

OptiPure®

OP175 Advanced Membrane Separation System

Installation, Operation
& Maintenance Manual
Rev. 3



**Manufactured By:
OptiPure Div. of
Procam Controls, Inc.
2605 Technology Drive, Bldg. 300
Plano, TX 75074
P: 972.881.9797 F: 972.422.6262**

General Information

Safety Warning

Electrical work should be performed by a qualified electrician in accordance with all applicable codes and regulations.

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 Procam Controls, Inc.
2605 Technology Dr. Bldg. 300
Plano, TX 75074 USA

Phone #: 972.881.9797
Fax #: 972.422.6262

E-mail correspondence to:
techsupport@optipure.net

Environmental Conditions

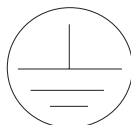
The OP175 is certified to operate under the following conditions:

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. Main supply voltage not to exceed +/- 10%.
5. Installation category II.
6. Pollution degree II.
7. Indoor use only, protect from elements.

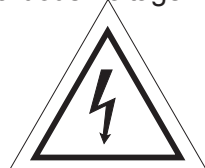
Explanation of Symbols

The following symbols are used on the water processor. The symbols and their explanation is given below:

Earth ground:



WARNING: Hazardous Voltage:



Safety Instructions

1. Please read and follow these instructions when connecting and using the system.
2. Never use the system if the power cord has been damaged. Do not allow anything to rest on the power cord, and keep the cord away from any place where people may trip over it.
3. When disconnecting from the electric socket hold the plug, not the cord.
4. Unplug the RP pump from the AC outlet prior to any service.
5. Locate the RP Assembly as close as possible to an AC outlet.
6. Securely bolt processor to wall before operating.
7. Avoid cross-connections and install on cold water supply only.
8. Use approved Air-Gaps when connecting to drain lines.
9. Do not exceed system pressure rating and use water hammer arrestors when water hammer is evident.
10. Turn off Feed-Water supply before filter or membrane cartridge replacement.

Getting To Know Your System

The OP175 is an Advanced Membrane Separation System designed to purify water by removing dissolved minerals and then add back a consistent amount of a balanced blend of TDS (Total Dissolved Solids), or mineral content, in the treated water.

Water Quality Indicator - Operates momentarily, push purple button to turn on. Push "IN" button for the TDS of the water going into your equipment. Push "OUT" button for the TDS of the purified water from the membrane.

Tank Repressurization Return-
1/2" gray hose - Connect to Re-pressurization Assembly Outlet

Operating Pressure Gauge
Shows feed pressure only when processor is operating (when level in storage tank is low).

Feed Water Inlet
3/8" Push-To-Connect - Connect to Water Supply Valve.

Optimized Water To Storage Tank - 3/8" Push-To-Connect - Connect to Optimized Water Storage Tank Inlet

Emergency Bypass Valve - User can switch from Optimized Water to Untreated Water if needed, by turning handle horizontal.

Sample Port - 3/8" Push-to-Connect - Used to flush replacement filters, gather water sample, measure production or to drain water from storage tank.

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

Pressurized Optimized Water Outlet - 1/2" gray hose - Connect to End User Equipment

Normal Operation
Items in green circles show a normal operating condition/position.

2@ CTO-Q10 Pre-Filters
PN: 300-05828

AMS-QT15 Membrane Cartridge

1@ Mineral Addition Cartridge
PN: 300-05850

Membrane Reject Water Tubing Connection

Repressurization Pump 120VAC

Low Level Relay & Control Box - 120VAC
- Plug in cord to standard wall outlet. Box connected to LL Float Switch & Pump. Light on top illuminates when there is water in tank & Pump is enabled.

Buffer Tank Valve
Normally open (handle parallel to valve body). Used to shut off water supply to downstream equipment.

Repressurization Pump - 120VAC

Buffer Tank - Pre-charged air bladder - 20 psi

Absolute 0.2 micron Hydrophobic Air-Breather/Filter

Repressurization Assembly Outlet
- 1/2" Hose Barb - Connect to Pressurized Water Inlet on Processor

Optimized Water to Storage Tank Inlet (on valve)
- 3/8" Push-to-Connect - Connect to Optimized Water Outlet on Processor.

High Level Float Switch (in Tank) & Cable (on side of tank) - Connect Cable to Processor "Tank Electrical Connection."

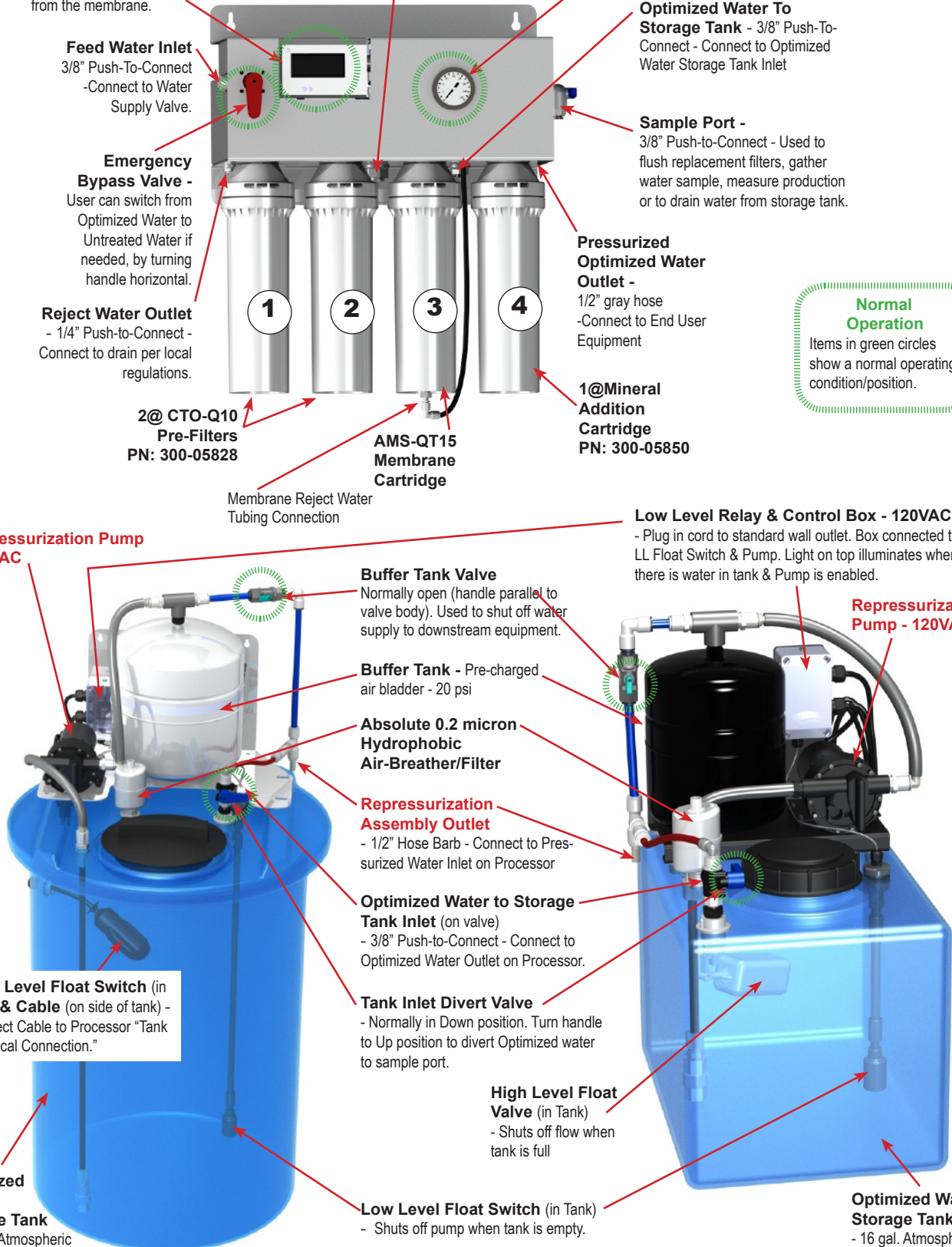
Tank Inlet Divert Valve
- Normally in Down position. Turn handle to Up position to divert Optimized water to sample port.

