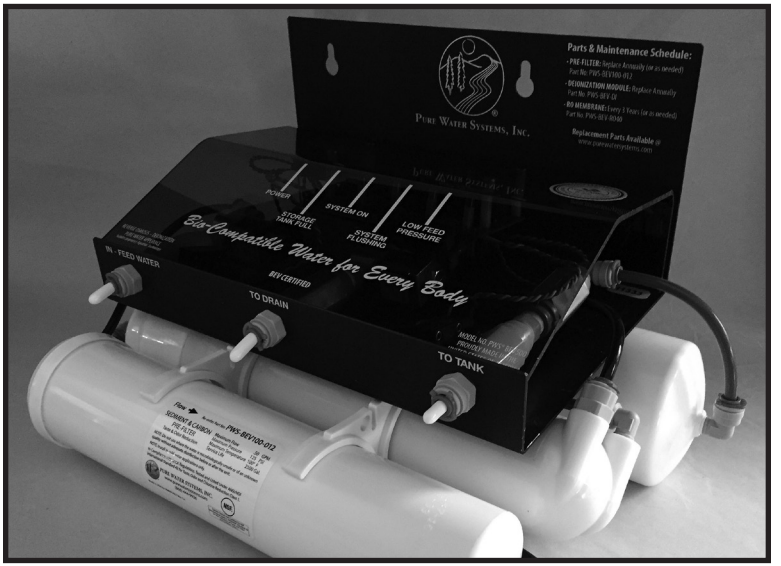


Getting Started With Your PWS® BEV-500 Pure Water Appliance

Includes setup and maintenance information for the PWS® BEV-500 Series Pure Water Appliance.

IMPORTANT NOTICE:

This owner's manual has been converted to a FLASH® animation and is visible in the SUPPORT section of our web site. Viewing the FLASH® animation takes only a few minutes and details setup, installation, and filter replacement.

We strongly encourage you to view the animation before installing your PWS® BEV-500 Series pure water appliance.

www.purewatersystems.com/500install.php

Contents

Pure Water Systems, Inc.
18354 S. Grasle Rd.
Oregon City, Oregon 97045
503-631-7712
http://www.purewatersystems.com

CHAPTER 1

Getting Started

Thank you for your purchase of this quality water purification system by Pure Water Systems, Inc. Your new PWS® BEV-500 system represents the state-of-the-art in water purification, combining several of the most efficient methods of water treatment to achieve a very specific result—pure water that meets the rigorous Vincent (BEV) standards for bio-compatibility.

As the new owner of a PWS® BEV-500 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-500 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-500 system requires adequate water pressure. This unit is designed to operate within a pressure range of 45–100 PSI. The amount of purified water produced depends primarily on your water pressure, temperature, and the amount of dissolved solids. Normal production is 24–36 (up to 40) gallons per day. 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 45 PSI, ask a plumber to adjust and raise the pressure to the **minimum level of 45 PSI**. An optional booster pump (BP-500) is available when source water pressure is severally low.

The PWS® BEV-500 system also requires electricity. The system operates at 24 volts, utilizing a compact transformer that accommodates 110 or 220 volts.

(System installation must comply with state & local laws and regulations.)

IMPORTANT NOTE FOR PRIVATE WELL OWNERS:

For private well owners we recommend you include the BP-500 Booster Pump with your system. This eliminates fluctuations in pressure associated with private wells and ensures your PWS® BEV-500 system operates at peak efficiency. While 45PSI is enough to produce water with

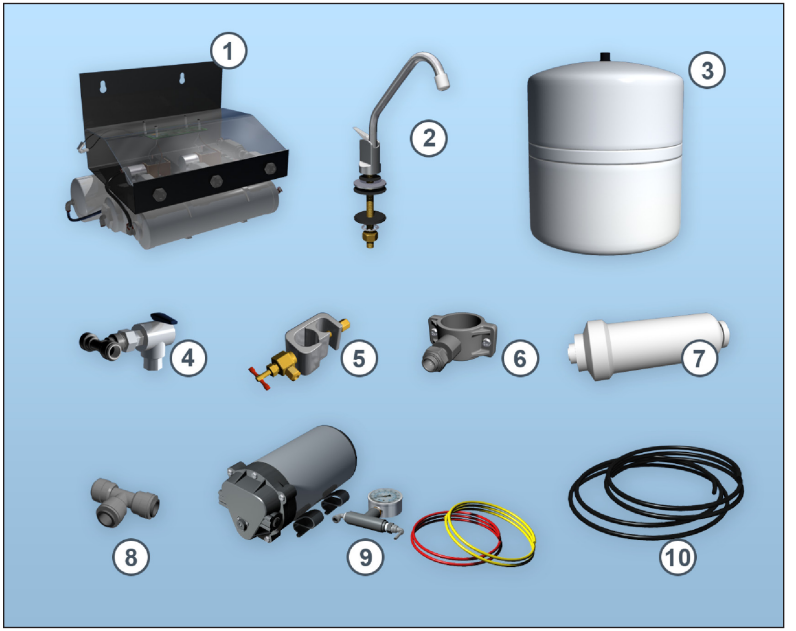
exceptional purity required for passing BEV standards, you may find water flow to the faucet is less than optimal, and that your holding tank will not store much water. (The amount of water stored is a function of line pressure).

Quick Description of Installation…

- Unpack
- Install the sink-mounted chrome faucet
- Install the feed water saddle valve to deliver tap water to the system
- Install the drain saddle so that contaminants can be flushed away
- Mount the Frame Assembly to the cabinet sidewall (optional)
- Make the tubing connections
- Install BP-500 Booster Pump to provide ample water pressure (optional)

Unpack the System

As you unpack your new PWS® BEV-500 unit, 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. Should you need to return the unit to Pure Water Systems, you must first obtain an RMA number by contacting customer service.



Contents include:

1. Main Assembly including the RO Pressure Vessel, Deionization Module, and Sediment & Carbon Pre-filter

2. Faucet assembly
3. Storage tank
4. Tank ball valve
5. Feed water saddle valve
6. Drain saddle
7. PWS TCR6 post-filter
8. Ice-maker tee (included, installation optional)
9. BP-500 Booster Pump (optional)
10. Tubing
11. Owner's Manual
12. Registration & Warranty Card

Required Tools:

Hi Speed Drill	#2 Phillips Screw Driver
¼" High Speed Drill Bit	Teflon thread tape
½" High Speed Drill Bit	Razor knife with fresh sharp blade
1/16" High Speed Drill Bit	Adjustable (Crescent) Wrench
For porcelain sinks, a Dremmel® tool and ¾" silicon carbide grinding wheel or a Glass & Tile carbide spade-tipped bit.	For granite counter-tops, you will need to have a professional drill a ½" hole.

Planning the Installation

Review the following instructions completely before proceeding. (Refer to diagram on page 35.) The PWS® BEV-500 system is comprised of several compact components which fit easily beneath most kitchen sinks. We encourage you to establish the desired location of each of the components before proceeding. The storage tank has built-in feet for upright positioning and it can be placed on its side when space is limited. (A stand is included.) System installation must comply with state and local laws and regulations.

Installing the Chrome Faucet Assembly

1) Select a location for the faucet on the sink top. (See Figure 1, below)

NOTE: Make sure there are no reinforcing ribs under the sink drilling location.

2) Use factory approved method or approved plumbing practice to drill hole in sink.

Porcelain sinks: factory approved method is: first grind away porcelain with a Dremmel® tool and silicon grinding wheel (about ¾" circle). Then, use a standard ½" high-speed

drill bit to drill hole through metal portion of sink. (See Figure 2) Alternately, use a "glass and tile carbide spade tipped bit."

Acrylic sinks: use ½" high-speed drill bit.

Stainless Steel sinks: use ½" high-speed drill bit or ½" Greenlee chassis punch.

Figure 1, Pure Water Faucet (see detail in Appendix C)

3) Install faucet according to detailed diagram in *Appendix C–page 33*, insuring rubber gaskets are place. Tighten lock nut beneath sink. Save compression fitting parts for connection to GAC post-filter.

