

# OptiPure

## BWS100

Advanced Membrane  
Separation System

Installation, Operation  
& Maintenance Manual  
Rev. 4



Manufactured By:  
OptiPure Div. of AQUION, Inc.  
101 South Gary Avenue, Suite A  
Roselle, IL 60172  
P: 972.881.9797

## General Information

### Introduction

The BWS100 Blended Reverse Osmosis System uses pressure to allow pure water molecules to filter through its semipermeable membrane separating pure water from dissolved solids (salts) and other contaminants. In essence the membrane splits feed water into two separate streams. One stream is the water produced for use (product or pure water), and the other contains the salts and contaminants filtered out by the membrane (reject) carried away to the drain. The OptiPure BWS100 is designed to produce water at a 33% recovery rate which means it uses water at a ratio two gallons of reject water for each gallon of pure water produced. This is a **Product/Reject Ratio of 1:2**.

The Optimized Water is stored in a hydrophneumatic storage tank. This type of storage tank utilizes a rubber bladder or diaphragm which separates the tank into two compartments; stored water and pressurized air (pre-set air pressure charge). As the water (under pressure) is forced into the storage tank the air becomes compressed. The compressed air provides the water flow and pressure to the equipment it feeds.

The "pure water" produced by the membrane is not always appropriate for use with foodservice equipment. The BWS100 system also allows blending filtered water with the pure water to produce **Optimized Water** which can be adjusted to provide the ideal characteristics for foodservice equipment applications. Instructions for blending Optimized water are on page 11.

The TDS (Total Dissolved Solids – dissolved minerals) of the Optimized Water can be viewed at any time with the systems Water Quality Monitor. It is important to note that during normal operation the WQM displays the TDS of the water from the storage tank – not from the system Blending Valve, so it shows you the actual quality of the water being sent to your equipment.

On the way to the equipment, the water from the storage tank passes through the system post-filter to "polish" the water by removing any taste or odor that the pure water might have picked up from the system components or storage tank.

### Safety Warning

Plumbing and installation work should be performed by a qualified plumber or installer in accordance with all applicable codes and regulations.

## Safety Instructions

1. Please read and follow these instructions when connecting and using the system.
2. Never use CO<sup>2</sup> as a substitute for the compressed air charge in the sealed pressurized water storage tank.
3. Never install a water treatment system over sensitive electronic equipment. Water leaks or splash during filter changes may damage or create a hazardous condition when system is installed above or over electrical equipment.
4. Do not install water treatment systems on water supplies that are microbiologically unsafe or of unknown quality without adequate disinfection before or after the system.
5. Avoid cross-connections and install on cold water supply only.
6. Use approved Air-Gaps when connecting to drain lines.
7. Do not exceed system pressure rating and use water hammer arrestors when water hammer is evident.
8. Turn off Feed-Water supply before filter or membrane cartridge replacement.



**WARNING:**  
Cancer and Reproductive Harm -  
[www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

## Service Contact

For local maintenance and service information please contact your nearest Authorized Service Representative. Service inquiries may be directed to technical support at:

OptiPure div. of AQUION Inc.  
101 South Gary Avenue, Suite A  
Roselle, IL 60172

Phone #: 972.881.9797

E-mail correspondence to:  
[techsupport@optipure.net](mailto:techsupport@optipure.net)

## Getting To Know Your System

The BWS100 Advanced Membrane Separation System is designed specifically for users that desire the ability to customize the TDS (Total Dissolved Solids) level or “Mineral Content” of the treated water. The BWS100 utilizes a precision multi-turn **Blending Valve** to accomplish this with great accuracy. This system design maximizes the ability to accurately blend a calculated percentage of the **filtered water** with the product water exiting the AMS-QT10 Membrane providing an Optimized Water to your equipment with the characteristics that you desire.

**Blending Valve**  
- Allows precise adjustment of optimized water TDS (mineral content).

**Water Quality Indicator** - Operates momentarily, push purple button to turn on. Push “IN” button for the feed water TDS. Push “OUT” button for the Optimized Water TDS.

### Environmental Conditions

The BWS100 is certified to operate under the following conditions:

1. Altitude up to 2000 m.
2. Ambient temperature of 40-105°F (5-40°C).
3. Max relative humidity 80% at 88°F (31°C).
4. Installation category II.
5. Pollution degree II.
6. Indoor use only.

**Optimized Water Outlet**  
- 3/8” Push-Fit Connection- Connect to equipment inlet

**Tank Inlet Valve**  
- 3/8” TrueSeal Push-to-Connect - Connect to Optimized Water Outlet on BWS100 processor.

**Reject Water Outlet** - 1/4” Push-to-Connect - Connect to drain per local regulations.

**Sample/Flush Port** - 3/8” Push-to-Connect - Used to flush pre filters or gather water sample or to measure production.

