



Installation Instructions

PTLROSYSTEM-COMPLETE
Premier Twist-Lock - Three stage RO System



Package Contents

Installation Instructions SPECTRUM PTL RO System



Parts & Hardware Included

- | | |
|--|----------------------------------|
| A RO Filter System Head with Built-in Bracket | K Drain Connector |
| B Twist-Lock™ Filters | L Drain Connector Screws |
| C Mounting Screws | M Nuts |
| D Tank Connector | N Foam Seal |
| E Water Storage Tank | O RO Tap Spout |
| F Saddle Valve | P RO Tap Body |
| G Pipette | Q RO Tap Base |
| H Plumber's Tape | R 5' of 1/4" Red Tube |
| I Restrictor | S 5' of 1/4" White Tube |
| J Nitrate Test Strip | T 2.5' of 3/8" White Tube |
| | U 6' of 1/4" White Tube |

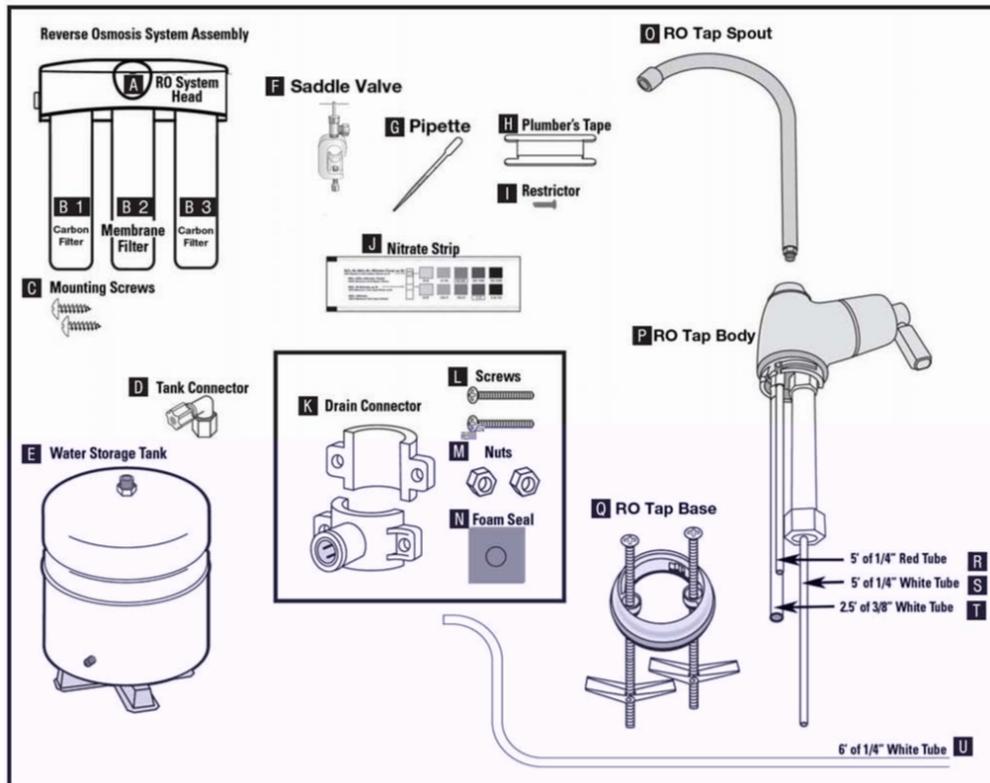


Tools & Materials Required

- | | |
|------------------------|--|
| ■ Phillips Screwdriver | ■ Safety Glasses |
| ■ 1/8" Drill Bit | ■ Masking Tape |
| ■ Center Punch | ■ Newspaper or Towels |
| ■ Adjustable Wrench | ■ Pencil |
| ■ Utility Knife | ■ Pan or Bucket |
| ■ File | ■ Compression Cap (Optional- For Kitchen Tap Spray Hose Connector) |
| ■ Tape Measure | |

Optional Materials

- Drill with 1/4" & 9/16" or 5/8" Drill Bits
- Hollow-Wall Anchor Bolts or Toggle Bolts
- Fine Steel Wool



How Reverse Osmosis works –

Your new SPECTRUM Premier Twist-Lock (PTL) Reverse Osmosis (RO) system is composed of a 3-stage system manifold, a PTL carbon block (PTL-CB) pre-filter, the reverse osmosis membrane (PTL-RO), a storage tank, a PTL-CB post-filter and an air gap tap to deliver the filtered water to your counter-top. First the water goes to the pre-filter, which is a replaceable cartridge that reduces chlorine, odour, sand, silt, dirt and other sediments to improve the taste of your water. Next, the water flows to the Reverse Osmosis membrane, which is a tightly wound membrane that reduces the total dissolved solids (TDS) and organic matter. The water goes from the membrane into the storage tank. A diaphragm inside the tank keeps the water pressurized to about 30 psi when the tank is full. This is what provides the fast flow to the tap. When the tank is empty, it should be pressurized to 5 – 7 psi. As water is drawn to the tap, it flows from the storage tank through the final filter. The final stage PTL-CB post filter reduces any remaining tastes and odours to provide cleaner great tasting drinking water direct to your tap.

Your system also has an automatic shutoff valve to conserve water. When the storage tank is full and the tap is not open, pressure closes the shutoff valve to stop flow of water with contaminants to the drain. After enough drinking water is drawn from the tap, the pressure in the Reverse Osmosis system drops and the shutoff valve opens to allow the tank to be re-filled.