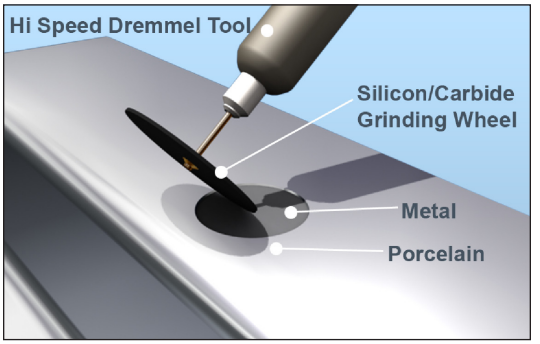


Figure 2, Using a Dremmel Tool to remove porcelain

Installing the Feed Water Saddle Valve

The saddle-type valve supplied is intended for use on ⅜" to ½" copper tubing cold water supply line. It is not intended for flex lines.

Install on cold water line only!

1) Turn off the cold water valve under the sink or the main valve for the house.
2) Slide clamp over the copper tubing and tighten screw firmly to hold the clamp in position. (See Figure 3, opposite)
3) Pierce the copper tubing by turning the needle valve handle clockwise until it is firmly seated. The valve is closed in this position.
4) Turn on the MAIN supply valve to pressurize cold water line. Immediately check for any signs of leaks.

5) Set aside compression fittings for later use connecting yellow feed tubing to system.

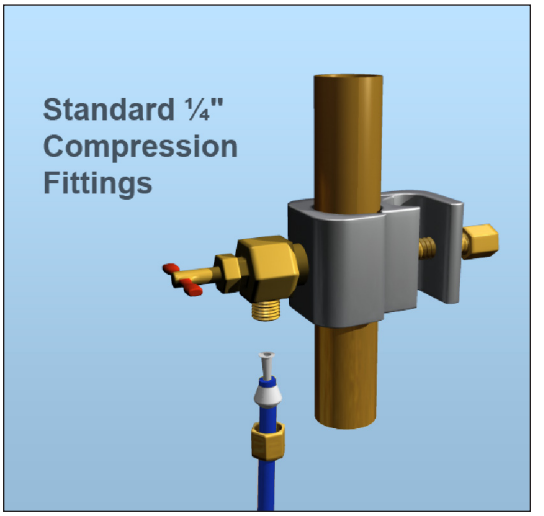


Figure 3, Feed-water saddle valve installation

When ready to supply water to the system, turn valve handle counter-clockwise until fully open.

In some instances the self-piercing valve provided will not be compatible with your plumbing. We have provided a feed valve that will satisfy most scenarios. Alternate parts using standard ¼" compression fittings can be found at plumbing supply or home improvement stores. On rare occasions, it may be necessary to contact a plumbing contractor to complete your installation.

Installing the Drain Saddle Valve

The drain saddle assembly should be installed above the trap and on the vertical or horizontal tailpiece. (See Figure 4)

Refer to Figure 5 (next page) and follow steps 1 through 4.

Do not over-tighten the fitting! Doing so can crack the drain saddle. This is a low-pressure connection; it is not necessary to screw the fitting all the way into the saddle.

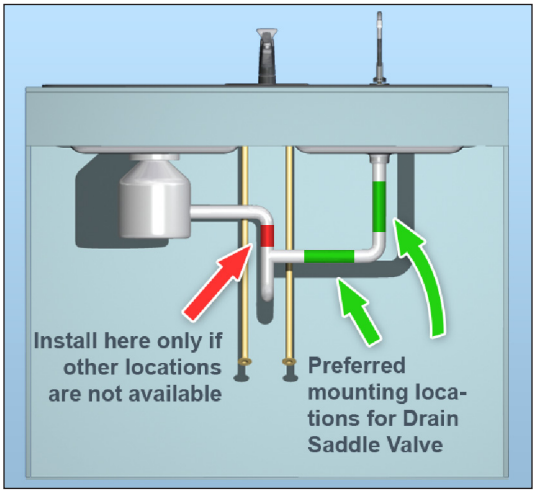


Figure 4, Drain Saddle Mounting Locations

NOTE: When installing the Main Assembly, mount the frame above the position of the drain saddle whenever possible. *(See Figure 10, page 10.)*

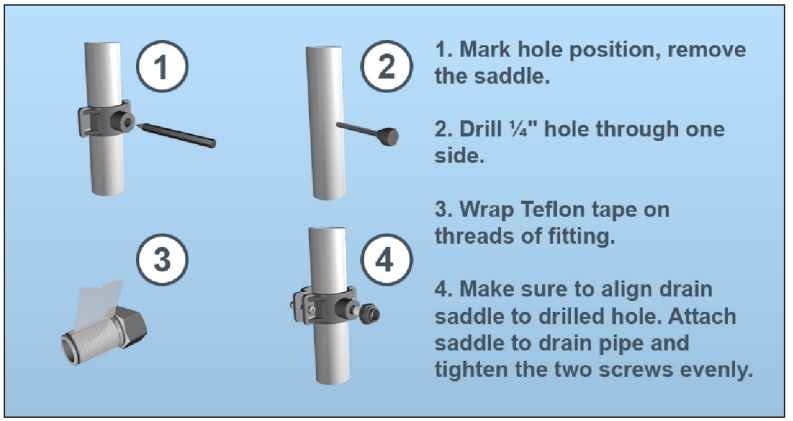


Figure 5, Steps to Mount the Drain Saddle

Preparing to Mount the Main Assembly

When possible we recommend mounting the main assembly on the left sidewall of the cabinet, but this is not a requirement. ***It is not required the system be mounted at all***—many owners choose to let the main assembly rest unsupported on the floor of the cabinet.

Mounting the system as shown in Figure 6 will not only save cabinet space, but also the brackets on the bottom of the frame can assist in holding the tank in position.

(Figure 6 shows 20" minimum to top of keyholes in frame. This can be reduced slightly more if space is a premium and you choose not to rest the tank in the included cradle.)

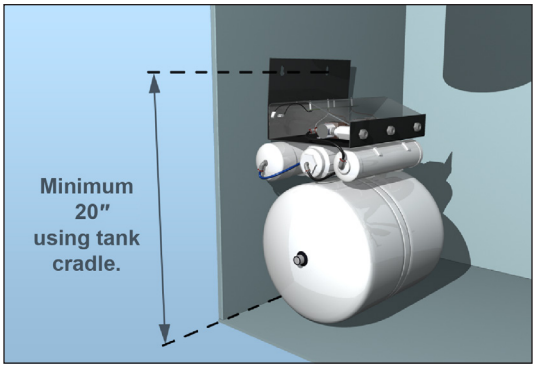


Figure 6, Mounting arrangement in the case of limited cabinet space

Install the screws provided allowing for the thickness of the frame. (A pilot hole using a 1/16" drill bit is recommended for particle board side-walls.)

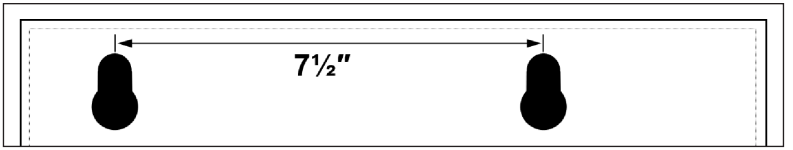


Figure 7, Spacing between keyholes ***(diagram not drawn to scale)***

NOTE: Do not hang the assembly until tubing connections have been made (following pages.)

Making the Tubing Connections

You have completed the bulk of the installation tasks. All that remains is connecting tubing between the components. Three lengths of tubing have been supplied:

- Connect the feed water saddle valve to the inlet on the main assembly (indicated by IN–FEED WATER on the front of the main assembly.)
- Connect the drain saddle valve to the drain fitting in the front center of the main assembly.
- Connect the storage tank to the main assembly (front right, TO TANK) and then connect the tank to the TCR6 carbon post-filter, and then the post-filter to the faucet.

NOTE: When cutting the poly tubing, DO NOT USE SCISSORS. Use a razor knife with a fresh blade. Do not crimp or collapse the tubing. Cut the tubing with a clean, 90° angle. This will allow the tubing to seat firmly into the fittings, creating a secure and leak free connection.