High Level Float Valve (in Tank)
- Shuts off flow when tank is full

Optimized Water Storage Tank
- 50 gal. Atmospheric

Low Level Float Switch (in Tank)
- Shuts off pump when tank is empty.

Optimized Water Storage Tank
- 16 gal. Atmospheric



Installation Requirements

This section and the next provide the water, electrical and space requirements for the OP175. **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+%
Feed Temperature:	40 - 100° F (4 - 38° C)
Feed pressure:	50 - 80 psi (3.4 - 5.9 bar) at 1 gpm
Production** (at 77°F, 60 psi)	184 gals/day, 7.7 gals/hr, 0.13 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%.

Location

The system should be installed indoors, in the proximity of the equipment (within 25 feet) and protected from the elements. Do not let the processor or storage tank freeze or be exposed to rain or direct sunlight.

Post-treatment

Treated water stored in a tank may absorb organic compounds from the tank, which can affect water taste and odor. If product water is for consumption, an optional post-treatment filter, such as an OptiPure FX or QT carbon filter, should be installed after the tank. If used, it is best installed as close to the point of use as possible. Other specialized post-treatment is also available.

Feed water 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"

**TDS (total dissolved solids) create conductivity in water and are expressed in ppm or mg/l (parts per million or milligram per liter).*

***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.*

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 set-up and service.

Electrical requirements

A power source should be located within 5 feet of the location of the unit.

RP Pump 120V 60Hz 2 Amps

Feed-water chemistry

Feed TDS	Up to 1200 ppm
Feed pH	6 - 10
Hardness	28 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

A water analysis must be conducted before installing the system or 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 special chemical pretreatment or periodic membrane cleaning. Please note that membrane failure due to fouling is not covered by the warranty.

Storage Tank

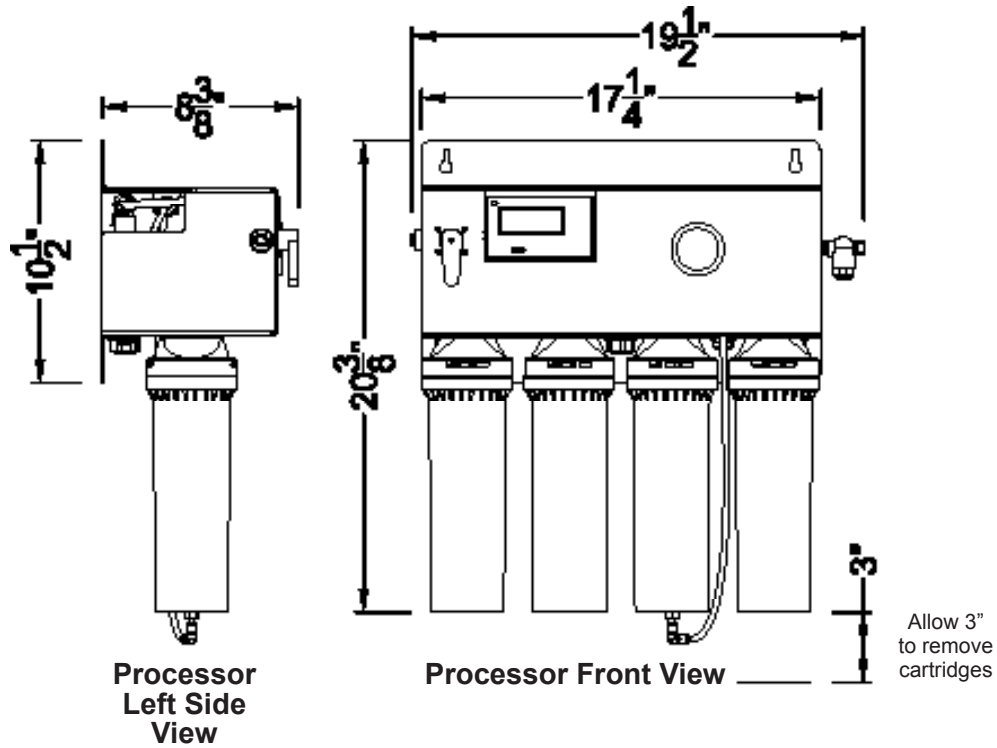
The tank must be located within 10 feet of the water processor unit. The floor beneath the storage tank should be smooth, clean and free of sharp objects that could puncture the bottom of the tank. **Note: The tank is atmospheric, with a sub-micron, hydrophobic air breather filter.**

Optimized Water Lines to Equipment

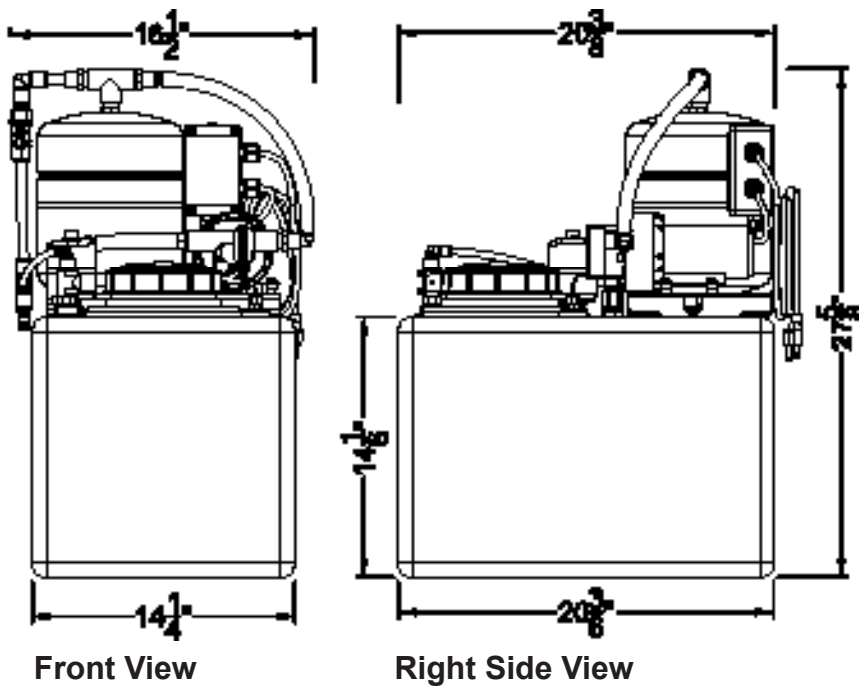
Tubing, piping and associated fittings connecting Optimized water lines to equipment should be food grade material that meets NSF Std 51 or 61 with a minimum pressure rating of 75 PSI. Optimized water may react with most metal piping imparting a bad taste. Plastic pipe or reinforced opaque beverage tubing are acceptable choices for Optimized water distribution. The larger inside diameter tubing or hose, the better to minimize pressure drop.

Equipment Dimensions

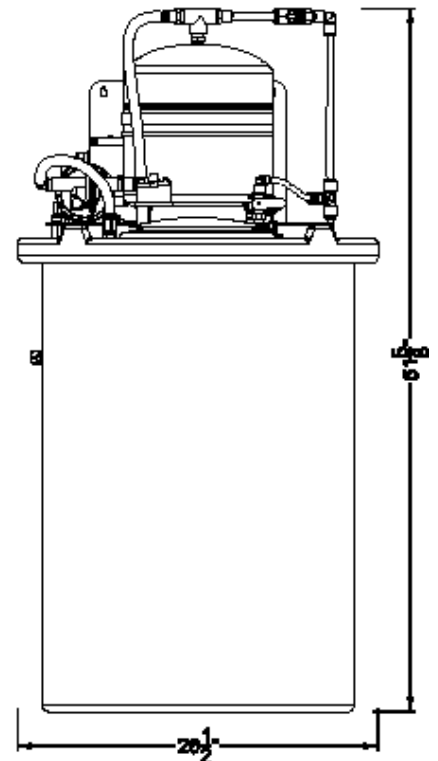
IMPORTANT - ALLOW A MINIMUM OF 24" IN FRONT OF THE PROCESSOR FOR MAINTENANCE AND SERVICE. DO NOT MOUNT SYSTEM ABOVE THE CEILING OR IN A LOCATION THAT IS NOT EASILY ACCESSIBLE. WHEN THE 16 GAL. TANK ASSEMBLY IS FULL OF OPTIMIZED WATER IT WILL WEIGH 140 LBS (THE 50 GAL. TANK, 450 LBS). ALWAYS LOCATE THE STORAGE TANK WHERE IT CAN BE ACCESSED DURING SERVICE.