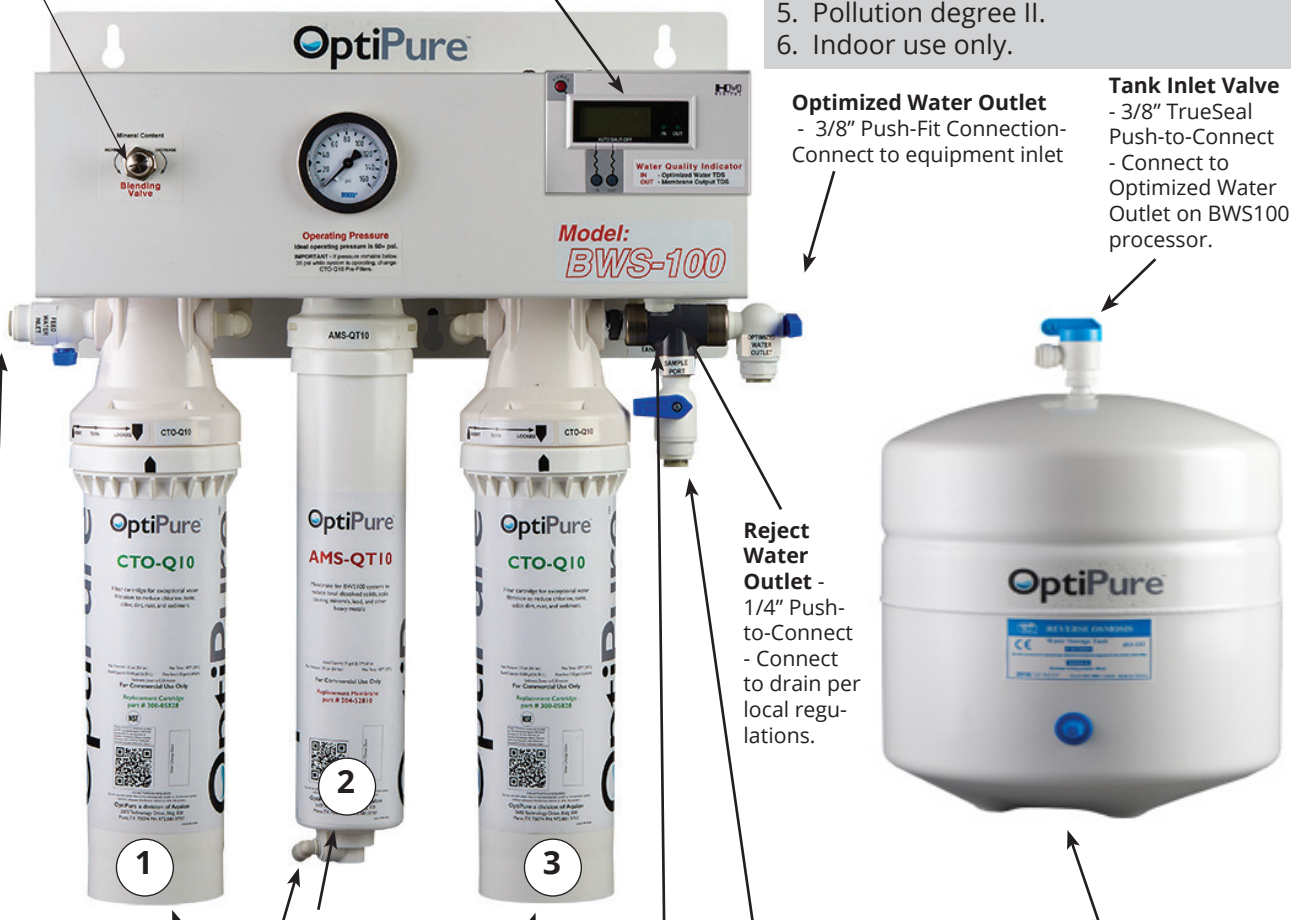
**Optimized Water Storage Tank** - 2.6/6/10/16 gal. Pressurized

**Feed water Inlet** 3/8” Push-To-Connect - Connect to Water Supply Valve.

Membrane Reject Water Tubing Connection

**Optimized Water Outlet** - 3/8” Push-To-Connect - Connect to Tank Inlet

**2x CTO-Q10 Pre/Post-Filters**  
PN: 300-05828



## Installation Requirements

This section and the next provide the water and space requirements for the BWS100. **Pay special attention to the feed-water chemistry requirements.** Operating a system on water supplies outside of these parameters may lead to premature membrane failure. This product is for commercial use only and must be installed and maintained in accordance with manufacturer's guidelines and local regulatory plumbing and electrical codes.

### Operating parameters

Typical Membrane TDS\* rejection:  
 97+% without blending

Feed Temperature: 40 - 100° F (4 - 38° C)  
 Feed pressure: 50 - 85 psi  
 (3.4 - 5.9 bar) at 1 gpm

Production\*\* **(at 77°F, 60 psi)**  
 80 gals/day,  
 3.33 gals/hr, 0.056 gpm

Recovery: up to 33%

**IMPORTANT NOTE:** The nominal production rate is strictly dependent on feed water temperature and pressure. Reduced temperature or pressure will reduce production. For example: Operating pressure of 30 psi will cut production by 50%. 48 °F feedwater will cut production by 50%.

### Post-Treatment

Treated water stored in a tank may absorb organic compounds from the tank, which can affect water taste and odor. The BWS100 has an integrated Post-Carbon Filter to remove taste/odor and organics from the Optimized Water. Other specialized Post-Treatment is also available including bio-growth inhibition, stabilization, and dissolved gas reduction.

### Feed Water supply connection

An adequate flow and pressure of water to the unit is essential for successful operation. Provide a dedicated 1/2" water line to the vicinity of the installation. Install a full-flow ball valve and pressure gauge with 1/2" female pipe thread (User-supplied) for connection to installation hardware provided with the system. A 1/2" Male Pipe Thread x 3/8" Push-To-Connect Adapter is included in the installation kit.

### Drain

A drain should be located within 5 feet of the location of the unit. Drain must allow a minimum flow of 2 gallons per minute. Compliance with most local plumbing codes requires installation of an approved air gap in the drain line. The drain connection should be accessible for system

\*TDS (total dissolved solids) create conductivity in water and are expressed in ppm or mg/l (parts per million or milligram per liter). System Reject % depends on blended water setting.  
 \*\*Nominal production @ 77°F (25°C) @ 500 ppm based on a 24 hr day. Actual production will vary based on variations in water temperature, pressure, and TDS.

set-up and service.

### Feed-Water chemistry

Feed TDS	Up to 1200 ppm
Feed pH	6 - 10
Hardness***	12 grains or less
Free chlorine	<2 mg/l
Iron (Fe)	0.1 mg/l max.
Turbidity	<0.05 NTU
Manganese	0.05 mg/l max.
Hydrogen sulfide	0.0 mg/l

Water chemistry must be analyzed before installing the system. The information requested above can be obtained from your local water utility. If your water analysis shows that any of these parameters are not within range, additional pretreatment and/or higher frequency of maintenance may be required. Contact your OptiPure distributor for assistance. The presence of silica or flocculants such as alum or cationic polymers in the feedwater may cause membrane fouling and may require additional pre-treatment or more frequent membrane replacement. Please note that membrane failure due to fouling is not covered by the warranty.

## Before Installation

### Storage Tank

The tank must be located within 10 feet of the water processor unit. The floor beneath the storage tank should be smooth and level with sufficient strength to support the weight of the water in the tank. **Note: The tank is pressurized with a 7-10 psi air pre-charge.**

### IMPORTANT: DO NOT PROCEED BEFORE DETERMINING THE PROPER

### Water Quality Monitor mount location

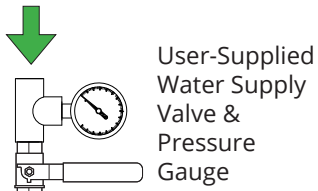
The Water Quality Monitor is shipped installed on the "Inlet end" or left end of the processor. This is ideal if the processor is installed under a counter on a left side wall. If the processor is mounted on the right side wall under counter or flat-mounted on a wall facing forward the Water Quality Monitor can be moved to any of the three mounting locations for easy viewing. Simply slide the WQM up off the bracket and remove the four screws and nuts and cut the nylon ties. Remount the bracket in the new locations and carefully (do not crimp or bend the cables sharply) route the conductivity probe cables and retie.