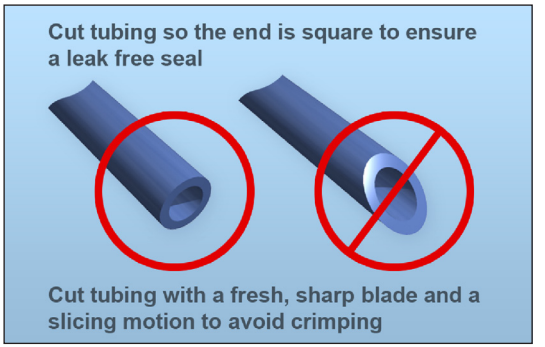


Figure 8, Cut tubing square; do not use scissors

Connecting Tubing to John Guest Speedfit® Fittings

PWS® BEV Series systems make extensive use of John Guest Speedfit® fittings. These high quality components provide secure, leak free seals and make it easy to connect and disconnect tubing without the use of tools.

Refer to diagrams on page 34, Appendix C.

Connect Cold Water Supply to Feed Water Inlet

Measure and cut a length of tubing to connect the feed water saddle valve to the "IN–FEED WATER" port on the front of the frame assembly. Connect the tubing to the saddle valve using the compression fittings provided.

Compression fittings are all similar—a) Slip nut over tubing, then b) slide ferrule over tubing taking care to align the beveled edges as shown, and then c) push nipple into tubing before threading nut onto valve. (See Figure 9, next page.)

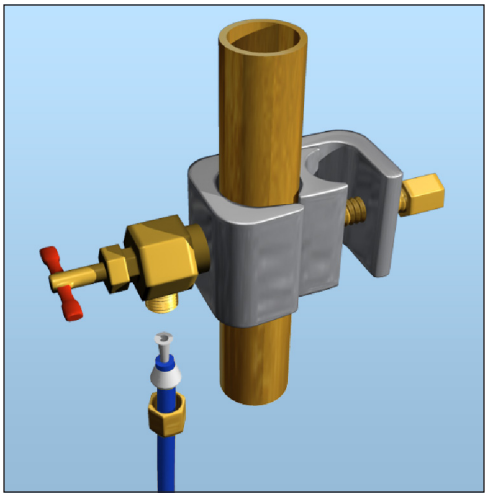


Figure 9, Connect compression fitting as shown

Connect the Drain Line

Measure and cut a length of tubing to connect the drain port (middle front of main assembly) to the drain saddle previously installed (page 7.)

IMPORTANT: If the frame of the main assembly is not above the drain saddle valve, you will need to loop the tubing as high as possible beneath the sink. Be sure to allow for this loop when you measure. (See Figure 10 below) A self-adhesive tubing clip has been provided to secure the drain loop.

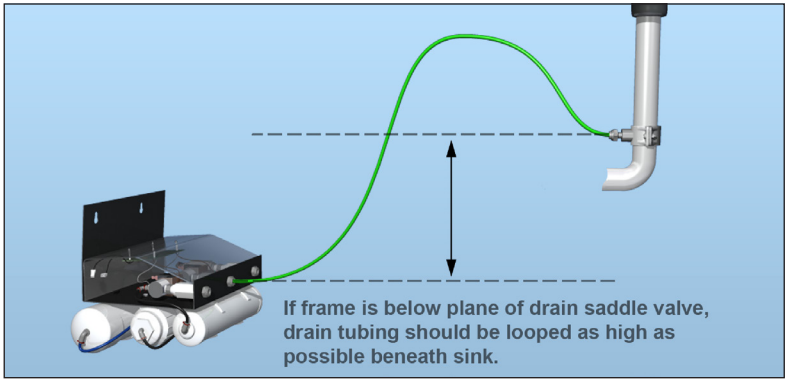


Figure 10, Drain line connection (tubing color for illustative purposes)

Attach the Transformer

Connect the male 2-pin plug from the transformer to the female 2-pin plug located on the left-rear of the main assembly as shown.

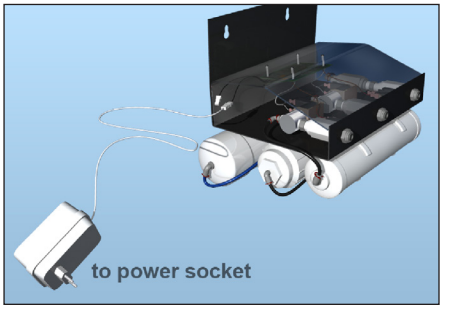


Figure 11, Transformer Connection

Mount the Main Assembly to the Cabinet

With the transformer, cold water supply and the drain line connected, the main assembly can now be placed onto the screws previously installed. Place the keyhole openings over the screws then slide the frame vertically onto the mounting screws.

You may wish to remove the main assembly and adjust/tighten the screws to make the connection as secure as possible.

Prepare Storage Tank

Wrap Teflon pipe tape on the threads of the storage tank, then place three (3) drops of regular household chlorine bleach into the opening.

Close the tank ball valve by turning the blue handle perpendicular to the valve body, then screw the valve onto the storage tank until firm—**DO NOT OVER-TIGHTEN**.(See Figure 12, right.)

Determine the position for the storage tank beneath the sink. If space is at a premium, it is OK to lay the tank on its side. A stand is included.

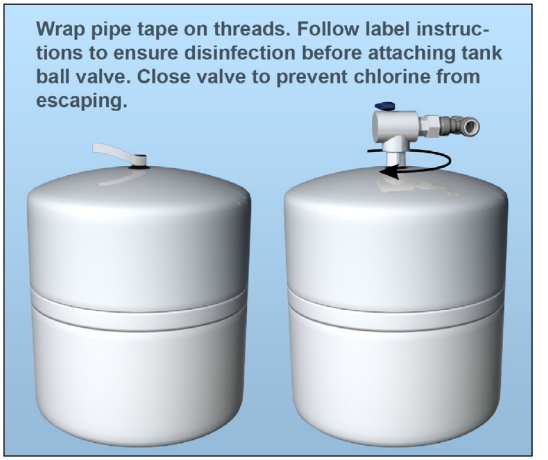


Figure 12, Storage tank preparation

Connect Main Assembly to Storage Tank

With the tank in position, measure and cut a length of tubing to connect the outlet port of the main assembly (marked "TO TANK") with the tee connector on the tank ball valve as shown. (Figure 13, right.)

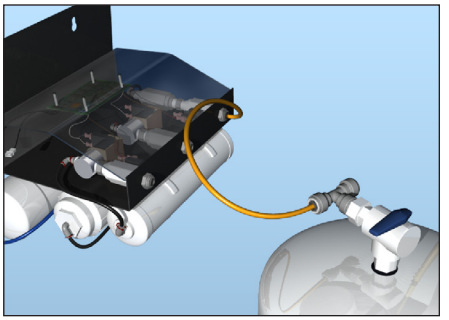


Figure 13, Connection from main assembly to tank. (tubing color for illustrative purposes only)

Connect GAC Post Filter between Storage Tank and Faucet

Refer again to diagram in *Figure C3 on page 35*, and the *Schematic on page 37*. The GAC post-filter (PWS-TCR6) is typically installed just below the faucet assembly and is easily supported by the tubing and Speedfit® fittings.

Measure and cut a length of tubing to connect the outlet of the GAC post-filter to the faucet assembly. Placing the post-filter near the tank will make it easy to service when needed.

Connect one end of the tubing to the threaded stem of the chrome faucet assembly using the ¼" compression fittings provided. (See Figure 9 above)

Connect the opposite end of the tubing to the outlet of the GAC post-filter.

Finally, measure a length of tubing to connect the storage tank to the GAC post-filter.

Leave the handle on the tank ball valve closed at this time.

Connect Your System to an Ice-Maker (Optional)

A Tee fitting has been provided with your installation materials for attaching your PWS® BEV-500 system to your refrigerator or ice-maker. The Tee installs after the TCR6 GAC post-filter, between the post-filter and the faucet. (See schematic, Appendix D)

Adding a Booster Pump (when Line Pressure is Low)

If you experience fluctuations in line pressure, or low line pressure often associated with private wells we recommend that you choose the PWS® BP-500 booster pump. The BEV-500 main unit is pre-wired for addition of the booster pump. *To setup and install the optional pump, refer to the instructions in Appendix E, page 39.*

Verify Tubing and Flow

Tubing and flow depend on whether or not you choose to use the booster pump. The info below will be instructive if you are adding the booster pump. (If you purchase the pump with your system, the tubing/flow adjustments will have been made at the factory before shipping.