**16 Gallon Tank
Repressurization Assembly**

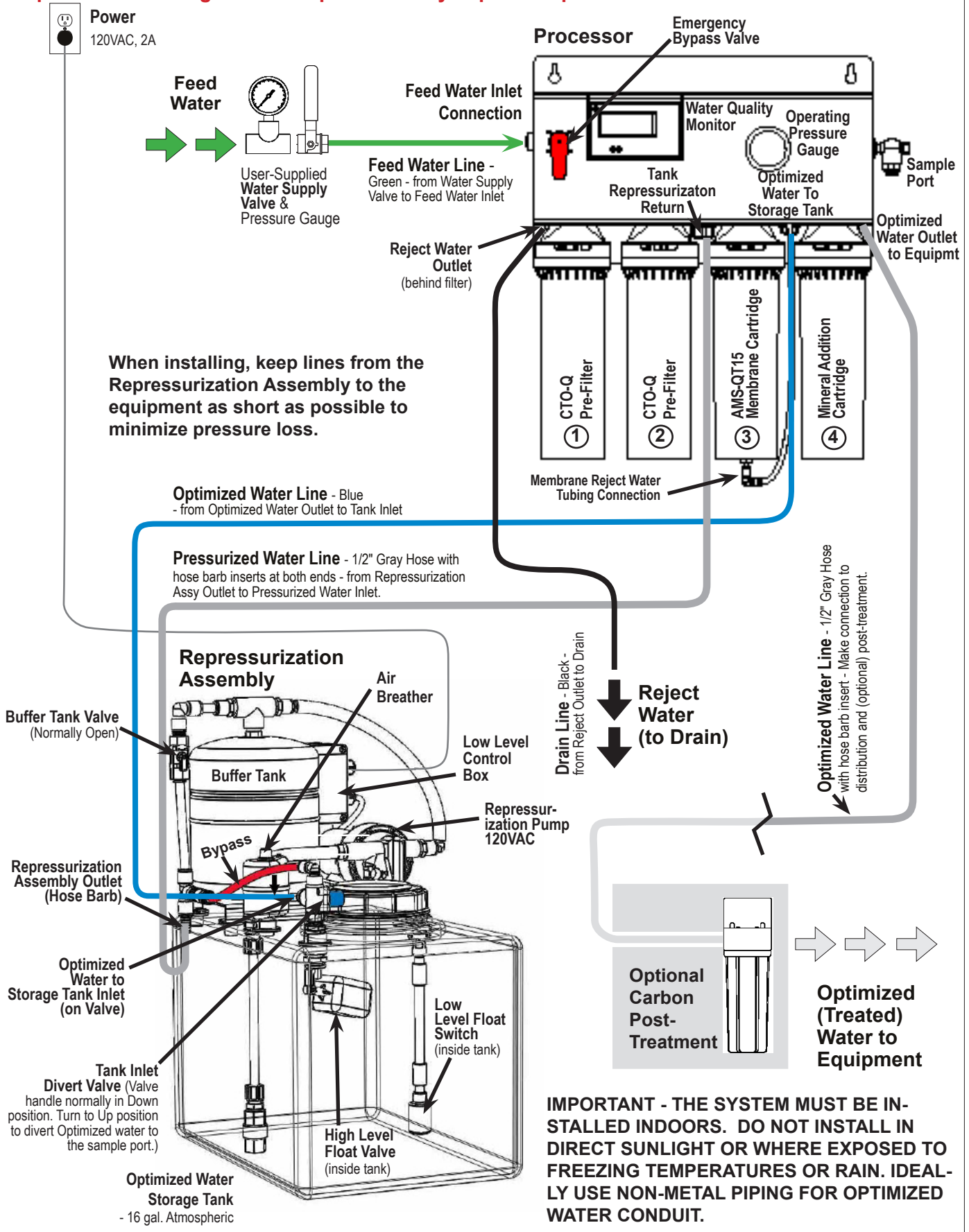


**50 Gallon Tank
Repressurization Assembly**



Typical Installation with 16 Gal. Atmospheric Tank

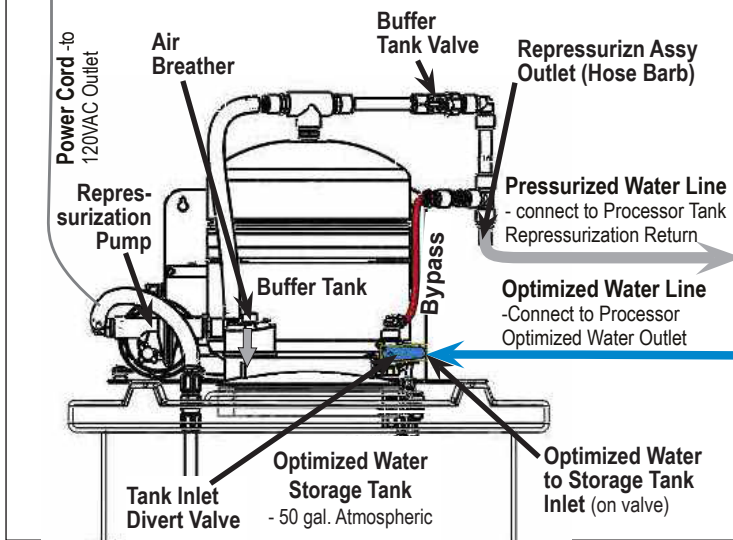
Important: Plumbing should be performed by a qualified plumber in accordance with local codes.



When installing, keep lines from the Repressurization Assembly to the equipment as short as possible to minimize pressure loss.

Installation with 50 Gal. Storage Tank

Refer also to "Typical Installation" Diagram on previous page.



screws. BE SURE TO ALLOW 3" BELOW THE CARTRIDGES TO ALLOW FOR REMOVAL. Screw the four 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.

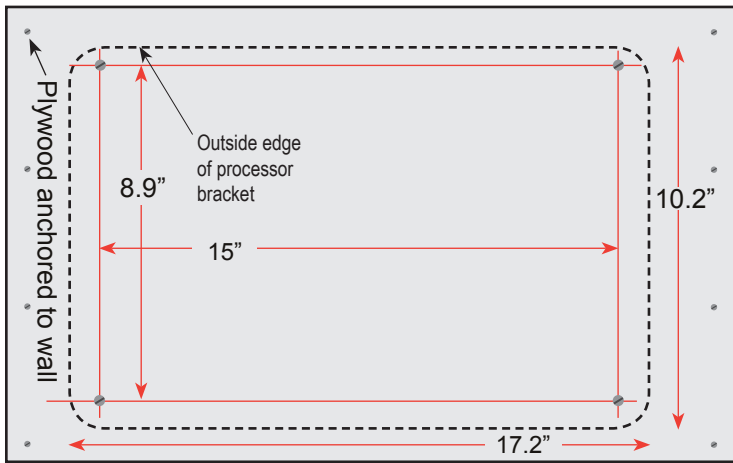
System Installation

Note: Do not install the cartridges in the processor until completing this section. Do not plug in the power cord from the RP pump until completing the following section, "System Start-Up".

Refer to "Typical Installation" diagram on page 6, and "How to Use Our Quick-Connect Fittings" on page 18, when making the following connections. If your system has a 50-Gallon Storage Tank, refer to "Installation with 50 Gal. Storage Tank" on this page.

A feed water ball valve and pressure gauge (user supplied) should be installed to provide water to the system FEED WATER INLET with the green tubing (supplied). Hose, tubing and fittings for making connections between the processor, storage tank and drain are supplied in the installation kit with the system.

1. Remove the tank lid. Inside the tank, the float valve may be secured for shipping. Remove any wrapping on the float to allow it to hang and move freely.
2. DRAIN: Connect the 1/4" black tubing from the installation kit to the REJECT WATER OUTLET on the processor. Run the line to an appropriate drain. Observe local plumbing codes and supply an appropriate air gap. (Any fittings for connecting to the drain will need to be supplied by the customer.) Fix tubing in place at the drain.
3. FEED WATER: Apply 3 'wraps' of Teflon tape to the 1/2" FPT x 3/8" push-connect fitting (supplied). Screw the fitting into the Feed Water Supply Ball Valve and tighten (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 located on the left side of the Processor. Cut the tubing to the required length if necessary.