**See photos on Page 6 showing mount locations for Water Quality Monitor.**

\*\*\*Pretreatment with optional ScaleX2 (Model SX2-QT) or water softener is recommended when the calcium carbonate hardness exceeds 12 grains or 205 mg/l.

# Typical Wall-Mount Installation

## Feed Water

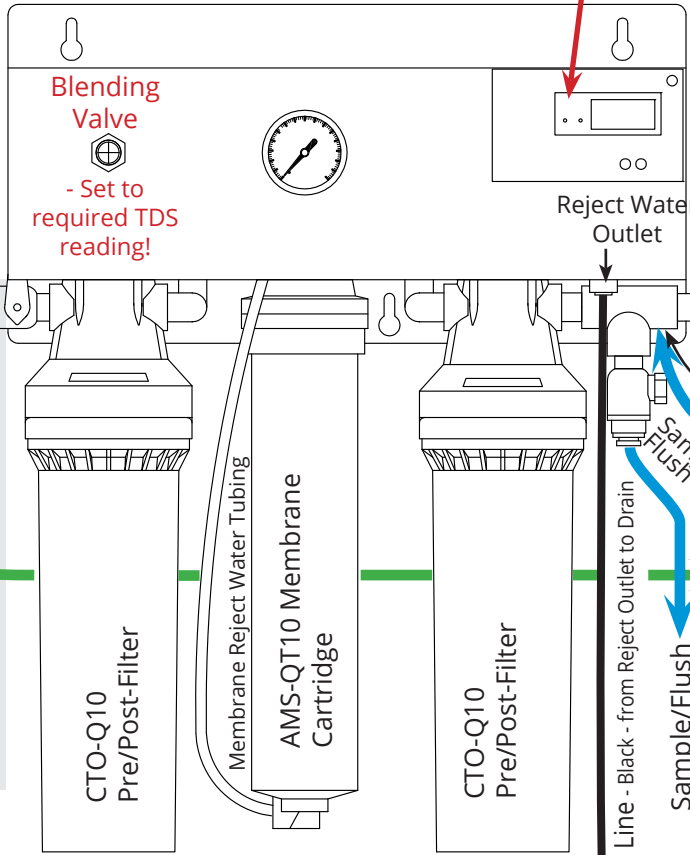


Feed Water Line - Green - from Water Supply Valve to Feed Water Inlet

OPTIONAL If hardness is over 12 grains: SX2-QT Pre-Filtration

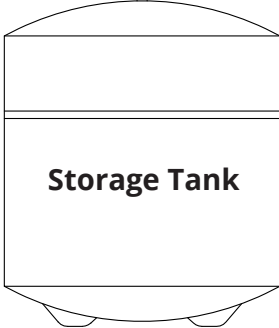
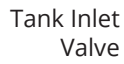
OPTIONAL Bypass Kit Bypass Line - Green - from Bypass Valve to Tee in Tank Line

## Water Processor



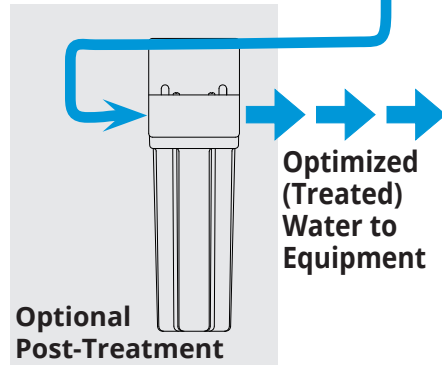
Water Quality Monitor - Install where accessible, on front or end of Processor

Reject Water (to Drain)



Storage Tank

Optimized Water Line - Blue - from "To Tank" Fitting to Tank



Optimized Water Line - Blue - from Outlet to Equipment

## Mounting the processor

The processor should always be mounted where it is well-supported, either using anchors or screwed directly into studs in a wall-board wall. **Never mount it directly to sheet-rock alone.** If necessary, pre-mount the processor on plywood or other suitable material to assure that the processor is well supported.

Three user-supplied bolts or screws with a head diameter of approximately 1/2" (which will fit into the keyholes in the system back plate, but will not slip out when tightened) should be used to hang the system. This will allow the unit to be lifted off the bolts, if necessary for maintenance, without removing all the bolts from the wall. Hold the processor in place (without the cartridges) to mark the locations for the screws. **BE SURE TO ALLOW 3" BELOW THE CARTRIDGES TO ALLOW FOR REMOVAL.** Screw the three bolts or screws in place, leaving approximately 1/4" clearance between the bottom of each bolt head and the wall. Position the system over the mounting bolts, and let the bracket slip down into the keyholes. Tighten all screws.

## Install QT Cartridges

NOTE: Before installing the QT Cartridges make sure to remove the three plugs in the QT heads.

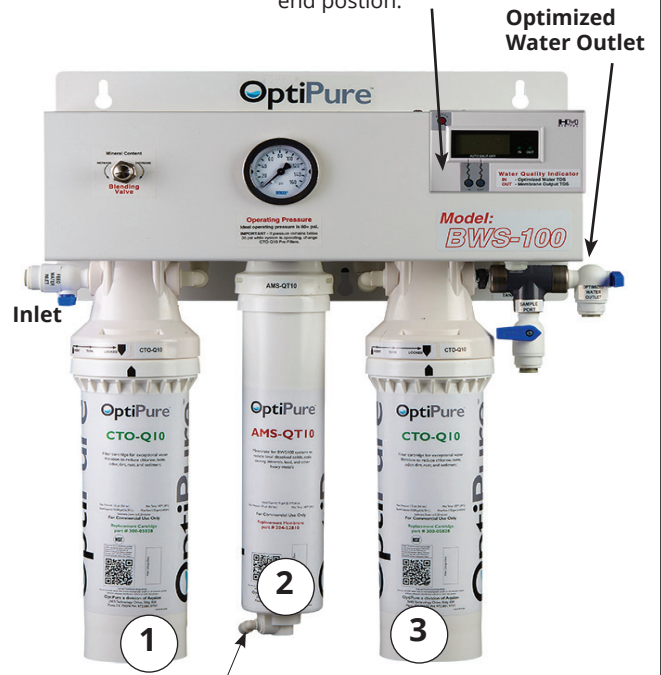
1. Insert the CTO-Q10 cartridges into QT heads 1 & 3 (starting from the left or inlet side of the processor) and turn to align arrows.
2. Insert the AMS-QT10 membrane cartridge into the QT head #2 (center) and turn to align arrows.
3. Connect the Push-to-Connect elbow (remove plug in elbow) on the end of the black Reject tubing to the stem connector on the bottom of the AMS-QT10 cartridge.