Without Pump: Cold water enters the main assembly through the "IN–FEED WATER" fitting. Water passes through a control solenoid then to the inlet of the Sediment & Carbon pre-filter; then to the Reverse Osmosis Pressure Vessel.

Purified water exits the main assembly from the fitting marked "TO TANK", through the tank tee, then through the small carbon post-filter (TCR6) to the chrome faucet.

With Pump: Cold water enters the main assembly though the "IN–FEED WATER" fitting. Water passes through a control solenoid to the booster pump, then to the Sediment & Carbon pre-filter before reaching the Reverse Osmosis Pressure Vessel.

Purified water exits the main assembly from the "TO TANK" fitting, through the tank tee, through the carbon post-filter (TCR6) to the chrome faucet.

Congratulations! You did it! You've completed the installation! Now lets fire that bad-boy up and start making some pure BEV quality water!

Starting the PWS® BEV-500 System

1) Plug the transformer into a powered outlet beneath the sink.

2) Open the chrome faucet on the sink top. (If you lift the handle it will stay up.)

3) Verify the Tank Ball Valve is closed. (Handle perpendicular to the valve.)

4) Slowly open the Feed Water Saddle Valve or your cold water supply valve. You will begin to hear water flowing into the system and to the drain.

5) Check the pressure gauge on optional Booster Pump. Record your initial pressure in Appendix B.

6) You will hear some buzzing sound initially as water rushes through the solenoids, then you will hear a click and the loud buzzing should stop. In about 20 minutes you will begin to see water drip from the faucet.

7) Close the faucet on the sink top, and then quickly open the Tank Ball Valve to allow the storage tank to fill. Actual production rate will vary slightly depending on tap water pressure. The BEV-500 will normally produce water at a rate of approximately 1.6 gallons / hour. Filling the tank will normally take 2+ hours, and the first tank may take even longer.

8) DISCARD THE FIRST FULL TANK OF WATER. *(The Reverse Osmosis membrane in your system is shipped with a preservative solution that will be washed out with the first tank of water.)* Lift

the handle on your faucet and let the water flow until only a slight trickle remains. Close the faucet and allow the tank to fill a second time. You are now ready to enjoy the great taste of 100% pure BEV quality bio-compatible drinking water.

Indicators of System Activity

The BEV-500 unit has five indicator lights on the frame. These are important indicators of system activity:

The **first green light** (from left) indicates the system is powered on. This light indicates the system is plugged in and receiving power. The light will remain lit even when the tank is full and the system is not operating.

The **second green light** (from left) turns on only when the storage tank is full. When the tank is full the first two lights on the frame (from left) will be lit.

The **first amber light** (from left) is lit whenever the system is active, i.e. when the system is actively purifying water and filling the tank, or when the system is flushing. This also means when the tank is full and the system is idle this light will not be lit. (If the first two green lights are lit, this light should not be.)

The **second amber light** (from left) is lit only when the system is flushing. In the BEV-500 system, flushing is an automated function and occurs for 2 minutes whenever the system begins to fill the storage tank.

The **red light** (last light from left) will be lit if the water pressure is low. If this light is on, you may need the optional BP-500 Booster Pump.

BEV500 INDICATOR LIGHTS					
	POWER	STORAGE TANK FULL	SYSTEM ON	SYSTEM FLUSHING	LOW FEED PRESSURE
System Running	●		●		
System Flushing	●		●	●	
Storage Tank Full	●	●			
Low Water Pressure	●				●

OPERATING PROCEDURES

Your PURE WATER SYSTEMS BEV-500 Reverse Osmosis / Deionization water purification system is fully self operational. The exclusive power panel does all the work! Each time the tank calls for water, the system will self flush the RO Module for 2 minutes and then manufacture water. Unlike (typical) Reverse Osmosis systems, this unique design helps to preserve the Reverse Osmosis membrane by automatically flushing away contaminants and debris that would otherwise build up and create plaque on the membrane surface. And plaque, on your reverse osmosis membrane or on your teeth, is a bad thing!

NOTE: Should you leave your residence for a few days or more, turn off the cold water feed line, unplug the electric cord, and drain the tank via the faucet. Repeat the start up procedure when you return.

IMPORTANT: Monitor your system and check for leaks frequently over the first week.

Most leaks are attributed to tubing not fully seated inside the Speedfit® fittings. Remove the red lock clip, compress the collet, and remove the tubing. Re-insert the tubing until you feel it bottom out on the tubing end-stop. Replace the red lock clip. This process solves 99% of leaking connections. If the leak persists, trim ¼" – ½" off the end of the tubing and try again.

CHAPTER 2

Getting to Know Your BEV System

Your PWS® BEV-500 system combines the three most effective water purification technologies available. Alone, each of these methods is highly effective at a particular group of pollutants—but only when combined can you be assured of complete removal of all contaminants. Every system combines carbon adsorption, reverse osmosis, and deionization. By carefully matching the components utilizing these methods, Pure Water Systems is able to assure your system produces water which meets or exceeds the rigorous Vincent standards for bio-compatibility.

A Look At The Key Components

Two Stage Pre-filter: *(Part No: PWS-BEV100-012)*

This fully encapsulated module contains a carefully chosen grade of granular activated carbon to remove chlorine, chloramines, and other organic contaminants along with a nominal 10-20 micron sediment filter to remove silt, sand, rust, or other deposits commonly found in the feed water supply. This protects the Reverse Osmosis membrane from particles which might clog the pores. (Removal of chlorine is essential to protect the polyamide thin-film-composite (TFC) reverse osmosis membrane downstream.)

Reverse Osmosis Membrane: *(Part No: PWS-BEV-RO40)*

A custom designed, extremely efficient spiral wound reverse osmosis membrane produces up to 40 gallons 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 reject organic and biological contaminates, including waterborne microorganisms. (EPA EST. No. 52531-FL-01)

The RO membrane in this system can tolerate significantly higher concentrations of oxidizing contaminants like iron and manganese than RO membranes found in other systems, as well as

a much higher degree of hardness. However, there are limitations—the operating parameters for this custom designed RO membrane are found in the **Specifications** section of this manual.

Deionization Module: *(Part No: PWS-BEV-DI)*

This stage includes a unique blend of deionization resins carefully matched to our exceptional reverse osmosis membrane and provides superior rejection of monovalent ions, fluoride, and nitrates—contaminants only partially removed by the reverse osmosis process. It is the inclusion of deionization resins which sets the BEV systems apart from ordinary reverse osmosis systems. It is not enough to include any commercial grade resins; the blend of cationic and anionic resins must be a nuclear grade and carefully engineered to match the reverse osmosis membrane.

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 contaminates.

The final stages of our proprietary DI module are included to prevent the reverse migration of contaminates into the system. The inclusion of these technologies further separates the BEV systems from other brands. After carefully combining the previous components it is essential to include this technology to ensure 99.999% removal of bacteria, cyst, and virus. (EPA EST No. 52531-FL-01). These stages also prevent any contaminants from entering the system via the faucet.

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 available from your municipal water department. In many cases it can be found on the website of your local Department of Public Works.)

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 45 psi is recommended. (If your water pressure is below 45 psi, a booster pump is available. If you are on a private well, have your plumber raise the minimum pressure above 45 psi.)

In general, the higher the pressure (up to 100 psi), the better the performance of the membrane at rejecting contaminants. Pressures below 45 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 and Chloramines

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 and chloramines 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. Alternately, the design of the BEV-500 unit allows for addition of a dedicated sediment filter if clogging is a common occurrence.

Iron

The exceptional RO membrane in your PWS® BEV-500 series system can handle up to 3 ppm ferrous iron. RO membranes in ordinary RO systems can typically handle only 0.1 ppm. Concentrations greater than 0.1ppm normally require pre-treatment in ordinary RO systems. If your water supply has iron concentrations above 3ppm, pre-treatment is recommended.

Additionally...

Here is a little additional information about the ordinary Reverse Osmosis (RO) systems sold in hardware stores, wholesale clubs, and via the internet:

1) They state their systems must be installed on water with less than 10 grains of hardness. Otherwise you need an expensive water softener just for the RO system. Your PWS® BEV-500 can be installed on hard water up to 25 grains due to the patented flush.