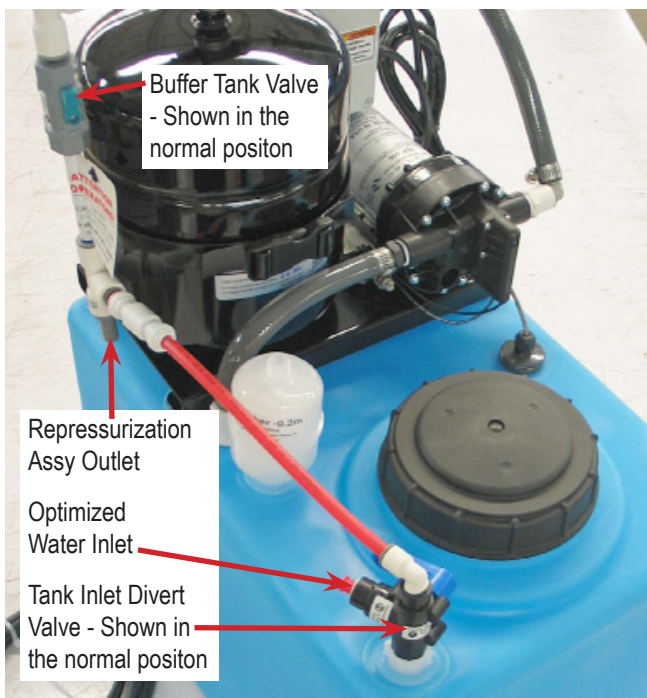
Wall Mounting

The processor unit should always be mounted where it is well-supported, either using anchors in a cement wall, or using the support of studs in a wall-board wall. **Never mount it directly to sheet-rock alone.** Instead, mount it on a sheet of plywood which is anchored to the wall studs, as shown above.

Four user-supplied bolts or screws with a head diameter of approximately 1/2" (which will fit into the keyholes in the system bracket, 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



50 Gallon Storage Tank



16 Gallon Storage Tank

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, do not make sharp bends or crimp the tubing.

4. **PROCESSOR TO TANK:** Connect a piece of the 3/8" blue tubing to the OPTIMIZED WATER TO STORAGE TANK fitting on the processing unit. Connect the other end of this tubing to the OPTIMIZED WATER TO STORAGE TANK INLET on the storage tank INLET DIVERT VALVE.
5. **REPRESSURIZATION ASSEMBLY TO PROCESSOR:** Using two of the 1/2" hose barb inserts (supplied), a piece of 1/2" gray hose, and two hose clamps, connect hose from the REPRESSURIZATION ASSEMBLY OUTLET on the Repressurization Assembly to the TANK REPRESSURIZATION RETURN on the Processor. The ridged end of a hose barb insert goes into each end of the hose with a hose clamp tightened onto it. The smooth ends of the hose barb inserts go into the push-to-connect fittings on the Processor and Repressurization Assembly.
6. **OPTIMIZED WATER TO EQUIPMENT:** Connect a piece of 1/2" i.d. gray hose to the OPTIMIZED WATER OUTLET on the processor with a 1/2" hose barb insert and clamp (supplied). The other end of this line will be connected to the distribution line that will deliver Optimized Water to the equipment at a later time. Prepare any necessary plumbing to make the connection between the 1/2" hose and distribution line, but for now leave the line loose and route the loose end of the gray hose into a drain or bucket (make certain the hose length will reach the storage tank - this will be required for the Start-Up procedures). The equipment connection will be completed in "Connect to Equipment."

Optional RP Assembly Location

The Repressurization Pump and Buffer Tank assembly is on a stand that can be remote from the storage tank. If this type of installation is required, the RP Assembly should be built as a remote unit from the OptiPure, with additional installation instructions supplied.

Install QT Cartridges

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

1. Insert the CTO-Q10 cartridges into QT heads 1 & 2 (starting from the left or inlet side of the processor) and turn to align arrows.
2. Insert the AMS-QT15 membrane cartridge into the QT head #3 and turn to align arrows.
3. Insert the MA-QT mineral addition cartridge into the QT head #4 (far right) and turn to align arrows.
4. 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-QT15 cartridge.

System Start-Up

Refer to illustration "Typical Installation" (page 6).

IMPORTANT: Before proceeding, position the Processor EMERGENCY BYPASS VALVE in the "SERVICE" position, assure that the Buffer Tank Valve is open, and position the TANK INLET DIVERT VALVE in the down position (Blue Valve Handle pointing sideways).

1. Slowly open the user-supplied WATER SUPPLY VALVE and allow the filter housings to fill. Water will begin to flow from the end of the 1/4" black tubing routed to the drain. After some time, water will begin to flow into the tank. Allow several minutes to flush the system until water flows smoothly from the drain line. Check all of the plumbing connections and correct any leaks if necessary.
2. The 16 Gal Storage Tank must be filled - or the 50 Gal Storage Tank filled approximately 1/3 of the way - to start-up and purge the Repressurization Assembly. You can quickly fill the storage tank to the appropriate level using the "System Bypass" on the processor. To do this use the following:
 - Route the 1/2" gray hose from the OPTIMIZED WATER OUTLET TO EQUIPMENT directly into the storage tank lid opening.

NOTE: Before performing the next step, be certain

to hold onto the gray hose.

- Turn the EMERGENCY BYPASS VALVE on the processor to "BYPASS." This will allow feed water to bypass the processor and quickly fill the storage tank.
- **When the tank fills to approximately 14 gallons return the processor EMERGENCY BYPASS VALVE to the "SERVICE" position.**

NOTE: Before performing the next step, be certain to hold onto the gray hose.

3. Plug the power cord from the RP pump into the outlet. Water should begin to flow rapidly from the storage tank, through the RP assembly and back into the storage tank through the gray hose. Allow the pump to run for several minutes until all of the air is purged from the Repressurization Assembly. As the air is purged, the pump will run more smoothly and the water flowing from the gray hose will become steady.
4. Unplug the RP Pump cord.

Connect to Equipment

Refer to the illustration "Typical Installation" on page 6.

You are almost ready to enjoy the benefits of Optimized Water. All that remains is to make the connection for distribution to your equipment.

1. Remove the 1/2" gray hose from the storage tank and complete the connection of the 1/2" gray hose from the Optimized Water Outlet on the Processor to the distribution line feeding the equipment that will be using the Optimized Water.
2. Ensure that any valves or solenoid valves on the connected equipment are closed. Plug the RP pump back in. The pump will run and fill the Buffer Tank until the pressure in the Buffer Tank reaches 70 psi, and then the RP Pump will shut off.
3. Open downstream valves at the equipment to allow air to purge from the distribution lines. When purging distribution lines the pump may shut off if the water level in the storage tank drops near the bottom of the tank. (Add more water to the tank if necessary.) Once purged and flushed, close the equipment valves. When there is no demand for water the pump will shut off automatically.

4. Before proceeding, follow these steps to empty the storage tank of untreated feed water:
 - Connect a piece of 3/8" blue tubing into the push-to-connect fitting of the SAMPLE PORT VALVE on the right side of the processor, and route the other end of the tubing into a drain or bucket.
 - Open the Sample Port Valve to drain water from the storage tank. When the pump shuts off due to a low water level, close the Sample Port Valve.
5. Replace and tighten the lid onto the storage tank.

Complete the Installation

Transition to Owner/Operator

The final step is to meet with the Owner/Operator, familiarize them with the system and complete the **Post-Installation Check List**.