**Water Quality Monitor -**  
Shown installed in Inlet end position.



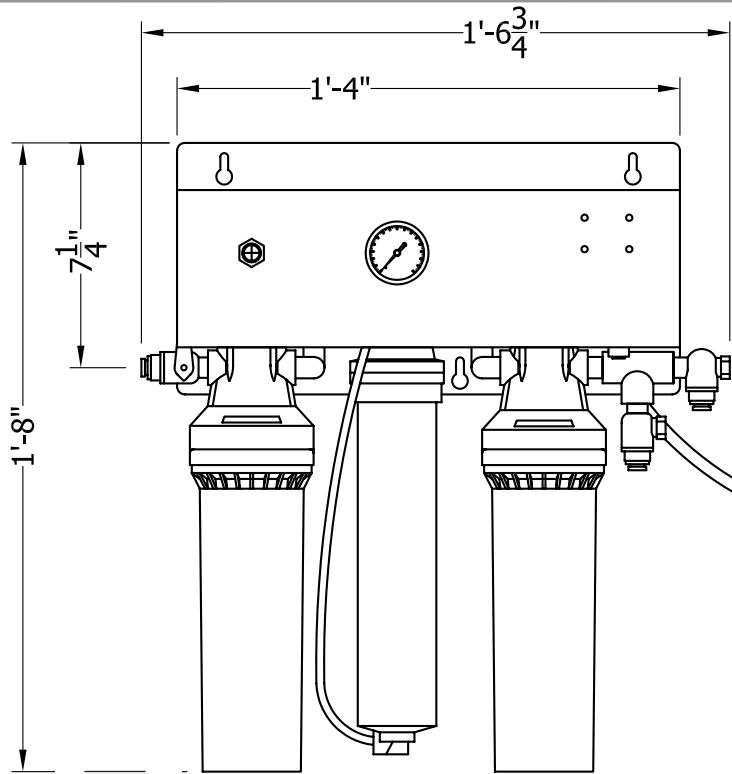
**IMPORTANT: Ensure Water Quality Monitor is installed in accessible position (See "Water Quality Monitor mount location", Page 5.)**

**Water Quality Monitor -**  
Shown installed on front panel. Ships installed in Inlet end position.



Reject tubing connected to stem connector on bottom of AMS-QT10 Cartridge

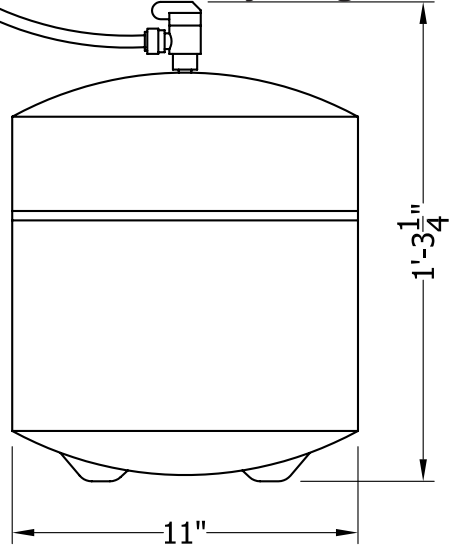
**Equipment Dimensions**



Allow 3" to remove cartridges

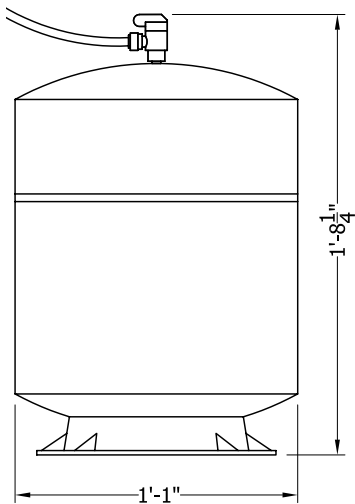
**Processor Front View**

**Tank Assembly (2.6 gal.)**

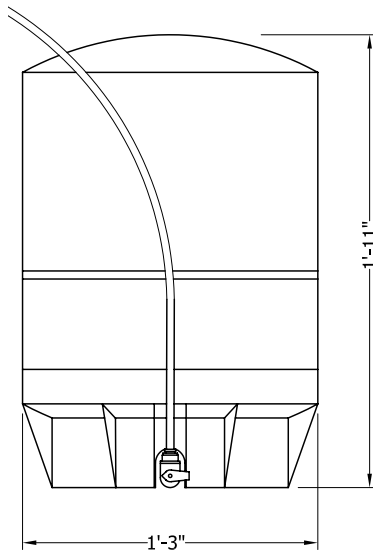


**IMPORTANT - ALLOW A MINIMUM OF 24" IN FRONT OF THE PROCESSOR FOR MAINTENANCE AND SERVICE. DO NOT MOUNT SYSTEM ABOVE THE CEILING OR IN A LOCATION THAT IS NOT EASILY ACCESSIBLE. ALWAYS LOCATE THE STORAGE TANK WHERE IT CAN BE ACCESSED (OR IS ACCESSIBLE) DURING SERVICE.**

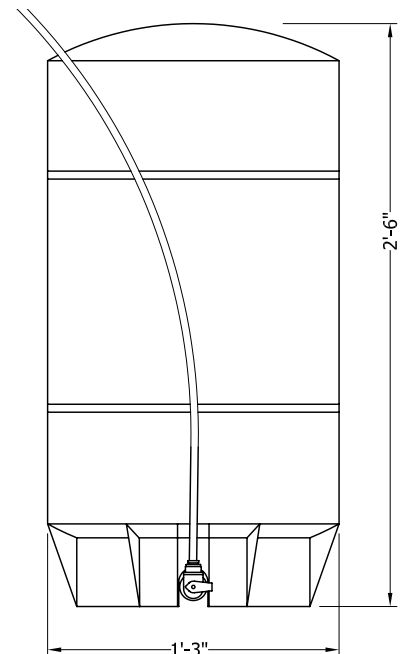
**Tank Assembly (5 gal.)**



**Tank Assembly (10 gal.)**



**Tank Assembly (16 gal.)**



## System Installation & Start-Up

Refer to "Typical Installation" diagram on page 5. See also "How to Use Our Push-to-Connect Fittings" on page 10.