2) There is a disclaimer that those units may not be installed on microbiologically unsafe water. But wouldn't that be a reason one would purchase a system? Your PWS® BEV-500 will remove disease causing waterborne microorganisms.

3) Their warranty is one year, but does not cover the RO membrane—yet that is the heart of the unit. When service is needed, you must ship the system out of town. Some require the module to be replaced every 6 months. Your PWS® BEV-500 carries a 5 Year warranty excluding normal filter changes or abuse.

You originally invested in your PWS® BEV-500 to provide your family the very best in water purification. There is hardly anything in this world that a man could not make a little worse or a little cheaper, and the people who consider price alone are this man's lawful prey. It's like this: we would rather explain price once than apologize for poor quality and service the rest of our life. We made the decision at the onset we would never sacrifice or lower quality for price—too much depends on it. Would you prefer that your family drink from a system whose poor technology and cheap design allows them to continue to consume dangerous toxins. . . or a product that provides the safest and most pure drinking and cooking water available?

CHAPTER 3

Maintenance And Servicing

Minimal work is required to keep your PWS® BEV-500 system in peak operating condition. The automated flush mechanism in the BEV-500 eliminates a weekly task as the system flushes automatically each time it is called on to refill the storage tank.

Your interaction with the unit will consist of replacing the filter modules as recommended, and perhaps wiping the dust off the cover occasionally! (The replacement schedule is detailed in Appendix B, and is printed on the anodized aluminum frame of the Main Assembly.) These simple steps will insure your unit consistently produces ultra-pure water meeting BEV standards for bio-compatibility.

Exterior Cleaning

The Plexiglas cover of the BEV-500 can be kept looking like new by occasionally cleaning the surface with a soft cloth. Do not use harsh chemicals or solvents. Besides occasional dusting, you might chose a mild, non-abrasive dish soap and soft sponge to remove smudges or stains, then rinse and dry the surface. Do not use abrasive scouring powders or glass cleaning products containing ammonia.

Flushing

The new BEV-500 handles all the flushing tasks on its own!

If your system has not been used for multiple days (e.g. while you are on vacation) turn off the cold water feed line, unplug the electric cord, and drain the tank via the faucet. Repeat the start up procedure when you return. The system will perform an extended flush then refill the storage tank.

Filter Replacement

After 12 months of use, it is time to replace the pre-filter and the deionization module to insure your system is producing water within BEV parameters. Replacement modules can be ordered directly from Pure Water Systems via our web site http://**www.purewatersystems.com**.

It makes good sense to have some towels on-hand. Changing filters will normally involve some areas getting wet as the small amount of water stored in various tubes spills out during this process.

1) Remove the contents from beneath the kitchen sink where the Main Assembly is located.
2) Disconnect the transformer from the outlet.
3) Remove the tubing connections from the front of the Main Assembly, i.e. feed water tubing, drain tubing, and connection to the storage tank.
4) Lift the Main Assembly up and off the screws securing it to the cabinet side-wall.
5) Choose a work area with a large flat surface such as a kitchen table.
6) Place a soft clean towel on the working surface – it will absorb the small amount of water that will spill from the modules as they are changed out, and it will protect the surface of both the table and your BEV-500 Plexiglas cover.
7) Turn the unit over on the towel, exposing the filter modules.

Removing The Modules

Before proceeding, study Figure 1 below, and *Figure C2 on page 34.*

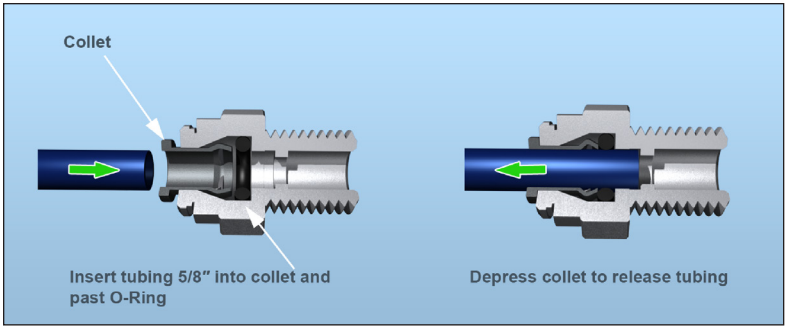


Figure 1, Speedfit® Push-in Fittings

Remove the tubing connections to the different modules as needed (Pre-Filter, Deionization Module, Reverse Osmosis Pressure Vessel). Study figure above detailing how to release tubing and follow the procedure outlined. (Generally the collet can be depressed with the thumbnail of one hand, and the tubing can be pulled out with the other hand.)

1) The first module you need to remove is the 2-stage pre-filter (PWS-BEV100-012). It is supported by two "Double C" clamps which are attached to the RO Pressure Vessel. At one end of the pre-filter the feed water tube enters from the feed assembly. At the other end a piece of tubing connects to the inlet of the RO Pressure Vessel.

   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.

To insure your system will be water-tight even after being shipped across country, we have inserted small plastic retaining clips on each fitting. These are easily removed with your fingers or, if grabbing the clip is difficult, you may wish to use a pair of needle-nose pliers.

2) Remove the retaining clips from each end of the pre-filter, then remove the tubing itself. You will feel some resistance as the tubing slides away from the O-ring inside the fitting.

3) With the pre-filter free of its connections, it can now be removed from the two "Double C" clamps holding it to the RO Module. **Note the direction of the "FLOW" arrow. You will need to install the new pre-filter in the same orientation.**

4) Moving on to the Deionization Module and the RO Pressure Vessel—these two modules are attached with a custom "butterfly clamp" secured by two wing nuts.

5) Disconnect the tubing from each end of the Deionization Module. **Note the direction of the "FLOW" arrow. You will need to install the new DI Module in the same orientation.**

6) One end of the RO Vessel has two connections—one blue tube connects to the DI Module, and one black tube connects to the Main Assembly. Remove the black tube from the RO Vessel.

7) You can now remove the two wing nuts which secure the RO Vessel and DI module to the Main Assembly. You can now remove the RO Vessel and DI Module from the frame.

8) Note: If this is the first time you are replacing the DI Module, you will find both the DI Module and RO Module are secured to the clamps with double sided adhesive tape (installed to prevent shifting and damage during transit). The adhesive will release if you carefully, and slowly, rotate the DI Module away from the clamp. It is not necessary to replace the adhesive when re-assembling the system.

9) Place the new DI Module in position, and replace the RO Vessel, butterfly clamps, and wing-nuts. Re-insert the blue tubing coming from the RO Module into the inlet end of the DI Module.

10) Re-insert the black tubing into the brine water discharge port on the RO Module.

11) Replace the red lock-clips.

12) Snap the two "Double-C" clamps back onto the RO Vessel.

13) Install the new pre-filter, being sure to arrange the flow arrow in the same direction noted in step 3 above.

14) Re-insert the feed water tube into the inlet of the pre-filter, and re-connect tubing from the pre-filter outlet to the inlet on the RO Vessel.

15) Double check your connections, and replace any remaining red lock-clips.

16) You can now re-hang the Main Assembly on the cabinet wall, re-attach the Feed Water tubing, the Drain tubing, and the tubing connecting the storage tank. Plug the transformer back into the socket, and slowly re-open the feed supply valve.

IMPORTANT: After changing filters, monitor your system and check for leaks frequently for the next several days.

Most leaks are attributed to tubing not fully seated inside the Speedfit® fittings. Remove the red lock clip, compress the collet, and remove the tubing. Re-insert the tubing until you feel it bottom out on the tubing end-stop. Replace the red lock clip. This process solves 99% of leaking connections. If the leak persists, trim ¼" off the end of the tubing and try again.

CHAPTER 4

Frequently Asked Questions

Q: When system enters FLUSH mode, it makes noise. Is this normal?

A: When your system is flushing, water is flowing to the drain much faster than in normal production mode. The check valves and solenoids will sometimes chatter with the increased flow, and this can be heard as a hum, a buzz, or a rattle. This noise will stop after 2 minutes and the system leaves FLUSH mode entering production mode.

Also, when your system is first put in service, or after changing filters, there may be air in the lines that can also cause noise from the system. After a few days the noise typically will go away.