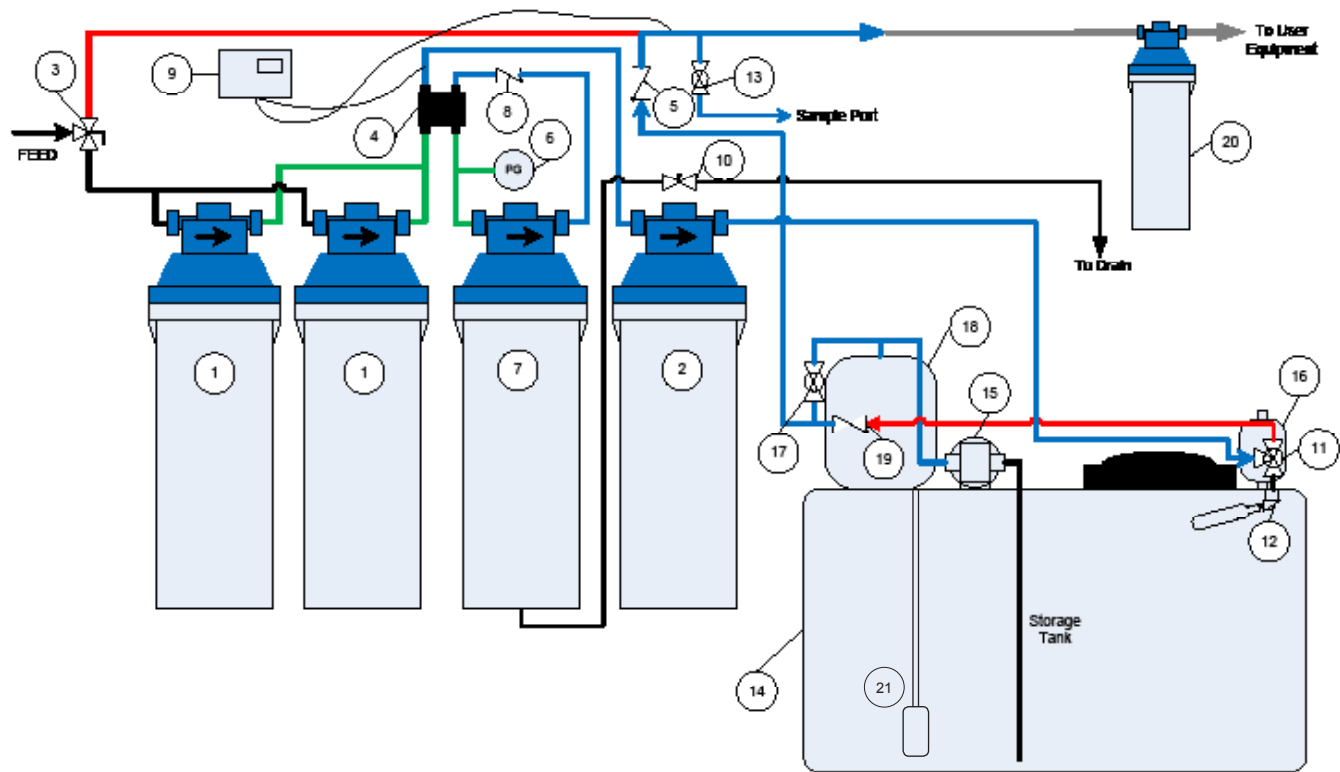
The system is now in "normal operating" mode and the storage tank will fill with Optimized Water from the Processor. Complete the "**Post Installation Checklist**" to **Confirm Normal Operation and System Settings**.

Allow the storage tank to fill before beginning operation of the connected equipment.

Reading the TDS

1. To read the TDS, the 16 Gal. tank must be allowed to fill half way - or the 50 Gal. must be filled about 1/4 of the way - with optimized water.
2. TDS must be read while there is some demand for water flow from the RP Assembly. Open a valve downstream at the equipment, or open the Sample Port Valve on the processor (with tubing routed to a drain or bucket) to allow flow.
3. Push the purple "POWER" button on the Water Quality Monitor located on the upper left corner. It will immediately display the "IN" or Optimized Water TDS (Total Dissolved Solids) in PPM (parts per million). Document this number as the Optimized Water TDS.
4. Within 30 seconds, push the "OUT" button to display the Membrane Permeate TDS and record this number as the Permeate TDS.

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 prefilters (1), which remove sediment, chlorine and organics.
- When the Emergency Bypass Valve (3) is in the normal SERVICE mode, water flows through the Processor. When the Bypass Valve (3) is in System Bypass mode, the water is diverted directly out to the equipment, bypassing both the Processor and the Repressurization Assembly.
- When water in the storage tank is at a low storage level, the high level float valve at the tank (12) opens, lowering the pressure in the Optimized Water line from the Processor to the Repressurization Assembly, causing the Automatic Shutoff Valve (4) in the Processor to open, allowing feed water to flow through to the AMS-QT15 membrane (7).
- The membrane feed water pressure is indicated by the pressure gauge (6).
- The water flows to the inlet of the membrane (7). The water is split by the membrane into a pure water stream and a reject water stream. The reject water flows to the Reject Flow Control (10) and then on to drain.
- The pure water stream continues through the Permeate Check Valve (8), and through the Mineral Addition cartridge (2), then on to the tank through the Tank Inlet Divert Valve (11) on top of the Storage Tank (14). Air in the tank is displaced by the incoming water and vented out of the Sub-Micron Air Breather (16).
- When the tank completely fills, the high level float valve (12) closes, causing pressure in the Optimized Water Line to rise, which then causes the Automatic Shutoff Valve (4) to close, stopping the flow through the Processor.
- When the "IN" button is actuated on the Water Quality Monitor (9), it measures the average TDS of the Optimized Water in the Pressurized Water Line coming from the storage tank. When the "OUT" button is actuated, the Water Quality Monitor (9) indicates the TDS of the Permeate water exiting the Membrane (7). If the Bypass Valve (3) is in System Bypass mode, the Water Quality Monitor (9) will measure the TDS of the untreated Feed Water when the "OUT" button is actuated. The Water Quality Monitor (9) is battery powered with two AA batteries. It will automatically shut-off after 30 seconds.
- As long as the Low Level Float Switch (21) detects a minimum level of water in the tank, the

Repressurization Pump (15) is enabled to draw from the Atmospheric Storage Tank (14) and dispense Optimized water, by way of the Buffer Tank (18), to the Processor, through the One-Way Check Valve (5), and out to the equipment. When the pressure in the Buffer Tank drops, the Pump runs to repressurize the Buffer Tank, and when the pressure reaches 70 psi, the Pump shuts off.

- The Optional Post-Treatment Filter (20) is designed to provide additional treatment based upon specific application requirements. For beverage applications an activated carbon filter is recommended.
- As Optimized Water is dispensed from the storage tank by the Repressurization Pump (15), air is replaced in the tank through the Sub-Micron (0.2 micron) Air Breather (16).
- If the Repressurization Pump (15) fails, water flow and can be restored to the equipment by turning the Emergency Bypass Valve (3) to the position to “SYSTEM BYPASS” position. This allows tap water to bypass the processor and RP assembly.
- A Sample Port (13) provides the ability to measure membrane production by closing the Buffer Tank Valve (17) and turning the Tank Inlet Divert Valve (11) to the bypass or UP position. This diverts the permeate (pure water produced by membrane) from the Storage Tank (14) through the Bypass Check Valve (19) and back to the processor where opening the Sample Port (13) will allow you to directly measure the permeate flow rate.
- Additionally, the Sample Port (13) provides the ability to drain water from the Storage Tank (14) by closing the user-supplied Water Supply Valve, opening the Buffer Tank Valve (17) and opening the Sample Port (13).

Repressurization Pump

The Repressurization Pump Assembly that comes standard with the OP175 System includes a diaphragm pump controlled by an internal Pressure Switch, and a Buffer Tank between the Pump and the downstream equipment maintains downstream pressure. Water demand for downstream equipment is directly supplied from the Buffer Tank, and demand can go on and off as necessary. The RP Pump is not directly affected by downstream demand, and downstream equipment is also not affected by the automatic

starting or stopping of the RP Pump. When the pressure drops sufficiently in the Buffer Tank, the pump starts automatically and repressurizes the Buffer Tank. The operating pressure for the Buffer Tank is preset (to 70 psi) and is NOT field adjustable.

The pump also incorporates check valves to keep the Buffer Tank and downstream line pressurized. The pump is equipped with auto-reset, thermal overload protection and is designed for intermittent duty.

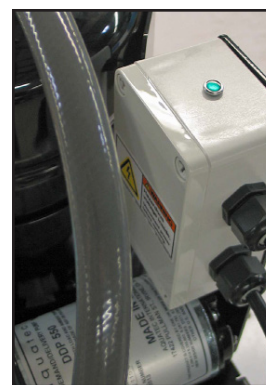
If the pump runs erratically, allow the pump to run to open drain with valve fully open to purge air from the pump head. Disconnect the power and reconnect several times to facilitate air purging.