A feed water ball valve and pressure gauge (see "Feed Water Supply Connection" on page 5) must be supplied to provide water to the system FEED WATER INLET with the green 3/8" tubing (supplied). Tubing and fittings for making connection between the Processor, Storage Tank, Drain and Optimized Water Outlet are also supplied in the installation kit with the system.

1. DRAIN: Connect the 1/4" BLACK TUBING to the REJECT WATER OUTLET on the processor. Run the line to an appropriate drain (see "Drain" on page 5). Observe local plumbing codes and supply an appropriate air gap and drain connection (hardware and fittings for the drain connection are user supplied).
2. FEED WATER: Screw the 1/2" FPT x 3/8" push-connect fitting (supplied) into the Feed Water Supply Ball Valve. Apply 3 'wraps' of Teflon tape to the fitting and tighten the fitting into the Supply Valve (DO NOT OVERTIGHTEN). Connect one end of the 3/8" GREEN TUBING to this fitting. Connect the other end of the tubing to the FEED WATER INLET VALVE located on the left side of the Processor. Cut the tubing to the required length if necessary.

**NOTE: When cutting the tubing use a sharp tubing cutter or blade and make a clean, straight cut before inserting into a push-connect fitting. When routing tubing to not make sharp bends or crimp the tubing.**

3. STORAGE TANK: Connect one end of the 3/8" BLUE TUBING into the OPTIMIZED WATER OUTLET push-connect fitting on the right underside of the processor. Route and connect the other end of this tubing to the STORAGE TANK VALVE.



Storage Tank Valve

4. SAMPLE PORT: Connect a remaining piece of the 3/8" tubing to the SAMPLE PORT VALVE on the right side of the processor. Provide enough tubing length to route this tubing to a bucket or drain. **NOTE:** The Sample Port valve will be used for system start-up, setup and maintenance procedures.

### System Start-Up

1. OPEN the Sample Port valve that is routed to a bucket. Make sure the Storage Tank valve is CLOSED.
2. Slowly OPEN the Feed Water Supply valve at the source connection and the Feed Water Inlet valve on the processor. You will begin to see water flow from the Drain line and then from the Sample Port.

**NOTE: If this is a new installation, it will take up to 5 minutes for the membrane to displace air before water will flow from the Sample Port.**

3. As the system fills with water, air and preservative from the filters and membrane will be purged from the system. Allow the system to flush for a few minutes and check all of the plumbing connections for leaks. **NOTE:** If leaks are detected, CLOSE the Feed Water Supply valve, correct the leaks and re-open the supply valve.
4. Once the system has been flushed for a few minutes, CLOSE the Sample Port valve. Water flow from the lines should stop. Check again for leaks and make corrections if needed.
5. Open the Storage Tank valve. The system will begin producing water flowing into the storage tank.

**The system installation and start-up is now complete, and basic system operation is tested and confirmed.**

**IMPORTANT: Complete the System Blend Adjustments before connecting the Optimized Water line to equipment.**



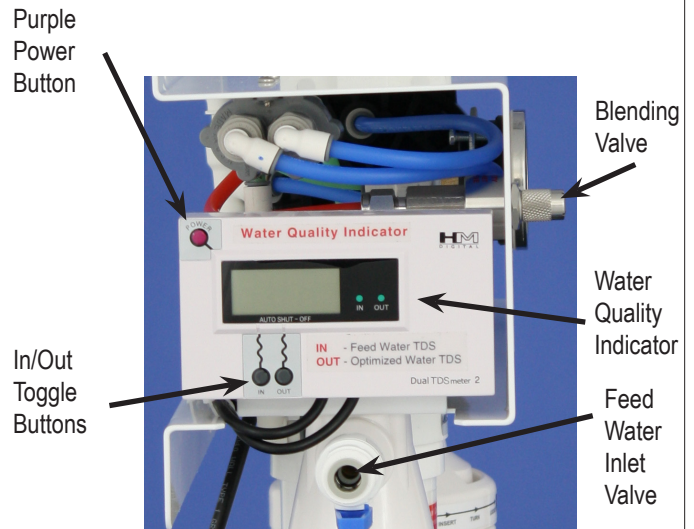
## System Blend Adjustments

**IMPORTANT:** It is important to note that water chemistry, and the equipment and product consideration involved in determining the ideal TDS "TARGET" for an application can be complex. Consult with your OptiPure Dealer or Contact the OptiPure factory for assistance with determining an appropriate TDS Target Range. An improper TDS setting or improper system maintenance will not deliver the desired benefits and can cause damage to equipment.

### Optimized Water TDS - Blending Adjustment

1. Close the Storage Tank valve, open the Sample Port valve and allow the system to run for a few minutes.
2. Push the purple "POWER" button on the Water Quality Monitor located on the upper left corner. It will immediately display the "IN" or Filtered Water TDS (Total Dissolved Solids) in PPM (parts per million). Document this number as the Feed Water TDS.
3. Within 30 seconds, push the "OUT" button to display the Optimized Water TDS and determine if this value is within the desired range.
4. If the "OUT" TDS is outside of the desired range turn the Blending Valve knob counter-clockwise to open the Blending Valve increasing the amount of Filtered Water blending with the RO water, thereby increasing the TDS of the Optimized Water.  
Turn the Blending Valve knob clockwise to close the blending valve, decreasing the amount of Filtered Water blending with the RO water, thereby decreasing the TDS of the Optimized Water.
5. Once the desired TDS is obtained allow the system to run for several minutes periodically checking the "OUT" TDS. Make smaller incremental adjustments as necessary until the TDS "Target" is achieved.

There are several factors that can impact the TDS of the Optimized Water besides adjusting the Blending Valve. They include changes in water pressure, seasonal changes in water temperature or TDS levels, and municipal blending practices. To assure consistent Water Quality year-round we recommend periodically checking the "IN" and "OUT" TDS and making adjustments as needed.



## Connect to Equipment

Once the System Installation, System Checks and System Adjustments are complete you can begin enjoying the benefits of Optimized Water with ideal characteristics for your application. Allow the Storage Tank to fill before connecting the Optimized Water distribution line to equipment. This will ensure that the equipment has adequate flow, pressure and available water to meet demands.