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

A: Under most normal 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 very rare cases, it may be necessary to replace the pre-filter more frequently.

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 2–4 years. If a membrane fails or its performance becomes reduced before this time, the cause can usually be traced to tap 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. (Poor rejection rates may also be an indication of a plugged 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.

To monitor overall system performance and rejection rates, the best method is to obtain TDS

meter from Pure Water Systems.

Q: When the system is filling, a small stream of water is constantly running into the drain—is this normal?

A: Yes. To keep reverse osmosis membranes from fouling, water must continuously be washing over the membrane surface, carrying away concentrated contaminants. Your BEV system uses 2.5–3 gallons to produce 1 gallon of pure BEV water. (Filling the reservoir uses less water than a typical 5 minute shower).

Q: Will I lose valuable trace minerals by drinking reverse osmosis water?

A: No. Our bodies do not easily assimilate the inorganic 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 pure water leach minerals from my body?

A: This question reflects one of the common myths found in the water industry. It has no basis in fact or physiologic science. Pure water does perform a valuable function by helping the body eliminate wastes and unused minerals that have been excreted from cellular tissues, but it does not "leach" minerals out of the cells. This false claim was probably first made by companies wanting to boost sales of filters incapable of removing dissolved minerals salts and dangerous heavy metals. Ask your Authorized Pure Water Systems Dealer for a copy of "The Role of Pure Water in Detoxification." (Can also be found on our website!)

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 gallon fruit juice bottles are an excellent choice. If you store or transport your BEV water in plastic or polycarbonate containers, be sure to keep the containers out of direct sunlight. Pure Water Systems also offers several BPA-Free storage bottles, including 2-Gallon Refrigerator Bottles with built-in spigot.

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

A: Should you leave your residence for a few days or more, (e.g. while on vacation) turn off the cold water feed line, unplug the electric cord, and drain the tank via the faucet. Repeat the start up procedure when you return.

CHAPTER 5

Limited Warranty

Pure Water Systems, Inc. warrants, to the original owner, each PWS® BEV-500 pure water appliance to be free from defects in materials and workmanship for 5 Years from date of Purchase.

What The Warranty Covers

5-Year Warranty on all parts (excluding normal module changes or abuse).

Your PWS® BEV-500 pure water appliance is a sophisticated water purification system. Failure to follow the maintenance schedule or use other-than genuine Pure Water Systems components will void the warranty.

Exceptions to 5-Year Warranty

The 5-Year 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.
18354 S. Grasle Rd.
Oregon City, Oregon 97045
Phone: (503) 631-7712

Your Pure Water Systems, Inc. PWS® BEV-500 Pure Water appliance is a sophisticated water treatment system. Failure to use genuine Pure Water Systems, Inc. components will void the 5-Year 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.

APPENDIX A

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)
Operating Temperature	40–100° F (4–38° C)
Operating Pressure	45–100 psi (3.1–6.9 bar)
pH Range	3.0–11.0
TDS Level, Maximum	2000 ppm
Turbidity	< 1.0 Net Turbidity (NTU)
Chlorine (Cl_2)	0.00 mg/l *
Hardness ($CaCO_3$)	< 350 mg/l (<20 grains/gallon)
Iron (Fe) & Manganese (Mn) combined	< 3 mg/l Ferrous Iron
Hydrogen Sulfide (H_2S)	0.00 mg/l

* Every system is equipped with our unique combination pre-filter to remove sediment and chlorine.

You can obtain specifics about your water supply from your local water department, a water testing service (listed in the Yellow Pages under "Analytical Labs"), or online from National Testing Laboratories at **http://www.watercheck.com**. If the parameters of your water do not fall within the specified ranges as noted above, please contact Pure Water Systems or your Authorized Distributor for treatment 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 (less than 45 PSI) BEV values cannot be assured. The addition of a booster pump (PWS-BP-500) is strongly recommended.

(A simple gauge for measuring water pressure can be obtained from home improvement stores, usually for less than $10.)

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.

This reverse osmosis / deionization system contains replaceable treatment components critical for effective reduction of TDS. Product water should be tested periodically to verify that the system is performing properly.

This system conforms to standards for the reduction of TDS as verified and substantiated by test data. While testing was performed under laboratory conditions, actual performance may vary.

It is important to note the applied standard does not allow for evaluation of the deionization phase of our design, so test results are not reflective of the full purification possible from a fully configured PWS® BEV-300 system (including DI Module). A full PERFORMANCE DATA SHEET is available upon request.

Source Water Supply Profile	
Community/Private	Chlorinated / Non-Chlorinated
Operating Feed Water Pressure	45–100 psi (3.1–6.9 bar)
Temperature	40–100° F (4–38° C)
pH Range	3.0–11.0
TDS Level, Maximum	2000 ppm
Turbidity	< 1.0 Net Turbidity (NTU)
Chemical Parameters	**Max mg/L (ppm)**
Hardness ($CaCO_3$)	< 350 (20 gpg)
Iron (Fe) & Manganese (Mn) combined	< 3.0
Hydrogen Sulfide (H_2S)	0.00
Chlorine (Cl_2)	0.00*
* Every system is equipped with granular activated carbon pre-filters to remove organic contaminants and chlorine.	

NOTES:
1) A PRESSURE REGULATOR IS RECOMMENDED FOR FEED WATER PRESSURES EXCEEDING 80 PSIG (5.5 bar).

APPENDIX B

Replacement Schedule

Below you can find the recommended replacement schedule and part numbers for the components of your PWS® BEV-500 pure water appliance.

Replacement Components

Module	Replacement Schedule	Order No.
Sediment & GAC Pre-filter	Annually	PWS-BEV100-012
Deionization Module	Annually	PWS-BEV-DI
BEV Series RO Membrane	2-3 years (as needed)	PWS-BEV-RO40
GAC Post-Filter	replace w/ RO membrane	PWS-TCR6

Purchase Date: _____

Purchased From: _____

Serial Number: _____

Maintenance Log

Module	Date Replaced

Module	Date Replaced

APPENDIX C

Connections

Figure C1: Sink Mounted Faucet Assembly

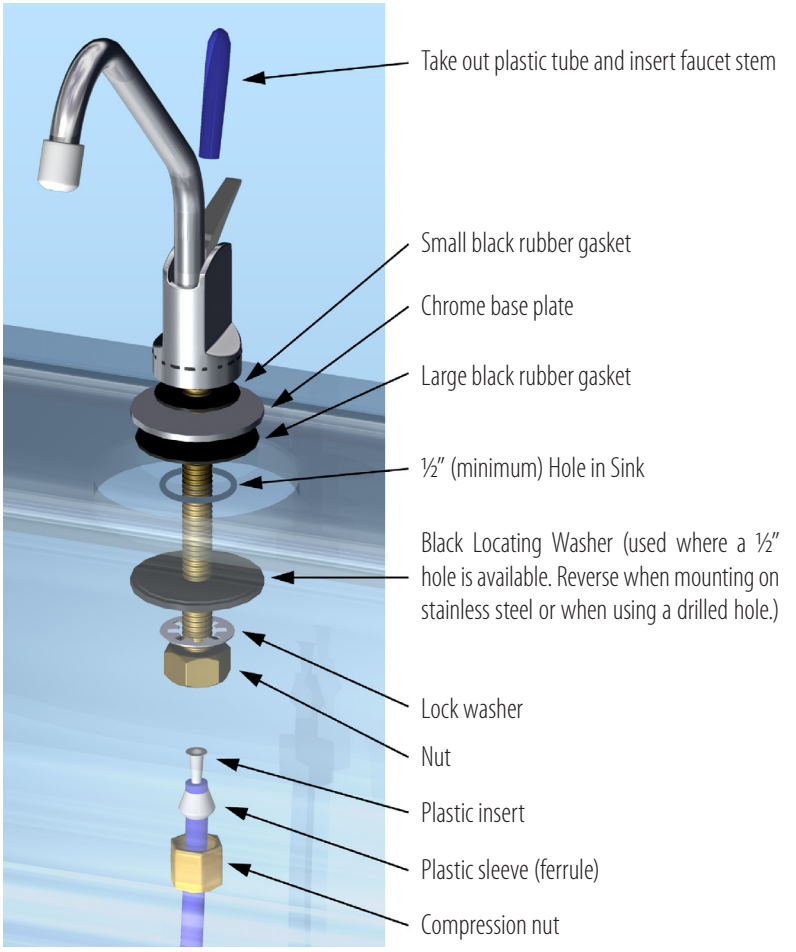
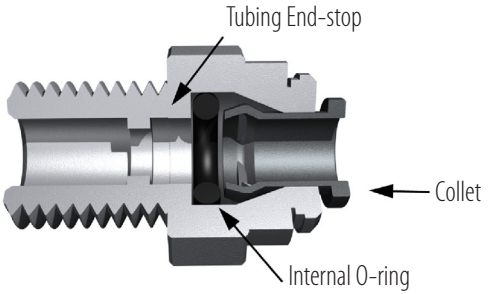
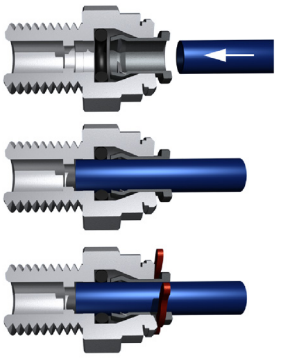


