



# Getting Started With Your PWS™ BEV-340 Pure Water Appliance

Includes setup and maintenance information for the  
PWS™ BEV-300 Series Pure Water Appliances.



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# Getting Started

Thank you for your purchase of this quality water purification system by Pure Water Systems, Inc. Your new PWS™ BEV-300 Series system combines several of the most efficient methods of water treatment to achieve a very specific result—ultra-pure water that meets the rigorous Vincent (BEV) standards for bio-compatibility.

As the new owner of a PWS™ BEV-300 pure water appliance there is a totally new experience awaiting you. You and your family will be amazed at the delightful new taste of your tap water—it's like owning your own personal mountain spring.

This manual provides information about the application and servicing of your PWS™ BEV-300 Series pure water appliance. Descriptions of the components and their functions will help to answer frequently asked questions. By thoroughly reading this manual you will be better able to operate your new system and perform simple maintenance.

## SETTING UP YOUR BEV SYSTEM

Your PWS™ BEV-300 system requires no electricity—the only requirement is adequate water pressure. This unit is designed to operate within a pressure range of 40–100 PSI (2.75–6.9 bar). The amount of purified water produced depends primarily on your water pressure, temperature, and the amount of dissolved solids. The custom reverse osmosis membrane will produce up to 40 gallons (~150 liters) per day of pure BEV quality water. If you plan to install this unit on a private well system, you should check your water pressure gauge. If the pressure is less than 40 PSI (2.75 bar), ask a plumber to adjust and raise the pressure to the minimum level of 40 PSI.

### *Quick Description of Installation...*

- 1) Unpack the system.
- 2) Review this manual.
- 3) Inspect the installation location—verify the system and storage tank will fit beneath sink.
- 4) Attach the pre-filters to the frame.
- 5) Install the faucet.
- 6) Install the feed water saddle valve.
- 7) Install the drain saddle valve.
- 8) Mount the 4-Stage Deionization Module.
- 9) Mount the pre-filter & RO assembly.
- 10) Turn on the cold water.
- 11) Produce and then discard the first tank of water.

### 1) Unpack the System

As you unpack your new PWS™ BEV-300 Series system, inspect all parts to make sure they have not been damaged in transit. If damage has occurred immediately file a claim with the freight company.

#### *Contents include:*

- Chrome Faucet Assembly
- Feed Water Saddle Valve Kit
- Drain Water Saddle Valve Kit
- 4-Stage Deionization Module & Clamp

- RO Pressure Vessel & Frame
- Pre-filter canisters and filters (3)
- Tubing
- Storage Tank
- Owner's Manual
- Registration & Warranty Card

## 2) Planning the Installation

*It is advisable to review the following instructions completely before proceeding.*

The BEV-340 system is comprised of several large components which, in most cases, fit easily beneath most kitchen sinks. It is wise to establish the desired location of each of the components before hand. The storage tank has built-in feet for upright positioning. However, it may be placed on its side when space is limited. (A stand is included.)

## 3) Attaching the Pre-Filters

Open the package containing the frame assembly and RO pressure vessel (ROPV). Mounted to the bottom of the frame are the tops of the three pre-filter canisters. Attached to the outlet port of the third pre-filter top is the auto shut-off valve.

Refer to the picture of the BEV-340 unit at the front of this manual: Pre-filter position 1 is on the left, behind the label reading "IN, FEED WATER." Pre-filter position 2 is the center. Pre-filter position 3 is on the right, behind the label reading "OUT, TO TANK."

The sediment pre-filter should be placed into position one (1). Remove the wrapping, place the filter into the canister, then screw the canister to the top until firm, taking care to align the filter correctly.

The granular activated carbon pre-filters occupy positions 2 and 3.

## 4) Installing the Chrome Faucet

Open the package containing the chrome faucet and mounting hardware. Study the diagram printed on the package for additional installation instructions.

- Select the location of the faucet on the sink top. (NOTE: Make sure there are no reinforcing ribs under the sink drilling location.)
- Use factory approved method or approved plumbing practice to drill hole in sink.

**For porcelain sinks**—factory approved method is: first grind away porcelain with Dremmel® tool and silicon grinding wheel (about ¾" circle). Then, using a standard ½" high-speed drill bit, drill hole through metal portion of sink. (See Figure 1) Alternately, use a "glass and tile carbide spade tipped bit."

**For acrylic sinks** use a standard ½" high-speed drill bit.

**For stainless steel sinks** use a ½" high-speed drill bit or a ½" Greenlee chassis punch.

- Install faucet according to the diagram on the package, insuring rubber gaskets are place. Tighten lock nut beneath sink.

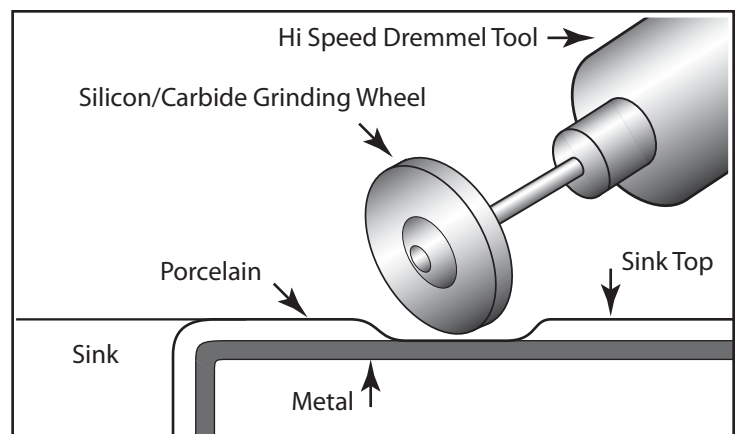


Figure 1, Using a Dremmel® Tool to Remove Porcelain

### 5) Installing the Feed Water Saddle Valve

Open the package marked FEED VALVE. Study the diagram printed on the package for additional installation instructions. Also see Appendix C.