The pump will prime only if all the pressure is relieved from the outlet port. The pump is self-priming up to 11 ft. The pump can run dry but will overheat and the pump overload will shut the pump off.

Storage Tank Level Controls

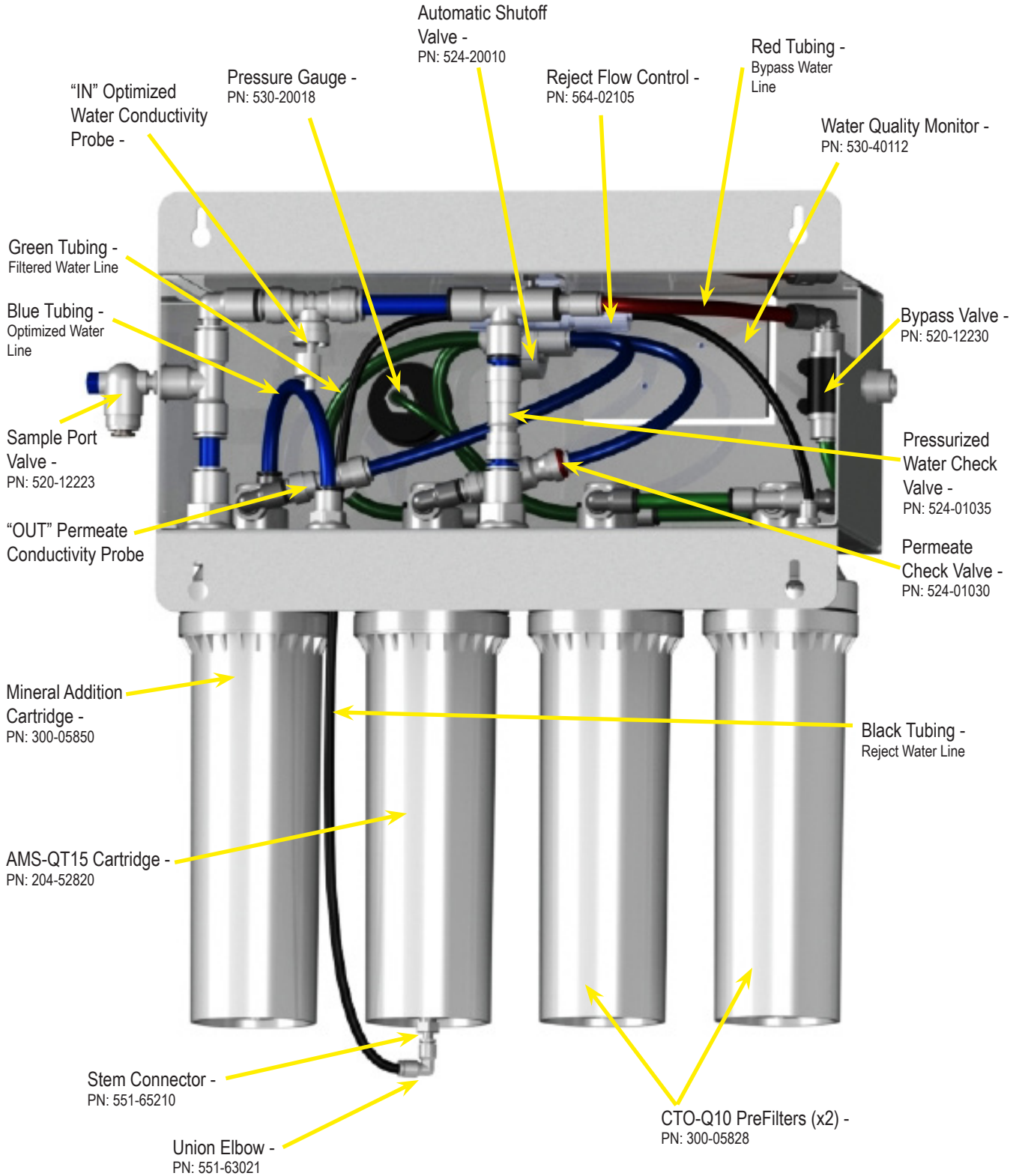
(See also the Electrical Schematic at the end of this manual.) For system control, there are independent High and Low Water Level Float Controls in the Storage Tank. When the Storage Tank becomes full, the High Level Float Valve shuts off flow to the Tank, causing the Processor to shut off.

If the tank is empty, the Low Level Float Switch automatically shuts off the RP Pump. As long as the power cord from the Tank/RP unit is plugged in, and there is a minimal amount of water in the Storage Tank, the green light is illuminated on the Control Box (attached to the Buffer Tank bracket), indicating that power is supplied to the RP Pump. This light means the RP unit is enabled, even though the RP Pump may be automatically turned off when the Buffer Tank is pressurized and operation of the Pump is not needed.