Figure C2: Anatomy of John Guest *Speedfit*® Fittings



To make a connection:



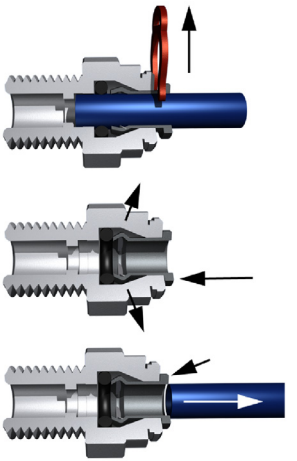
1) Insert tubing into fitting,

2) Past the internal O-ring,

3) Until it bottoms out against the tubing end-stop.

4) Pull on tubing to ensure a secure connection, then slide red lock clip between collet and fitting.

To remove tubing:

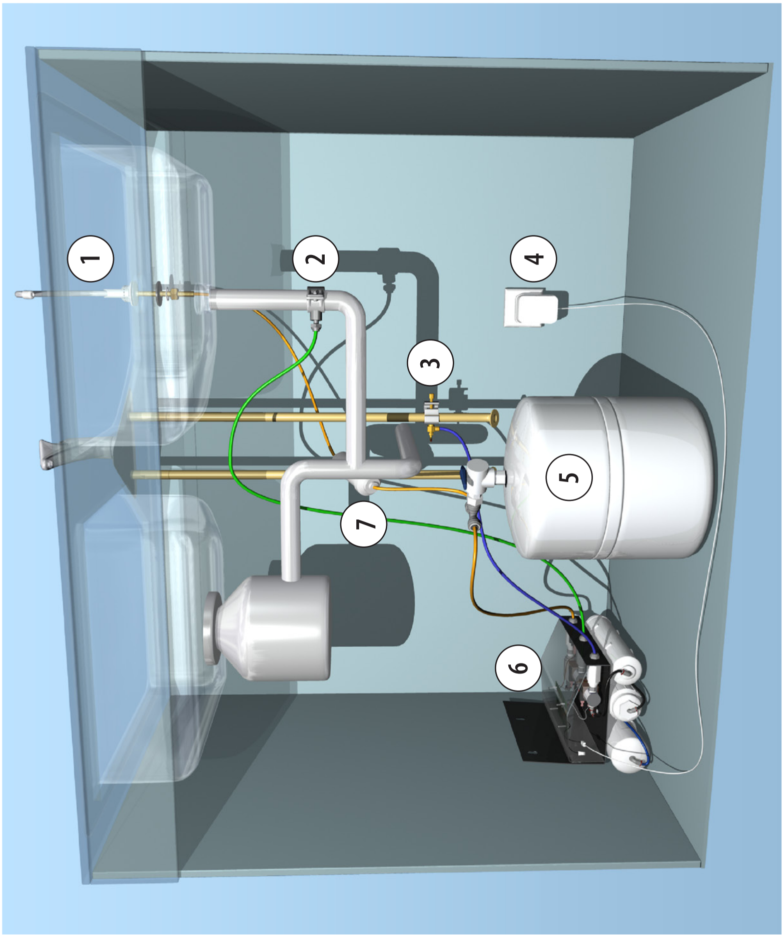


1) Remove the red lock-clip

2) [With your thumbnail] Push the collet up against the body of the fitting which will release the internal teeth.

3) While continuing to compress the collet, pull out the tubing.

Figure C3: PWS® BEV-500 Installation Diagram



1) Sink Mounted Faucet

2) Drain Saddle Valve

3) Feed-water Saddle Valve

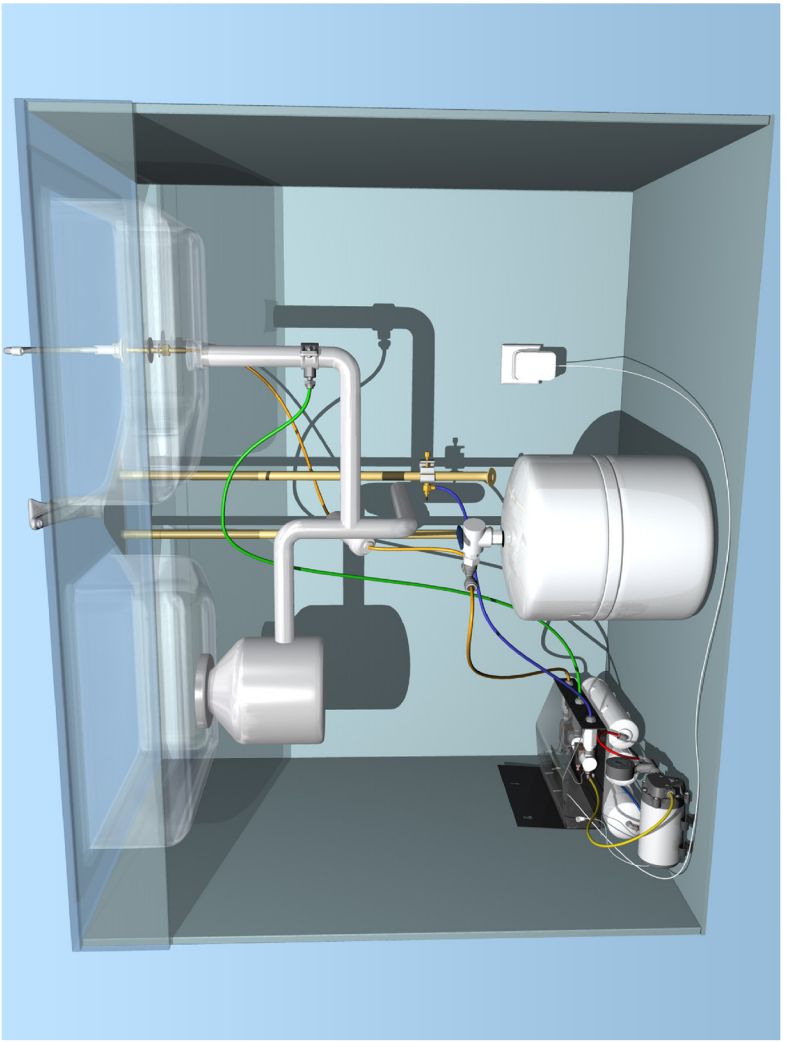
4) Transformer

5) Storage Tank

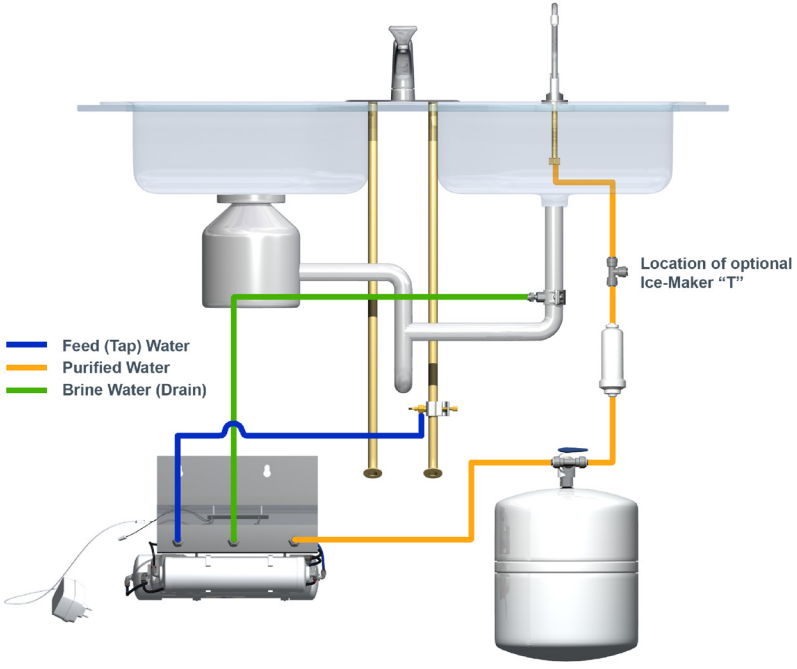
6) PWS® BEV-500 Main Assembly

7) GAC Post Filter–TCR6 (obscured by plumbing pipes)