INSTALL ON COLD WATER LINE ONLY!

- a) Shut off the cold water supply line.
- b) Clamp the feed valve to the cold water line.
- c) Turn the handle fully clockwise to pierce the line, then fully counter-clockwise to allow flow.

You are now ready to move to the next step – DO NOT TURN ON THE COLD WATER SUPPLY YET!

(In some instances, the feed water saddle valve will not be an appropriate connection to your existing plumbing. By furnishing a self-piercing feed water saddle valve, we have attempted to provide a connection that will satisfy most installation scenarios. Should the saddle valve be an inappropriate connection for your installation, you can obtain appropriate parts from most plumbing supply or home improvement stores. Pure Water Systems carries a limited inventory of alternate fittings. On rare occasions, it may be necessary to contact a plumbing contractor to complete your installation.)

### 6) Installing the Drain Saddle Valve

Open the package containing the drain saddle valve and John Guest® fitting.

- a) The drain saddle assembly should be installed above the trap and on the vertical or horizontal tailpiece. (See Figure 2)

**NOTE:** When installing the pre-filter/RO assembly, it is desirable to mount the frame above the position of the drain saddle valve.

- b) Refer to Figure 3 and follow steps one through four to mount the drain saddle valve.

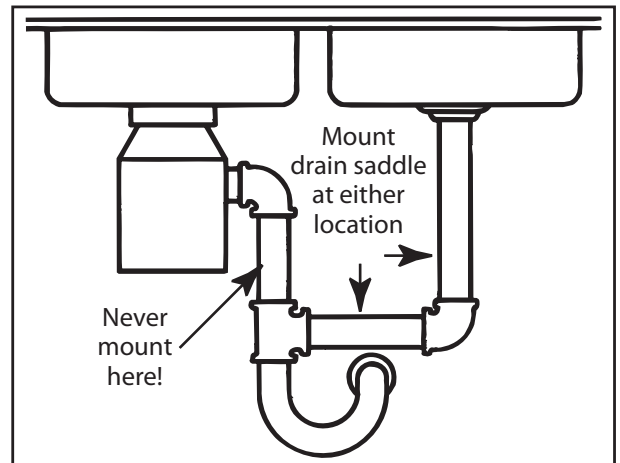


Figure 2, Drain Saddle Valve mounting locations

### 7) Mounting the Deionization Module

The 4-stage deionization module can be placed anywhere convenient, but it is preferable to keep the distance between the pre-filter/RO assembly, the storage tank, and the DI module as short as possible. The DI module can be mounted horizontally (preferred) or vertically. If mounted vertically, the outlet should be at the bottom.

- a) Wrap the threads of the supplied John Guest® “Speedfit” fittings with Teflon thread tape and install the fittings into each end of the DI module.
- b) Establish the position for the DI module.
- c) Secure the module to the wall of the cabinet using the supplied stainless steel clamp and screws.

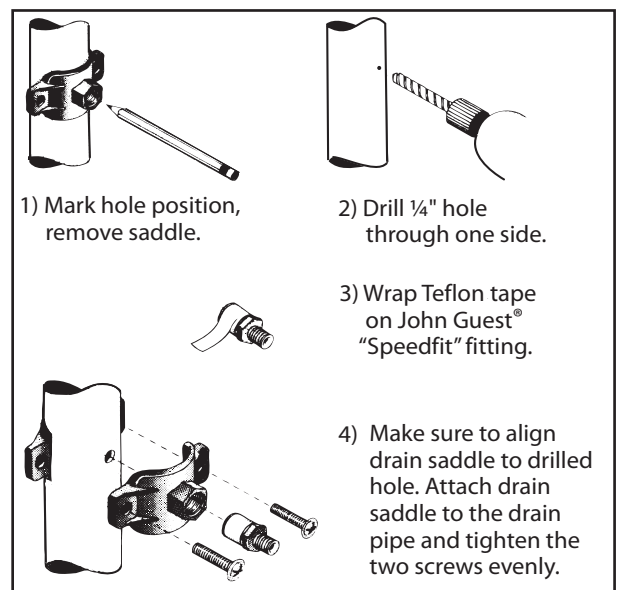


Figure 3, Mounting the Drain Saddle Valve

## 8) Mounting the Pre-filter/RO Assembly

Mount the pre-filter/RO assembly on the cabinet wall using the screws supplied. It is best to have the bracket placed above the plane of the drain saddle valve. When this is not possible, it is acceptable to stand the entire assembly on the cabinet floor, but extra care must be taken when routing tubing from the assembly to the drain saddle valve.

## 9) Connecting the System Components

A twenty foot length of poly tubing has been supplied with your system. This is more than enough tubing for most installations. When cutting the poly tubing, **DO NOT USE SCISSORS**. The approved method is a razor knife with a fresh blade. When cutting, it is important to not crimp or collapse the tubing. Cut the tubing with a clean, 90° angle. This will allow the tubing to seat firmly into the John Guest® fittings, creating a secure and leak free connection.