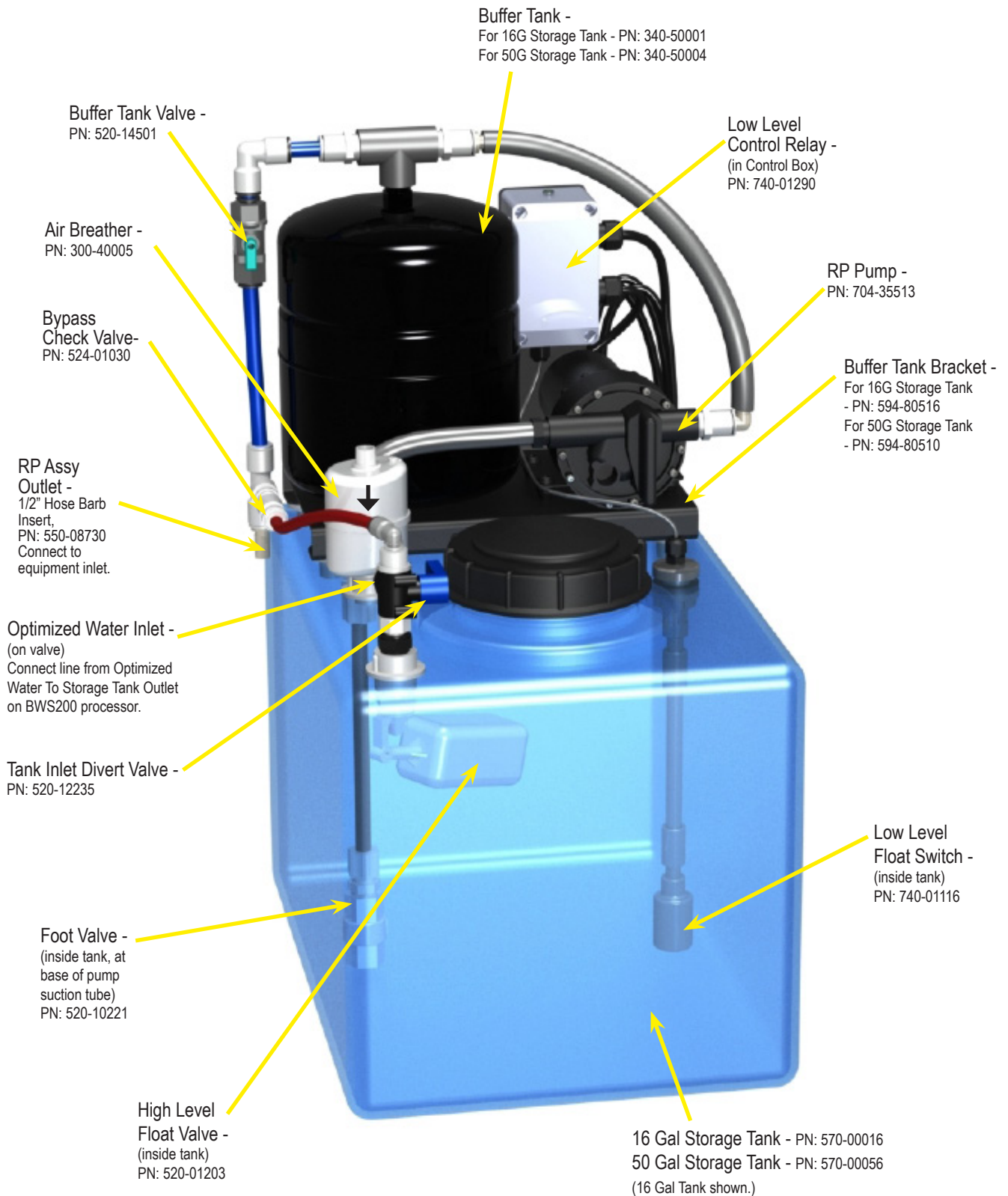
Low Level Float Switch Indicator light

OP175 Processor Components

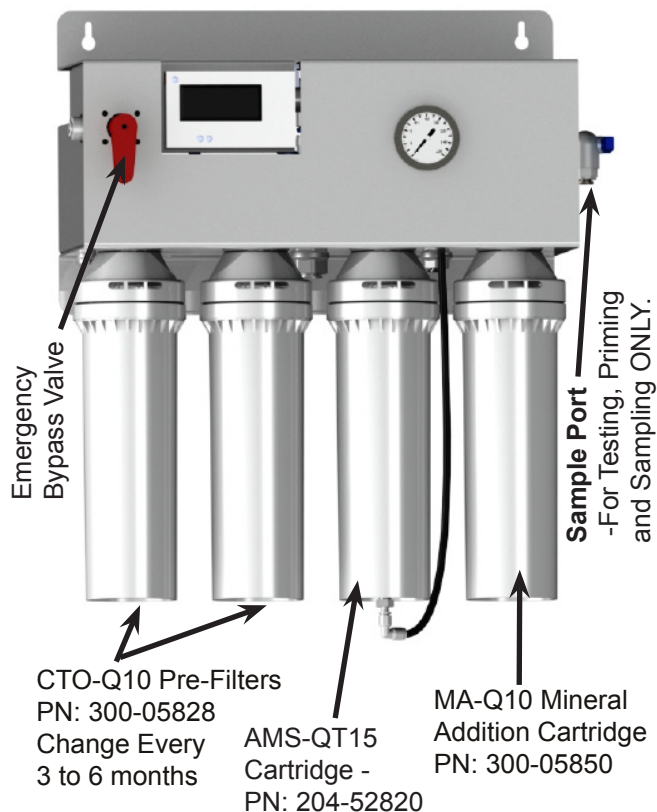


Tank/RP Components

16 Gallon Storage Tank Shown.



Routine Maintenance



Normally, the most frequent routine maintenance required on the system is periodic replacement of the carbon/sediment pre-filters and the mineral addition cartridge. The CTO-Q10 cartridges should be changed every 3-6 months depending on water usage. In areas with high levels of sediment and other contaminants the CTO-Q10 cartridges may require more frequent changes. The mineral addition cartridge should be changed when the Optimized Water TDS drops.

Pre-Filter change procedure

1. Unplug the RP Pump power cord.
2. Either close the Water Supply Valve (shutting off all water flow), or put the Emergency Bypass Valve (on the Processor) in the System Bypass position (allowing untreated water to continue to flow to the equipment).
3. Wait a moment for system pressure to drain off.
4. Once the system pressure has been relieved, remove the two CTO-Q10 cartridges by turning a quarter-turn to the left and pulling down on the cartridge.
5. Install the new CTO-Q10 cartridges into the QT heads by aligning the notches and pushing up, then turn a quarter-turn to the right.
6. If it is necessary to replace the Mineral Addition

Cartridge, repeat steps 3-4 for the Mineral Addition Cartridge.

7. Install a piece of 3/8" tubing in the Processor Sample Port valve, open the Sample Port, and direct to a bucket or drain.
8. Turn the Tank Inlet Divert Valve to the Bypass Mode (Handle Pointing UP).
9. Open the Water Supply Valve and put the Emergency Bypass Valve in the "SERVICE" position, allowing water to run into the new Pre-Filter cartridges and purge air through the system and out the Sample/Flush Port to drain.
10. Once the air has been purged and filters flushed, close the Sample Port valve and return the Tank Inlet Divert Valve to the Normal position (handle horizontal or down).
11. Check for leaks.
12. Plug in the RP Pump power cord.

Optional Post-treatment cartridge change procedure (if applicable)

1. Close the ball valve at the inlet to the Post-Treatment assembly.
2. Remove the existing cartridge and discard.
3. Install the new cartridge.
4. Open the ball valve and the RP pump should actuate filling the housing with water.

AMS-QT15 Replacement

The AMS-QT15 membrane is a high-efficiency, low-fouling reverse osmosis membrane that will provide product water with 95+% rejection of the Feed Water. The life of the membrane will vary depending on Feed Water quality, usage, and Pre-Filter maintenance. Typical membrane life is 12 to 18 months, but with routine scheduled Pre-Filter replacement, and no adverse Feed Water conditions, the AMS-QT15 membrane may last 2-5 years.

1. Unplug the RP Pump power cord.
2. Either close the Water Supply Valve (shutting off all water flow), or put the Emergency Bypass Valve (on the Processor) in the System Bypass position (allowing untreated water to continue to flow to the equipment).
3. Place a bucket or other similar catch basin under the AMS-QT15. Remove the black reject line from the push-to-connect elbow on the bottom of the membrane. (Refer to "Push-to-Connect Fittings" on page 18.) Allow the membrane and reject line to drain into the bucket.

Routine Maintenance, Continued

4. Remove the AMS-QT15 cartridge from the head by turning the cartridge a quarter-turn to the left and pulling down on the cartridge.
5. With a wrench, remove the push-to-connect elbow and stem adapter attached to the bottom of the AMS-QT15 cartridge. Remove the residual Teflon tape from the male 1/8" threads on the stem adapter.
6. Wrap the 1/8" male thread on the stem adapter with 2 wraps of Teflon tape and re-install in the bottom of the new AMS-QT15 cartridge.
7. Align the taps on the AMS-QT15 cartridge with the QT head and insert into the head and turn a quarter-turn to the right.
8. Insert the black reject line into the push-to-connect elbow on the bottom of the AMS-QT15 cartridge.
9. Install a piece of 3/8" tubing in the Processor Sample Port valve, open the Sample Port, and direct to a bucket or drain. Turn the Tank Inlet Divert Valve to the Bypass or UP position. Open the Water Supply Valve and put the Emergency Bypass Valve in the "SERVICE" position. Allow water to flush through the membrane displacing air and preservative to flow out the Sample/Flush port to drain for 5-10 minutes.
10. Actuate the Water Quality Monitor and check the "OUT" or Permeate Water TDS.
11. After the AMS-QT15 cartridge is purged of air, close the Sample Port.
12. Check for leaks.
13. Plug in the RP Pump power cord.

Storage Tank Cleaning

If the Storage Tank becomes dirty, regular cleaning and sanitization may be required. (Request a Storage Tank Cleaning Guide from OptiPure.) The Tank can be emptied for cleaning by doing the following:

1. Close the Water Supply Valve
2. Connect 3/8" tubing from the Sample Port on the Processor to the drain.
3. Open the Sample Port. The RP Pump should operate, pumping water to the drain until the Tank is nearly empty.
4. Unplug the RP Pump power cord.
5. When finished, close Sample Port, plug in RP Pump, and open Water Supply Valve.

RP Pump Motor Brushes

Over time or with heavy usage, the motor brushes in the RP Pump can become worn, causing the Pump to no longer operate reliably. (See "RP Pump Does Not Turn On" under Trouble-Shooting for symptoms.) For a system with heavy usage, it may be necessary to replace motor brushes under a preventive maintenance schedule, such as annually. To restore a Pump with worn brushes, order and install **Brush Kit 704-39905**, which is supplied with instructions.

Buffer Tank Pre-Charge Pressure

Very slowly over time, the air pre-charge in the RP Assembly Buffer Tank can diminish, reducing the ability of the Buffer Tank to maintain downstream pressure. Annually, the pre-charge should be checked using a tire gauge on the valve, which is on the side or bottom of the Buffer Tank. If it is lower than 20 psi, air should be added to restore it to 20 psi.

