordinances and Code Compliance.** CUSTOMER has full responsibility for obtaining any licenses, permits and inspections required with respect to installation and use of the goods herein described.

- **Governing Law.** Any agreement based upon this Order and the obligations thereby imposed on SELLER and CUSTOMER shall be governed by and construed according to the laws of the State of California.