- a) Measure and cut a length of tubing to connect the sink mounted chrome faucet to the outlet end of the 4-stage DI module.

To attach the tubing to the chrome faucet extension beneath the sink, use the supplied compression fittings and follow the instructions printed on the plastic bag which contained the chrome faucet assembly. Connect the other end by pushing the tubing into the John Guest® fitting at the outlet of the DI module until you can feel the tubing “bottom out” inside the fitting. It is normal to experience some resistance as the tubing is pushed past the O-ring inside the fitting.

- b) Measure and cut a length of tubing to connect the drain water check valve on the pre-filter/RO assembly to the drain water saddle valve. See Appendix C.

**IMPORTANT:** If the frame of the pre-filter/RO assembly is not above the drain saddle valve, you will need to loop the tubing as high as possible beneath the sink. (See figure 4) Be sure to allow for this loop when you measure.

The drain water *check* valve is the grey colored fitting located just behind the RO pressure vessel on the top of the frame. Connect one end of the tubing to the drain water *check* valve and connect the other end to the drain *saddle* valve.

- c) Measure and cut a length of tubing to connect the feed water saddle valve to the inlet on the left side of the pre-filter assembly. Connect the tubing to the saddle valve using the compression fittings provided. See Appendix C.

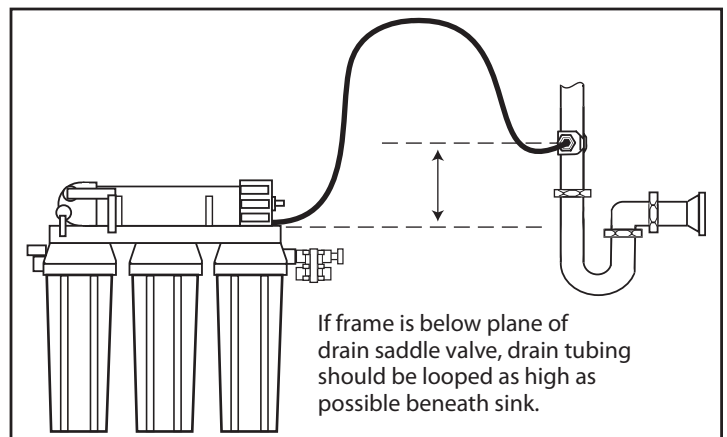


Figure 4, Drain Tubing Connection

- d) Mounted to the right side of the pre-filter/RO assembly, just below the bracket, is the Auto Shut-off valve. One port from the auto shut-off valve supports a swiveling “T” connector which will connect the pre-filter/RO assembly, the storage tank, and the DI module. See Appendix C.

Measure and cut a length of tubing to connect the pre-filter/RO assembly to the DI module. Connect one end to the inlet of the DI module. Connect the other end to one of the ports on the swivel “T” connector. It does not matter which port you choose.

- e) Wrap the threads of the stainless steel fitting on top of the storage tank with Teflon thread tape. Screw the supplied tank shut-off valve onto the storage tank.
- f) With all the other components connected, place the storage tank into position. Measure; cut an appropriate length of tubing; and connect the valve on top of the storage tank to the open port on



the swivel-T connector. Remember to avoid crimping and excessive tubing length. Open the valve on top of the storage tank by moving the handle parallel to the tubing.

- g) Open the chrome faucet on the sink top.
- h) Turn on the cold water supply. In approximately 20 minutes you will see water beginning to drip from the chrome faucet. Close the faucet and allow the storage tank to fill. Check for leaks and gently tug on all connections to assure a tight fit.

### Operating Notice

The initial filling of the storage tank will probably seem slow. The Reverse Osmosis element has been factory tested for rejection and flow, however, the element when new is generally “tight.” The water cavity of the pressure vessel and deionization module is initially empty and must fill before pure water will appear in the tank. After leaving the unit connected and running for 24–36 hours the storage tank should be completely full.

Your PWS™ BEV-300 system is easy to operate because the tank auto shut-off does all the work. When the storage tank is nearly full the auto shut-off will stop the flow of feed water to the system. Similarly, when the water in the tank drops below a certain level, the auto shut-off will re-open the feed water supply allowing the system to refill the storage tank.

(The auto shut-off mechanism relies on a pressure differential between the feed water and product water to operate. For this reason, the system will “turn on” before the tank is completely empty, and will “turn off” before the tank is completely full.)

### Flushing

Flushing is the single most important maintenance function you will need to perform to keep your system operating at peak efficiency. This simple operation only takes a few minutes, yet makes a great difference in the quality of the water your unit produces, and extends the service life of the RO membrane.

- a) Flushing the RO membrane can only be accomplished when the system is filling (see pressure gauge). Allow the storage tank to empty until you hear the water flowing then begin the flushing procedure.
- b) Move the black handle on the flush valve parallel to the RO pressure vessel. This will open the flush valve and allow water to rapidly flow across the surface of the RO membrane, washing away contaminants which, if allowed to accumulate, might clog the pores of the membrane.
- c) Set a kitchen timer so you do not forget to return the flush valve to the closed position.