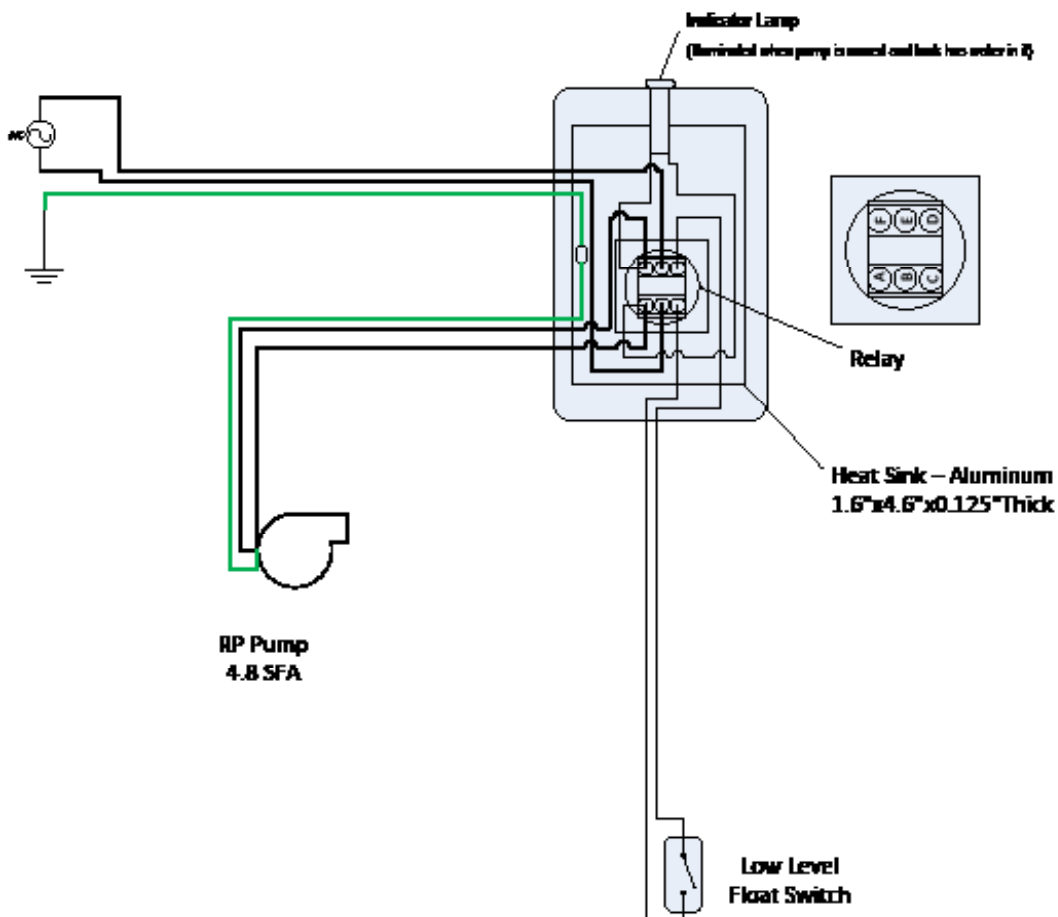
Trouble-Shooting

Problem	Possible Cause	Resolution
Running out of water.	Valves in incorrect operating position No power to RP Pump Operating Pressure reduced Very cold Feed Water temperature Low Feed Water Pressure Demand exceeds system capacity	Ensure the Processor Bypass Valve is in Service position, the Repressurization Assy (RP) Tank Divert Valve is in Down position, & Buffer Tank Valve is Open (handle parallel to valve body). See "RP Pump Does Not Turn On" Pre-Filters need to be replaced Raise water temp to increase production or determine if higher capacity system is required Install optional Feed Water Pressure Booster Pump Determine if the demand is unusual or inconsistent, or resize system
Poor water quality.	Blend Valve mis-adjusted Membrane failure	Follow steps to adjust Blending Valve on Page 10 Replace AMS-QT15 membrane
Short AMS-QT15 membrane life.	Poor Feed Water quality, presence of iron, silica or non-calcium carbonate hardness Plugged Reject Flow Control element	Determine Feed Water quality by obtaining a water quality report from city water supply utility or contact your OptiPure dealer Replace Reject Flow Control
Short Pre-Filter life	Heavy sediment loading	Add FXAF01-12 or -12B for added Pre-Filter protection

Trouble-Shooting, Continued

Processor Either Does Not Shut Off or Turn On	Automatic Shutoff Valve not functioning	Replace Automatic Shutoff Valve
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.
RP Pump Does Not Turn On	No power to Pump (Green LED Off at top of Control Box - attached to Buffer Tank bracket) Low water level in Tank (Green LED on Control Box is Off) RP Pump motor brushes worn RP Pump damaged	If LED is On, RP Pump is operational (Pump will turn on only when the Buffer Tank is empty). If LED is Off, ensure power cord is plugged into an outlet with power (check circuit breaker), & that there is water in Tank. If LED will not turn On (with power & water in tank), there may be a problem with Low Level Float Switch or Relay. Allow Processor to partially fill Tank with water. Green LED indicates RP Pump is operational, & will turn on when Buffer Tank is empty. Try bumping the RP Pump with your hand. If it turns on temporarily, the brushes are probably worn. Order & install Brush Kit 704-39905. (Green LED is On, Buffer Tank is empty) If bumping RP Pump yields no response, Pump could be damaged or brushes may still be worn. Call for service.
RP Pump runs intermittently or rough.	Air trapped in pump head. RP Pump motor brushes worn	Unplug pump temporarily and open downstream valve to empty Buffer Tank. See "RP Pump motor brushes worn" above.
RP Pump cycles on-off frequently	Low air pre-charge in Buffer Tank (possible on aged system)	Empty Buffer Tank and re-charge air pressure to 20 psi.

Electrical Schematic, Low Level Float Switch/RP Pump Circuit

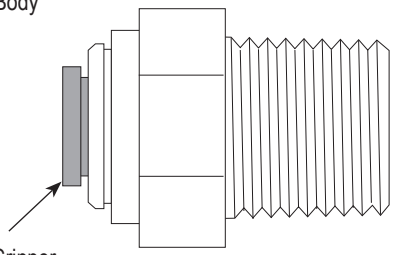


How to Use Our Push-to-Connect Fittings

Fitting Overview

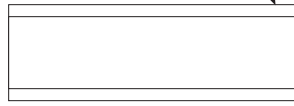
Fitting Body

Collet/Gripper
(Dark Gray)



Tubing Preparation

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



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

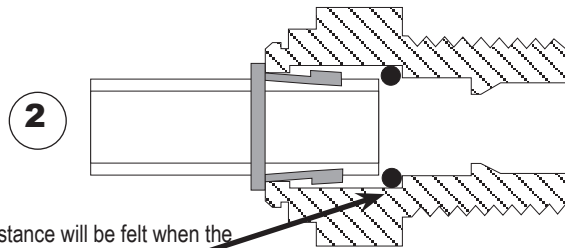


After cutting, make sure the end of the tube is round. Correct any out of roundness that may have occurred in cutting the tubing.

To Attach Tubing:

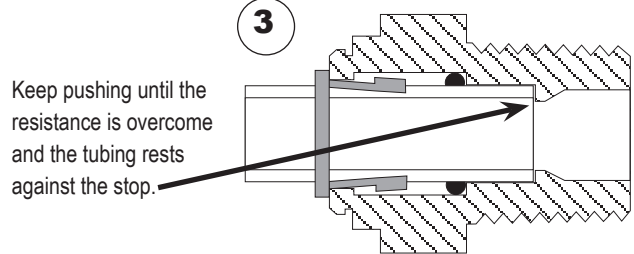
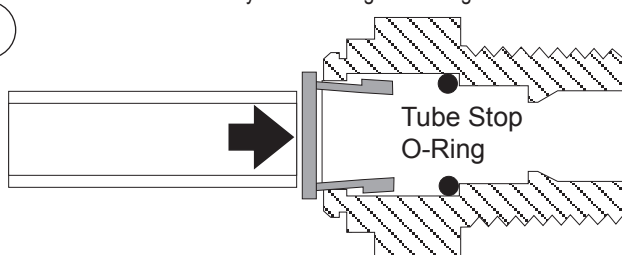
To ease insertion, moisten end of tubing with fresh water or 3% hydrogen peroxide solution.

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:

Press collet in to release grippers. While holding the collet in, pull out on the tubing.

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.