1. Connect the 3/8" BLUE TUBING (or other similar tubing) to the OPTIMIZED WATER OUTLET VALVE On the right side of the Processor. Route the tubing and make the connection to the equipment using the Optimized Water.
2. Open the Optimized Water Outlet valve at the Processor and any valves at the equipment. Check for leaks and make corrections as needed.
3. The installation process is now complete. The next step is to complete the Post-Installation Check List.

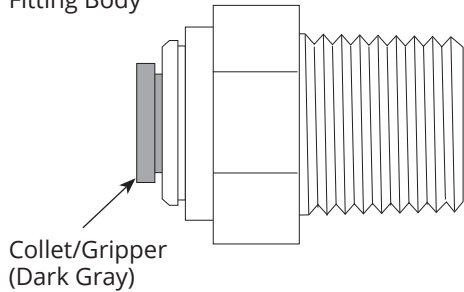
**Leave this manual and the Post-Installation Check List with the owner/operator of this BWS100 system.**

Before proceeding with the system connections familiarize yourself with the following instructions about:

**How to Use Our Push-to-Connect Fittings**

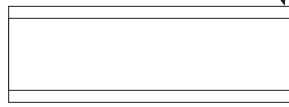
**Fitting Overview**

Fitting Body

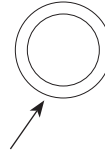


**Tubing Preparation**

The outside of the tubing must be free of knicks and gouges.



Cut tubing with a plastic tubing cutter or a razor knife. Make a clean, square cut.

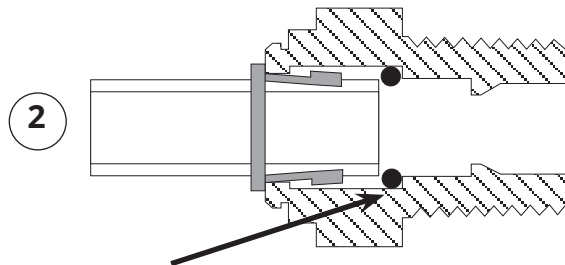


After cutting, make sure the end of the tube is round. Correct any out of roundness that may have occurred in cutting the tubing.

**To Attach Tubing:**

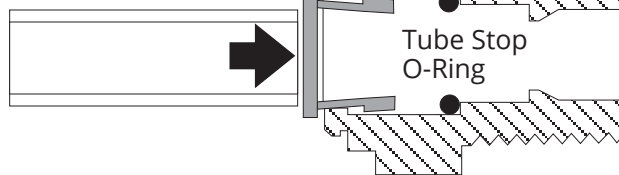
To ease insertion, moisten end of tubing with fresh water or 3% hydrogen peroxide solution.

Push tubing straight in.

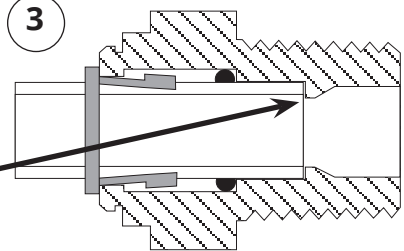


Resistance will be felt when the tubing meets the O ring.

Cutaway view of fitting and tubing



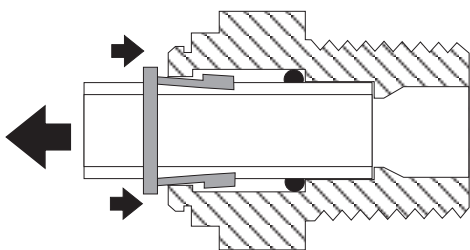
Keep pushing until the resistance is overcome and the tubing rests against the stop.



**To Remove Tubing or Plug:**

Press collet in to release grippers. While holding the collet in, pull out on the tubing or plug (used during shipping).

It may be necessary to use a partially open crescent wrench or similar device to hold both sides of the collet in while pulling the tubing out.



**Opening & Closing Valves:**

Valve handle in the image is shown in the "OPEN" position



Turn the handle 90° closes the valve interrupting flow. Dotted line represents position of handle when valve is closed.

### Tank Components



Tank Inlet Valve -  
PN: 524-00105

Tank Assembly,  
including Valve -  
PN: 194-00002

Tank Assembly,  
including Valve -  
PN: 194-00005



Tank Assembly,  
including Valve -  
PN: 194-00016

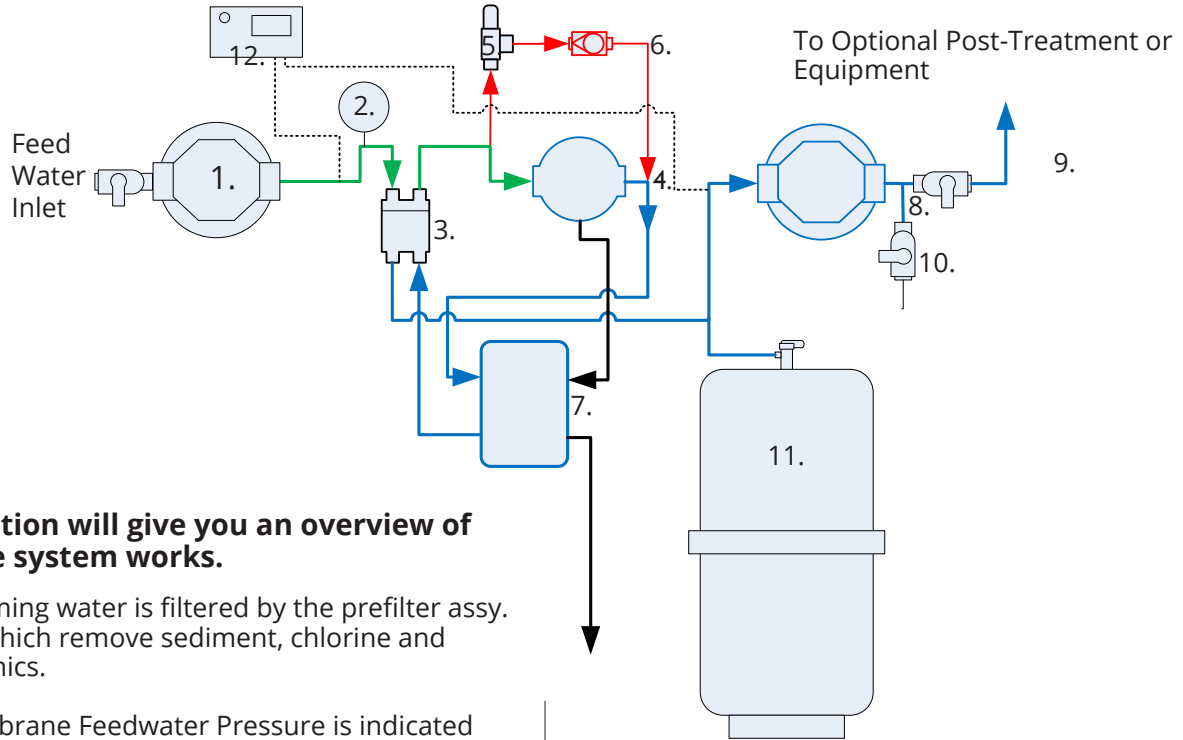
Tank Assembly,  
including Valve -  
PN: 194-00010