**Flushing the unit for 10 minutes every two weeks is ideal.**

In the event you forget to flush the system for an extended period of time, you can perform an exhaustive flush of the membrane by leaving the flush valve open for 20 minutes.

If your unit has not been operational for several days (e.g. while you are on vacation), drain the storage tank (use the water for watering plants, etc.) then flush the membrane for 5-10 minutes as described above.



# Getting to Know Your BEV System

Your PWS™ BEV-300 Series system includes seven unique stages in five different modules. Every system combines the proven water filtration methods of carbon adsorption, reverse osmosis, and deionization. By carefully matching the components utilizing these methodologies, Pure Water Systems is able to assure your system produces water which meets or exceeds the Vincent standards for bio-compatibility.

## A LOOK AT THE SEVEN STAGES

### Stage One

Water entering the system is first subjected to our spun-polyester dual gradient (10-20 micron) sediment pre-filter. Any suspended particles such as sand, rust, or other deposits commonly found in the feed water supply are removed. This protects the reverse osmosis membrane downstream from particles which might clog the pores of the membrane. This pre-filter has been carefully selected for its extremely high dirt holding capacity.

### Stage Two

Before the feed water reaches the reverse osmosis membrane, it is subjected to twin, unidirectional granular activated carbon pre-filters. Flow is lengthwise, not radial, for maximum contact time and organic adsorption. Pure Water Systems has chosen to use twin carbon filters in this stage where every other manufacturer uses only a single cartridge. By using twin cartridges we insure complete removal of organic contaminants including pesticides, herbicides, and other hydrocarbon based compounds.

A single gram of steam washed, bituminous grade, granular activated carbon typically has ~1500 square meters of surface area—meaning our twin GAC pre-filters provide over 400 acres (1.62 square kilometers) of surface area where organic contaminants dissolved in the water have an opportunity to be adsorbed and eliminated. This immense GAC surface area also insures complete and total conversion of chlorine—protecting the polyamide thin-film-composite (TFC) reverse osmosis membrane downstream.

### Stage Three

A custom designed and extremely efficient spiral wound reverse osmosis membrane produces up to 40 gallons (~150 liters) of purified water per day. This membrane utilizes the unique properties of a semi-permeable material which allows passage of pure water molecules while not allowing dissolved salts, heavy metals, and organics to pass through. Our extraordinary membrane is designed to consistently and significantly reduce the total dissolved solids in the source water supply by greater than 97%. It also has a tremendous capacity to completely reject organic and biological contaminants, including water-borne microorganisms. (EPA EST.No. 52531-FL-01)

The operating parameters for this custom designed reverse osmosis membrane are found in the Specifications section of this manual.

*Stages four through seven are contained in our unique four-stage, RO matched deionization module.*

### Stage Four

This stage includes a unique blend of deionization resins carefully matched to our exceptional reverse osmosis membrane and provides superior rejection of monovalent ions and the ionic residues of pesticides and other hydrocarbon contaminants. It is the inclusion of deionization resins which sets the BEV

systems apart from other reverse osmosis systems. It is not enough to include any commercial grade resins; the blend of cationic and anionic resins must be nuclear grade and carefully engineered to match the reverse osmosis membrane.

#### Stage Five

Following the DI resins are four inches of granular activated carbon to polish the product water for a clean, fresh taste. The flow rate at this stage provides tremendous contact time to assure complete removal of any remaining organic contaminants.

#### Stages Six and Seven

The final two stages of our proprietary DI module are included to prevent the reverse migration of contaminants into the system. The incorporation of these stages further separates the BEV systems from other manufacturer's designs. After carefully combining the elements of the previous five stages it is essential to integrate these stages to assure contaminants cannot enter the system from the product water end.

## COMPONENT DESCRIPTION

Following is a brief description of the main components of your PWS™ BEV-300 Series system.

#### Feed Water Saddle Valve

The feed water saddle valve provides a simple and effective method of connecting your new PWS™ BEV-300 Series system to most existing home plumbing. Easily attached, the clamp-on valve includes a piercing mechanism which allows you to tap into the cold water supply line without having to drill holes or unscrew existing fittings.

#### Drain Saddle Valve

The drain saddle valve included in the installation kit provides a simple and secure method of attaching the brine water discharge from your BEV-300 system to the existing drain line. Like the feed water saddle valve, this valve is easily attached and does not require disassembly of existing plumbing fixtures.

#### Sink Mounted Chrome Faucet

The long reach chrome faucet included in your installation kit is made from the highest quality lead-free materials and is designed to provide years of trouble free service.

#### Sediment Pre-filter

Our spun-polyester dual gradient (10-20 micron) industrial grade pre-filter is designed to remove silt, sand, rust, scale and other suspended particulates. It has a much higher dirt holding capacity when compared to sediment pre-filters included in most other RO systems. This allows the filter to contain considerably more suspended contaminants before fouling or reducing throughput to the downstream components.

#### Granular Activated, Unidirectional, Carbon Pre-filters

Only Pure Water Systems offers dual, unidirectional, GAC pre-filters where flow is engineered to be lengthwise—not radial like most other designs. Lengthwise flow insures maximum contact time providing for total removal of any dissolved organic compounds present in the feed water. By placing two pre-filters in series, we also insure complete chlorine conversion protecting the reverse osmosis membrane which follows.

#### RO Pressure Vessel

The pressure vessel houses the polyamide thin-film-composite reverse osmosis membrane. The design provides a means to collect the purified product water and an exhaust opening to drain off the concentrated brine water.