Figure C4: PWS® BEV-500 Diagram with Optional Booster Pump



Schematic



Purpose of diagram is to indicate tubing connections and location of components relative to water flow. Diagram is not drawn to scale and is not intended to indicate actual position of components beneath the sink.

APPENDIX

E

Installing the Optional Pump

Prepare to Mount the Pump (BP500)

Identify a location for the pump. The pump can be placed on the floor for convenience, preferably in close proximity to the main assembly. This will ensure that the tubing is kept to a minimum and is neatly arranged.

If you choose to mount the pump on the cabinet sidewall, do not attach the pump with screws until the tubing connections are completed. Prepare your mounting location using a pencil to mark the locations of the screw holes. (A pilot hole using a 1/16" drill bit is recommended for particle board side-walls.)

In the BEV500 main assembly, the Sediment & Carbon pre-filter (PWS-BEV100-012) is connected between the feed-water solenoid (within the Main Assembly, behind the "IN-FEED WATER" fitting) and the Reverse Osmosis Pressure Vessel (ROPV). Flow comes through the feed-water solenoid, to the pre-filter, and then to the ROPV. Remove the tubing between the feed-water solenoid and the pre-filter—the pump will be connected between these fittings. *(See Figure E1).*

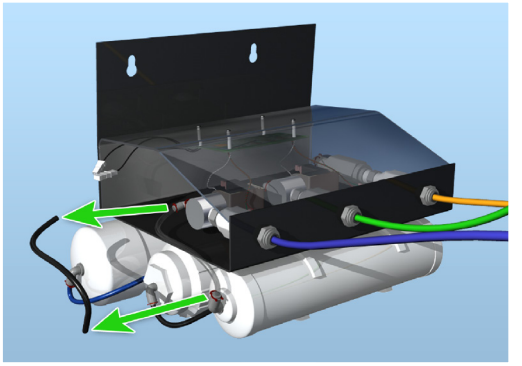


Figure E1, Remove tubing that connects feed-water solenoid to Sediment & Carbon Pre-filter

Connect the Pressure Gauge to the Pump

The BP500 booster pump includes both a pump and a pressure gauge. Remove the blug dust-plugs on the pump by depressing the collets and pulling out the plugs. *(See Figure E2, next page).*

The pressure gauge is mounted to a stainless steel union-tee which includes a stem adaptor on one end, and a ¼" tubing connection on the other.

Looking at the end of the pump as shown in *Figure E2,* you will see small arrows on the pump head indicating direction of flow. Insert the stem of the pressure gauge assembly firmly into the OUTLET of the booster pump. *(See Figure E3)*

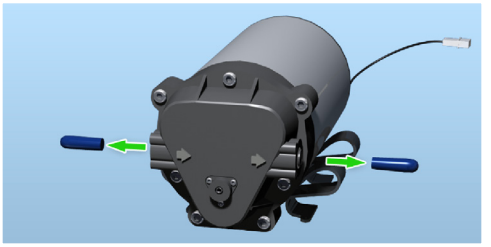


Figure E2, Remove the dust-plugs

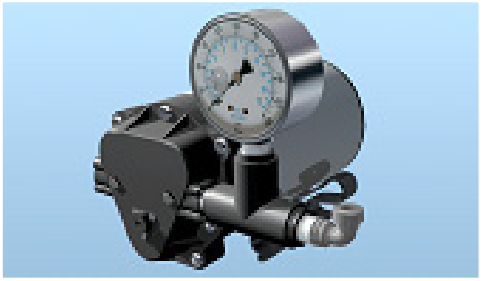


Figure E3, Insert stem of Gauge assy. into Pump OUTLET

Connect Tubing Between Pump and Feed-water Solenoid

Measure and cut a length of the **yellow** tubing to connect between the pump inlet (note flow arrows on the end of the pump) and the feed-water solenoid. Insert one end of the **yellow** tubing into the the feed-water solenoid. *(See Figure E4)* Insert the other end of tubing into the INLET of the booster pump.

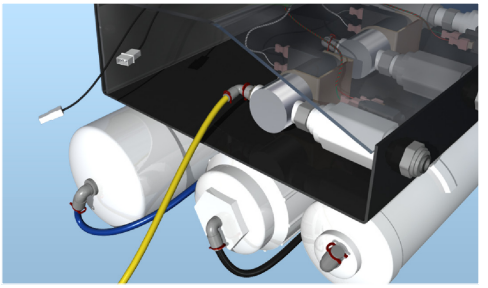


Figure E4, Connect yellow tubing to Feed-water solenoid

Connect Pump to Pre-filter

Measure and cut a length of the **red** tubing to connect the pump to the inlet of the Sediment & Carbon pre-filter. *(See Figure E5, next page)* Insert locking clips between the collet and fitting on all tubing connections.

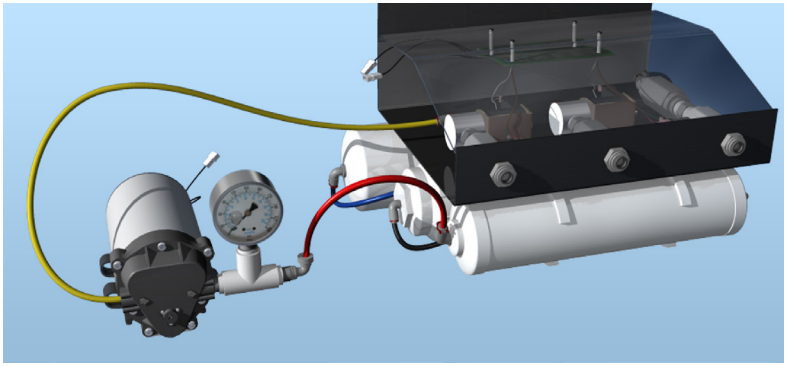


Figure E5, Completed tubing connections using BP500 Booster Pump

Make the Wiring Connection

The BEV-500 Main Assembly is pre-wired with a male 2-pin wire connector to connect to the female 2-pin connector of the booster pump. *(See Figure E6, below)*

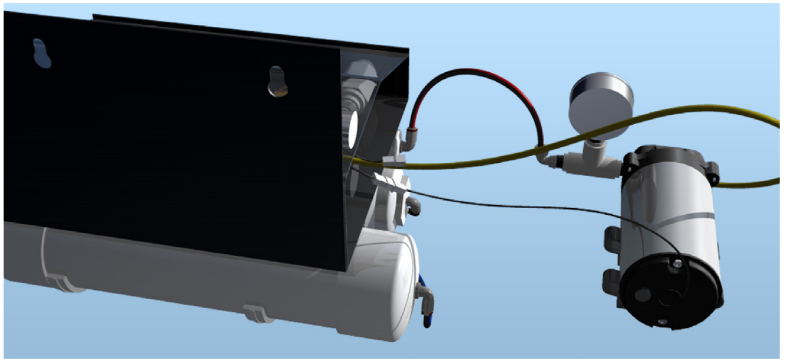


Figure E6, Connection of pump to pre-wired plug on the Main Assembly

Mount the Pump (BP500)

With the tubing connections completed between pump inlet and outlet; and wiring connections made, the pump can be mounted. You can rotate the face of the pressure gauge, if needed, for easier reading.

www.purewatersystems.com