Tank Inlet  
Valve -  
PN: 520-12216

Tank Inlet  
Valve -  
PN: 520-12220

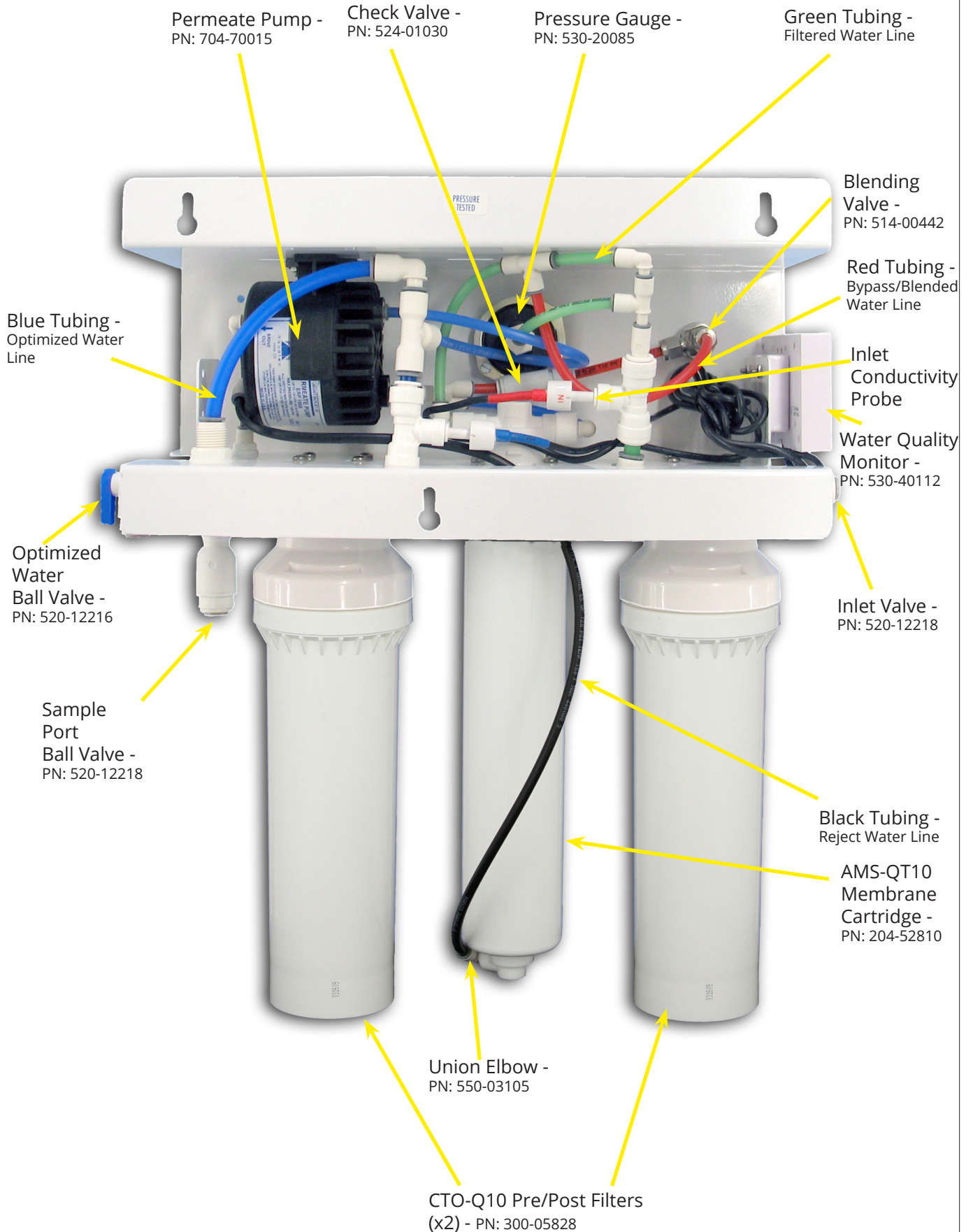
**What are all those parts and what do they do?**



**This section will give you an overview of how the system works.**

- Incoming water is filtered by the prefilter assy. (1), which remove sediment, chlorine and organics.
- Membrane Feedwater Pressure is indicated on Pressure Gauge (2) before flow enters the Automatic Shut-Off Valve (3).
- When the back-pressure from the Storage Tank (11) is low, the Automatic Shut-Off Valve (3) opens, allowing water to flow through to the AMS-QT10 membrane (4) and the Blending Valve (5).
- Based on the Blending Valve (5) adjustment a percentage of filtered water flows through the One-Way Check Valve (6) and blends with the Membrane (4) pure water stream.
- The water flows to the inlet of the membrane (4). The water is split by the membrane (4) into a pure water stream and a reject water stream. The reject water flows on to the brine side of the Permeate Pump (7) then on to drain.
- The pure water stream blends with the metered Filtered Water and then on to the permeate side of the Permeate Pump (7).
- The reject stream flows thru the brine side of the Permeate Pump (7) which pressurizes the pure water stream going to the Pressurized Storage Tank (11).
- When the tank completely fills, which is indicated by the Automatic Shut-Off Valve (3), it closes, stopping flow to the AMS-QT10 membrane (4).
- As the Optimized Water fills the Storage Tank (11) it compresses the air charge in the tank and builds pressure. The Permeate Pump (7) generates pressure to offset the back-pressure from the Storage Tank (11).
- The Water Quality Monitor (12) measures the TDS of the Feed water between (1) and (2) when the "IN" button is actuated. When the "OUT" button is actuated the Water Quality Monitor (12) indicates the TDS of the Blended Optimized Water after the Storage Tank (11). The Water Quality Monitor (11) is battery powered with two AA batteries. It will automatically shut-off after 30 seconds.
- The Storage Tank (11) is designed to dispense the Optimized water out to the equipment through the Post-Treatment Cartridge (8) and through the Optimized Water Outlet (9).
- The Optional Post-Treatment Filter is designed to provide additional treatment based upon specific application requirements.
- Optimized Water can be sampled or flushed from the Sample Port (10). With the Storage Tank (11) Optimized Water Inlet Valve Open, the Sample Port (10) provides a sample of water from the tank. With Tank Inlet Valve on the Storage Tank (11) closed, the Sample Port will provide a sample of the Optimized Water directly from the AMS-QT10 (4) Membrane and Blending Valve (5). With the Blending Valve (5) closed and the Storage Tank (11) Valve closed the Sample Port (10) can be used to measure AMS-QT10 (4) output.