## RO Membrane

Reverse osmosis is a scientific method of reversing nature's biological process where a dilute or lighter solution passes through a semi-permeable membrane into a more concentrated solution. In the human body fluids pass in and out of such membranes (cell tissues) by the phenomenon known as osmosis while plants absorb food and moisture from the soil in the same way. Scientists have long realized if the natural process of osmosis could be reversed—if water from concentrated sources could be made to pass through a selective membrane and emerge as pure water, many practical applications could be developed. For instance, unwanted salts and other dissolved inorganic minerals could be removed from all kinds of water sources. The process was originally perfected by NASA and DOW Chemical to purify and re-use all liquids aboard spacecraft. Reverse osmosis filters out all particles greater than .0001 microns in diameter.

The membrane used in your PWS™ BEV-300 system is a privately manufactured, custom rolled, spiral wound polyamide thin-film-composite membrane. This membrane has the ability to remove in excess of 97% of the dissolved inorganics. Rejection is based on degree of removal of sodium and chloride ions. Although RO has a higher percentage of removal of all di, tri, and quadri-valenced elements (e.g. >99% of aluminum) any mono-valenced elements are rejected at ~97% level. The nominal remaining 3% of dissolved solids, mostly monovalent, enter the next stage of the process—the deionization module.

## Deionization (DI) Module

Deionization resins are a man-made plastic bead chemically made anionic (OH<sup>-</sup>) and cationic (H<sup>+</sup>). The resins in your PWS™ BEV-300 system are of nuclear grade and carefully matched to the reverse osmosis membrane. (As opposed to commercial grade resins typically found in water softeners.) In the DI module, H<sup>+</sup> and OH<sup>-</sup> are exchanged for the mono-valenced elements in the product water coming from the RO membrane. The only thing added to the product water from your BEV-300 system is hydrogen ions (H<sup>+</sup>) and hydroxyl (OH<sup>-</sup>) ions, which combine to form H<sub>2</sub>O, or pure water.

Following the DI resins are several additional inches of granular activated carbon. This is included to insure the complete removal of any organic contaminant that might appear in trace form from a partial degree of removal via RO and DI. Since we've never found any organics which are not removed either by the upstream RO membrane or the DI resins, the GAC at this stage acts primarily to polish the product water for a clean, fresh taste. GAC is the most common product used to filter bottled or "spring" waters.

Finally, the end of the DI module contains two additional stages which are in place as safeguards against any reverse migration of contaminants.

## Built-in Flush Valve

The built-in flush valve mounted to the RO pressure vessel provides a quick and simple method to periodically flush the surface of the RO membrane. Simply opening the flush valve once every two weeks for ten minutes will wash away impurities that may be concentrating near the surface of the RO membrane. If not occasionally flushed from the membrane surface, impurities can concentrate and clog the pores of the membrane. Flushing the membrane ensures longer service life and greater rejection of contaminates.

## OPERATING PARAMETERS

To insure proper operation of your BEV system, it is advisable to collect the following information about your water supply. This information is generally available from your municipal water department, and in many cases is available online.

### Pressure

In order to overcome the natural osmotic force, adequate water pressure must be available from your water supply. The osmotic force is directly proportional to the concentration of dissolved solids in the water. When the water pressure is equal to the osmotic force, there will be no movement of pure water molecules across the semi-permeable membrane. A minimum of 40 PSI is recommended. (If your water pressure is below 40 PSI, a booster pump is available. If you are on a private well, have your plumber raise the minimum pressure above 40 PSI.)

In general, the higher the pressure (up to 100 PSI), the better the performance of the membrane at rejecting contaminants. Pressures below 40 PSI will result in poor rejection rates and may reduce the service life of the membrane.

### pH

The TFC membrane will hold up very well when the pH of the feed water is between 3 and 11. Water supplies with pH over 11 are very rarely, if ever, found. (Chlorine bleach has a pH of ~11.5.)

### Chlorine

Chlorine is the most common substance added to municipal water supplies. Its purpose is to eliminate biological growth (i.e. chlorine is toxic). Regulations usually require there to be residual chlorine when it reaches your tap. Typically, the residual concentrations of chlorine in household water range from 0.5 to 1.0 parts-per-million (ppm).

Besides being toxic, chlorine will degrade the TFC reverse osmosis membrane. Therefore, it is essential to remove chlorine from your feed water before it reaches the RO membrane. Your BEV system includes a pre-filter containing a special grade of granular activated carbon (GAC) which will very effectively remove the chlorine from your tap water. It is important to replace the pre-filter annually to insure no chlorine is reaching the membrane.

### Sediment

In areas with very high sediment concentrations the pre-filter may clog prematurely. If the pre-filter becomes clogged, you will likely notice a decrease in the production rate from your system. In areas with very high sediment concentrations, it may be necessary to replace the pre-filter on a semi-annual basis.

### Iron

Iron concentrations greater than 0.1 mg/l can degrade overall system performance. If your water supply has iron concentrations above 0.1 mg/l, iron pretreatment is recommended.

# Maintenance and Servicing

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Minimal work is required to keep your BEV system in peak operating condition. All that is required is following a regular schedule of flushing and replacing the filter modules as recommended. Following these simple steps will insure your unit consistently produces ultra-pure water meeting the Vincent (BEV) standards for bio-compatibility.

Take care of your BEV system and it will provide many years of healthful drinking and cooking water for your entire family.

## Flushing

Flushing is the single most important maintenance function you will need to perform to keep your system operating at peak efficiency. This simple operation only takes a few minutes, yet makes a great difference in the quality of the water your unit produces, and extends the service life of the RO membrane.

- a) Flushing the RO membrane can only be accomplished when the system is filling (see pressure gauge). Allow the storage tank to empty until you hear the water flowing then begin the flushing procedure.
- b) Move the black handle on the flush valve parallel to the RO pressure vessel. This will open the flush valve and allow water to rapidly flow across the surface of the RO membrane, washing away contaminants which, if allowed to accumulate, might clog the pores of the membrane.
- c) Set a kitchen timer so you do not forget to return the flush valve to the closed position.

**Flushing the unit for 10 minutes every two weeks is ideal.**

In the event you forget to flush the system for an extended period of time, you can perform an exhaustive flush of the membrane by leaving the flush valve open for 20 minutes.

If your unit has not been operational for several days (e.g. while you are on vacation), drain the storage tank (use the water for watering plants, etc.) then flush the membrane for 5-10 minutes as described above.

## FILTER REPLACEMENT

After 12 months of use, it is time to replace the sediment pre-filter, the twin GAC carbon filters, and the 4-stage Deionization module to insure your system continues to produce water within BEV parameters. Replacement modules can be ordered directly from Pure Water Systems via our web site at <http://www.purewatersystems.com>.

- 1) Remove the contents from beneath the kitchen sink where the filter assembly is located.
- 2) Turn off the cold water supply line.
- 3) Drain ALL the water from the storage tank.
- 4) Close the valve on the top of the storage tank.
- 5) Open the Flush Valve
- 6) Place a towel beneath the pre-filter/RO assembly—it will absorb the small amount of water that will spill from the modules as they are changed out.

It is often helpful to have an empty 3-5 gallon bucket nearby.

## Replacing the Sediment Pre-filter

The sediment pre-filter is in the filter canister on the left side of the assembly (position 1), beneath the “IN (FEED WATER)” marking on the aluminum frame. The sediment pre-filter will likely be rather distasteful looking—as it is common for sludge to form on the filter surface. After one year, this sludge layer can be fairly thick.

- a) Push the red button (on the top of the aluminum frame, above the pre-filter canister) to reduce any back pressure remaining in the canister.
- b) Firmly grasp the canister with both hands and unscrew it from the pre-filter assembly. Carefully move the canister over the bucket, dump the water, and remove the old pre-filter.
- c) Using a long handled, soft bristle brush, scrub the inside of the canister with a mild dish washing detergent and rinse.
- d) Place the new pre-filter into the canister, and then carefully re-attach the canister to the assembly. Tighten until firm.

## Replacing the Twin GAC Pre-filters

The twin unidirectional, GAC pre-filters are in the middle canister (position 2) and the canister on the right (position 3). Follow the same procedure as described for replacing the sediment pre-filter (above).

## Replacing the 4-Stage DI Module

*(Before proceeding, study Figure 5 below)*

The tubing is attached to the module using a unique push-in fitting system manufactured by John Guest® Company. This system is designed to make connecting and disconnecting filter modules very easy while insuring a water tight connection.

The “collet” assembly will securely hold the tubing in place under normal operating conditions. Pulling on the tubing will not cause it to release, instead the “grip” of the collet will become more secure. An O-ring behind the collet assures a leak free seal.

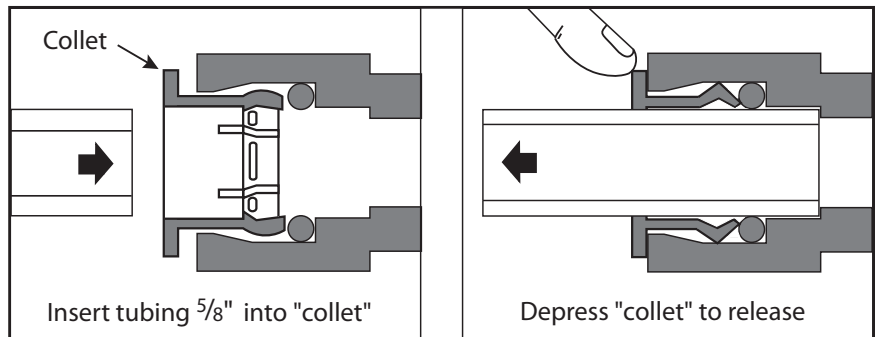


Figure 5, John Guest® “Speedfit” fittings

- a) Disconnect the tubing from both ends of the DI module. (If the DI module was mounted vertically, you might find less water will be spilled if you remove the tubing from the outlet end **after** removing the module from the retaining clamp.)
- b) Remove one screw from the clamp and remove the old DI module. (The clamp is fairly flexible and can be bent out to allow the module to be removed.) *Note the direction of the “FLOW” arrow. You will need to install the new DI module in the same orientation.*
- c) Place the new DI module into position, taking care to note the direction of flow. Secure the clamp and re-connect the tubing. Gently tug on the tubing to insure a secure, leak free connection.

## Returning the System to Service

To return your system to service:

- 1) Open the sink mounted chrome faucet.
- 2) Return the membrane flush valve to the “production” position.