**BWS100 Processor Components**



## Routine Maintenance: Filter Change Procedure

The only routine maintenance required with the BWS100 system is the periodic replacement of the carbon/sediment pre-filter and post-filter. The CTO-Q10 pre-filter should be changed every 3 – 6 months depending on water usage. In areas with high levels of sediment and other suspended solids the CTO-Q10 pre-filter may require more frequent changes. The CTO-Q10 post-filter should be changed annually.

### Pre-Filter and Post-Filter change procedure

1. Close the Feed Water Inlet Valve on the left side of the system.
2. Close the Storage Tank Valve.
3. Open the Sample Port Valve (with 3/8" tubing routed to a bucket or drain) to relieve pressure from the system.
4. Once the system pressure has been relieved, remove the CTO-Q10 Pre-Filter by turning the cartridge a quarter-turn to the left and pulling down on the cartridge. Do the same procedure with the CTO-Q10 Post-Filter if it is being replaced.
5. Install the new CTO-Q10 cartridge into the QT head by aligning the notches on the cartridge with the notches in the QT head and pushing up; then turn a quarter-turn to the right until the arrows are aligned to lock the cartridge.
6. Leave the Storage Tank Valve closed and the Sample Port Valve open. Slowly open the Feed Water Inlet Valve and allow water to run into the new CTO-Q10 cartridge(s) and purge air through the system and out the Sample Port to drain. Once the air is purged and the water flows smoothly close the Sample Port Valve.
7. Open the Storage Tank Valve and check the system for leaks.
8. After changing the Pre-Filter the system operating pressure can change. It is a good idea to check the Optimized Water TDS and make adjustments as necessary. (refer to "Optimized Water TDS - Blending Adjustment" on page 11).



CTO-Q10 Pre-Filter  
PN: 300-05828  
Change Quarterly

CTO-Q10 Post-Filter  
PN: 300-05828  
Change Annually

### Measuring Product & Reject Flow Rate

Connect a piece of 3/8" tubing to the Sample Port Valve on the outlet assembly of the processor and route it to a bucket or drain. Close the Storage Tank Inlet Valve and open the Sample Port Valve. Using a graduated cylinder or other measuring vessel collect and measure the amount of water that is produced (from the 3/8" sample port line) in 60 seconds. To convert ounces per minute to gallons per minute, divide ounces/min by 128. To convert milliliters per minute to gallons per minute, divide ml/min by 3785. Multiply gpm times 1440 to get gallons per day production.

Measure the **Reject Flow Rate** using the same procedure.

## Routine Maintenance: AMS-QT10 Change Procedure

The AMS-QT10 membrane is a specialized high-efficiency, low-fouling reverse osmosis membrane that will provide permeate or product water with 95+% rejection of TDS from the Feed Water. The life of the membrane will vary depending on Feed Water quality, usage, and Pre-Filter maintenance. Under typical conditions the membrane will last 12-18 months but it can be as long as 3-5 years.

### AMS-QT10 Replacement

1. Close the Feed Water Inlet Valve. Close the Tank Inlet Valve.
2. Open the Sample Port Valve to release pressure from the system.
3. Place a bucket or other similar catch basin under the AMS-QT10. Remove the black reject line from the push-to-connect elbow on the bottom of the membrane. Allow the membrane and reject line to drain into the bucket.
4. Remove the AMS-QT10 cartridge from the head by turning the cartridge a quarter-turn to the left and pulling down on the cartridge.
5. Remove the push-to-connect elbow attached to the bottom of the AMS-QT10 cartridge.
6. Align the tabs on the new AMS-QT10 cartridge with the QT head and insert into the head and turn a quarter-turn to the right.
7. Insert the black reject line into the push-to-connect elbow on the bottom of the AMS-QT10 cartridge.
8. With the Tank Inlet Valve still closed open the Feed Water Inlet Valve. Open the Sample Port Valve to bleed off air and preservative. Allow water to flush through the membrane allowing air and preservative to flow out the Sample/Flush port to drain for 5-10 minutes.
9. Actuate the Water Quality Monitor and check the "OUT" or Optimized Water TDS. It may be necessary to adjust the Blending Valve to obtain the desired TDS level.
10. After the desired TDS level is adjusted open the Tank Inlet Valve and close the sample/flush valve to resume normal operation.
11. Check for leaks.

## Trouble-Shooting

Problem	Possible Cause	Resolution
Running out of water.	Operating Pressure reduced Very cold Feed Water temperature	Pre-Filters need to be replaced Raise water temp to increase production or determine if higher capacity system is required
	Low Feed Water Pressure	Install optional Feed Water Pressure Booster Pump
Poor water quality.	Blend Valve mis-adjusted	Follow steps to adjust Blending Valve on Page 11
	Membrane failure	Replace AMS-QT10 membrane
Short AMS-QT10 membrane life.	Product/Reject Ratio misadjusted	Measure and adjust the Reject Flow Rate per Page 16, 17
	Poor Feed Water quality, presence of iron, silica or non-calcium carbonate hardness	Determine Feed Water quality by obtaining a water quality report from city water supply utility or contact your OptiPure dealer
Short Pre-Filter life	Heavy sediment loading	Add FX-AF-12 or -12B for added Pre-Filter protection
Processor Does Not Shut Off or Turn On.	Automatic Shut-Off Valve failed	Replace ASO Valve
	Air Lock in Permeate Pump	Bleed Air out of Permeate Pump
Water Quality Monitor will not turn on.	Dead batteries	Replace batteries by sliding Water Quality Monitor up and removing the six screws on the back cover. Remove cover to access batteries.
Tank full of water but water will not dispense.	Low air pressure in tank	Add air to tank. Tank should have 7-10 psi when empty.
	Bladder ruptured	Replace tank.