- 3) Slowly re-open the cold water supply line.
- 4) Open the valve on top of the storage tank.
- 5) After about 20 minutes you should see water coming from the faucet. (It will take some time for the DI module to fill with product water.)
- 6) Check for leaks around the tops of the pre-filter canisters. If water is seeping from any of the canisters turn the cold water supply off, relieve line pressure by pressing the red button on top of the canister, and then unscrew the leaking canister from the assembly. Check to be sure the O-ring is properly seated and then carefully re-attach the canister to the assembly, taking care to align the filter module inside. Tighten until firm.
- 7) Check for leaks at either end of the DI module.
- 8) Close the faucet and allow the system to produce a full storage tank of water.
- 9) Drain off and discard this initial tank of water. Do not use for cooking or drinking.
- 10) You are now ready to enjoy great tasting, pure BEV water for another 12 months!



# Frequently Asked Questions

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**Q:** How long will my sediment pre-filter last before it needs to be replaced?

**A:** Under typical city water conditions, the pre-filter is designed to function properly for 12 months, and should be replaced annually. Sediment concentrations vary greatly between municipal systems so there is no way of determining the lifetime of a filter without knowing more about the feed water. In some cases, it may be necessary to replace the pre-filter more frequently.

**Q:** How long will my GAC pre-filters last before they need to be replaced?

**A:** Your PWS™ BEV-300 system has been designed to operate within a wide range of feed water conditions. These conditions vary greatly across municipalities, so it is difficult to state precisely how long your pre-filters will last. We have designed the systems so that under the most extreme conditions your pre-filters will still be performing correctly after 12 months of use. Following an annual replacement schedule will insure your system is consistently performing as designed and producing ultra-pure water which meets the rigorous Vincent standards for bio-compatibility.

**Q:** How long will my reverse osmosis membrane last?

**A:** The membrane's life depends on the water conditions as listed in the specification section of this manual. If all these conditions are met, the life of the membrane is generally 2–3 years. If a membrane fails or its performance becomes reduced before this time, the cause can usually be traced to feed water conditions outside the specifications.

**Q:** How do I know if there is a problem with the membrane?

**A:** The best method is to measure the resistivity (conductivity) of the product water and compare it to the feed water. You can obtain a resistivity meter from Pure Water Systems or you can send samples to Pure Water Systems for analysis. (Poor rejection rates may also be an indication of a clogged pre-filter, so check that filter first.) A large increase in the production rate is also an indication of membrane failure, and can often be traced to the membrane having been subjected to either freezing or hot water.

**Q:** How can I monitor the performance of the unit?

**A:** With identical feed water pressure, the production rate should remain fairly constant. If your system begins to produce water at a much faster rate, the RO membrane may have failed. If your system is producing water at a much lower rate, replacing the pre-filter is often indicated.

To monitor the overall system rejection rate, the best method is to obtain either a resistivity meter or TDS meter from Pure Water Systems.

**Q:** Will I lose valuable minerals when I drink reverse osmosis water?

**A:** No, the body does not readily assimilate the minerals found in drinking water. We obtain the majority of our minerals from the foods we eat. There are many, many more chelated minerals in a piece of organic fruit or a serving of organic vegetables than in several gallons of water.

**Q:** Will hot water ruin my RO membrane?

A: YES! Hot water over 100° F will damage the membrane and cause poor rejection of the contaminants in your water. Make sure you use only COLD water in your BEV system.

Q: How should I store my purified water?

A: We recommend using a sealable glass container. Used one gallon fruit juice bottles are an excellent choice. We also recommend containers made of 100% LEXAN®, like those available under the Nalgene® brand. High quality polycarbonate containers are also acceptable for short term storage. If you store or transport your BEV water in polycarbonate containers, be sure to keep the containers out of direct sunlight.

Q: How should I store my unit when not in use?

A: If your unit is out of service for several days (while you are vacationing, for example) no special precautions are required. However, we do recommend you flush the unit for 10-15 minutes and discard the first tank of water when you return the system to production.

# Limited Warranty

Pure Water Systems, Inc. warrants to the original owner each PWS™ BEV-300 Series pure water appliance to be free from defects in materials and workmanship for as long as you own the product.

## What the Warranty Covers

Full Lifetime Warranty on all parts (excluding normal module changes or abuse).

## Exceptions to Lifetime Warranty

The Lifetime Warranty does not include damage caused by or resulting from unreasonable use, including failure to provide reasonable maintenance, or incidental or consequential damages, such as water damage or damage to appliances, fixtures or other equipment.

Warranty will be void if product failure or damage is due to any of the following:

- 1) Misuse, misapplication (e.g. unacceptable water conditions), neglect (e.g. inadequate filter changes), alteration, hot feed water, freezing, or accident.
- 2) Improper installation, operation, or servicing.

No one is authorized to change or add to this warranty.

## What We Will Do To Correct an Inconvenience

Upon notice, we will repair or replace covered defective parts, free of charge.

If it is necessary to ship the product to Pure Water Systems, Inc. or bring it to a dealer for service, the buyer must pay for any shipping or travel costs.

Pure Water Systems, Inc. will pay for any return shipping charges in the U.S. for parts or products covered under the warranty.

Pure Water Systems, Inc. will furnish any factory labor to make repairs on parts or products returned to the factory that are covered under the warranty.

## How You Can Get Service

Contact the Pure Water Systems, Inc. customer service department for instructions and authorization number for returning the defective part or product.

Pure Water Systems, Inc.  
Customer Service Dept.  
5707 238th Place N.E.  
Redmond, WA 98053  
Phone: (425) 765-6175

Your Pure Water Systems, Inc. BEV-300 Series pure water appliance is a sophisticated water treatment system. Failure to use genuine Pure Water Systems, Inc. components shall void the exclusive lifetime warranty.

## How State Law Relates To the Warranty

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty applies to the original purchaser and gives you specific legal rights. You may also have other rights which vary from state to state.

# Specifications

Following are the recommended operating parameters for our custom rolled reverse osmosis membrane:

Membrane type	Spiral Wound Polyamide Thin Film Composite (TFC)
Production	Up to 40 Gallons-Per-Day (GPD)
Maximum Operating Temperature	40–100° F (4–38° C)
Operating Pressure	40–100 psi (2.75–6.9 bar)
pH Range	3.0–11.0
TDS Level, Maximum	2000 ppm
Turbidity	< 1.0 Net Turbidity (NTU)
Chlorine (Cl <sub>2</sub> )	0.00 mg/l *
Hardness (CaCO <sub>3</sub> )	< 350 mg/l
Iron (Fe)	< 0.1 mg/l
Manganese (Mn)	< 0.05 mg/l
Hydrogen Sulfide (H <sub>2</sub> S)	0.00 mg/l

\* Every system is equipped with our unique twin unidirectional granular activated carbon pre-filters to remove organic contaminants and chlorine.

You can obtain specifics about your water supply from either your local water department or a water testing service. If the parameters of your water do not fall within the specified ranges as noted above, please contact Pure Water Systems or your local dealer for further options.

Production is rated at optimum temperature of 70° F, 60 PSI, and 500 ppm TDS. Actual production will vary depending on local temperature, pressure, and TDS level.

Low tap water pressure will reduce the volume and quality of the water produced by your system. In low pressure situations (<40 PSI, 2.75 bar) BEV values cannot be assured. The addition of a booster pump (PWS-BP-300) is strongly recommended.

**ALWAYS USE COLD WATER**—hot water will damage the TFC membrane.

The unit must not be allowed to freeze. Freezing water will expand inside the modules—damaging the membrane and potentially rupturing the filter housings. Damage of this type will void the warranty.

# Replacement Schedule

Below you can find the recommended replacement schedule and part numbers for the components of your BEV-340 pure water appliance. You can order replacement modules online from the Pure Water Systems, Inc. website at <http://www.purewatersystems.com>.

### Replacement Components

<b>Module</b>	<b>Replacement Schedule</b>	<b>Order No.</b>
Sediment Pre-filter	Annually (or as needed)	PWS-BEV300-SED
Unidirectional GAC Pre-filter	Annually	PWS-BEV300-GAC
4-Stage Deionization Module	Annually	PWS-BEV-DI
BEV 300 Series RO Membrane	2-3 years (as needed)	PWS-BEV-RO40

Purchase Date: \_\_\_\_\_  
Purchased From: \_\_\_\_\_  
Serial Number: \_\_\_\_\_

### Maintenance Log

<b>Module</b>	<b>Date Replaced</b>

# Connections

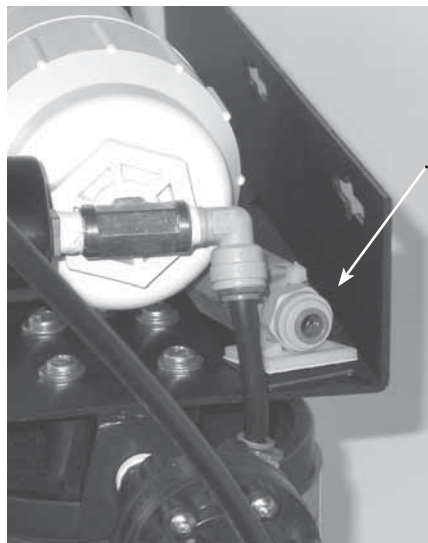


Connect tubing from the feed water saddle valve to the John Guest® “Speedfit” fitting on the sediment pre-filter.

Tubing from the tank shut-off valve connects to one port on the T fitting.

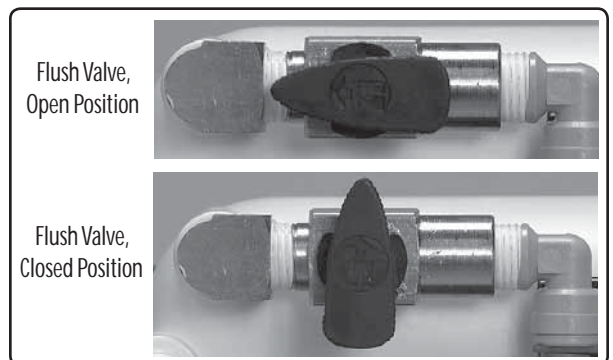
Tubing from the inlet port of the DI module connects to the second port on the T fitting.

It does not matter which port on the T fitting is chosen for each connection.



The drain check valve, located on the right side of the frame behind the reverse osmosis pressure vessel, connects to the drain saddle valve (which is mounted to the existing plumbing).

Drain Check Valve



Flush Valve,  
Open Position

Flush Valve,  
Closed Position

# Schematic

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