Reverse osmosis uses a membrane that is semi-permeable, allowing cleaner water to pass through it, while rejecting the contaminants that are too large to pass through the tiny pores in the membrane. This quality reverse osmosis system uses a process known as cross-flow to allow the membrane to continually clean itself. As some of the fluid passes through the membrane the rest continues downstream, sweeping the rejected contaminants away from the membrane and down the drain. The process of reverse osmosis requires a driving force to push the water through the membrane - the pressure provided by your home's water supply is sufficient: 40 to 100 psi.

What it removes –

The SPECTRUM Premier Twist-Lock reverse osmosis system has achieved NSF/ANSI 42 & 58 certification. NSF International is a world leader in standard, development, product certification, education and risk management for public health and safety. Your Reverse Osmosis unit, PTL-CB, will reduce Chlorine, Odour, Particulates, Sediment, and improve taste, according to NSF 42 Standard. The PLT-RO will also reduce Total Dissolved Solids (TDS), Pentavalent Arsenic, Hexavalent Chromium, Lead, Cadmium, Cysts, Nitrate Plus Nitrite, Nitrate and Nitrite according to NSF 58 Standard.

Plan Your Installation

It is recommended to read through the entire manual before beginning your installation. Follow all steps exactly. Reading this manual will also help you get all the benefits from your system. Your Premier Twist-Lock Drinking Water System can be installed under a sink or in a remote location. Review the location options below and determine where you are going to install your system.

Under The Sink Location

The Reverse Osmosis Filter Assembly and storage tank are normally installed in a kitchen or bathroom sink cabinet. See Fig. 1. A suitable drain point is needed for reject water from the Reverse Osmosis Filter.

Remote Location

You can also locate the Reverse Osmosis Filter Assembly and storage tank in a remote location away from the Reverse Osmosis Tap. You will need a nearby water source and drain point. See Fig. 2.

NOTE: Ensure the location is heated. Cold incoming water will adversely affect RO flow rate.

Check Space Requirements

Check size and position of items for proper installation into location chosen.

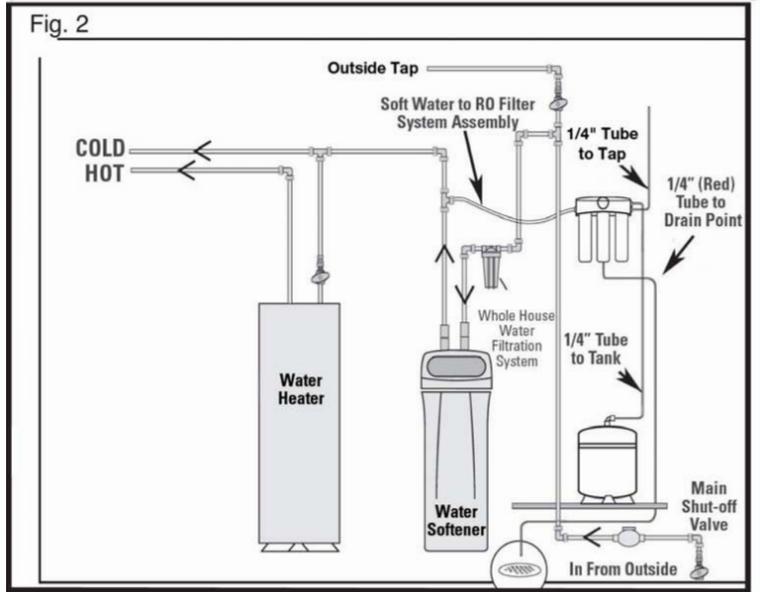
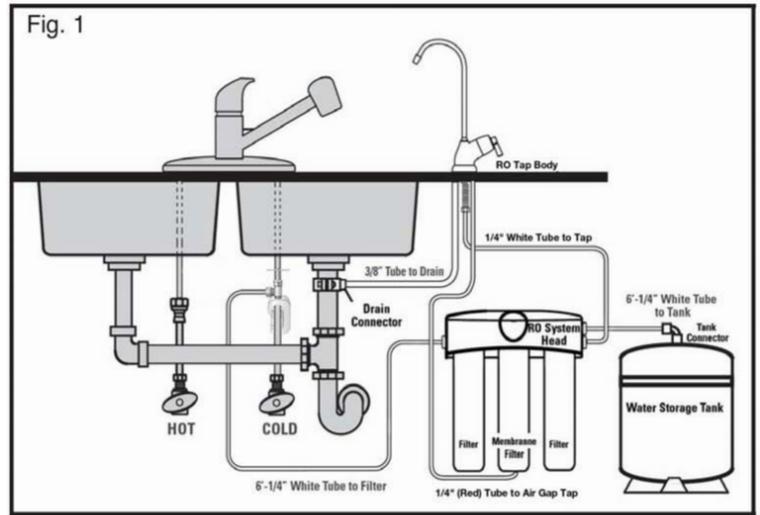
Overview and Site Preparation

There are eight easy steps to installing your Drinking Water system. They are as follows:

- STEP 1 - Install Saddle Valve
- STEP 2 - Install RO Drain Connector
- STEP 3 - Install RO Filter Assembly
- STEP 4 - Install Water Storage Tank
- STEP 5 - Install RO Tap
- STEP 6 - Connect Tubing for Water Supply Line from Saddle Valve to RO System Head
- STEP 7 - Install RO System and Drain in Remote Location
- STEP 8 - Sanitize, Pressure Test, Purge System

Prepare Site For Installation

- 1 Before starting, close the cold water shut-off valves.
- 2 Temporarily place tank and filter assembly into cabinet. Double check position of items and space required for proper installation.
- 3 Remove tank and filter from cabinet and set aside.



STEP 1

Install Saddle Valve



WARNING

Be sure that all electrical appliances and outlets are turned off at the circuit breaker before working in cabinet area.

CAUTION

Please wear safety glasses to protect eyes when drilling.

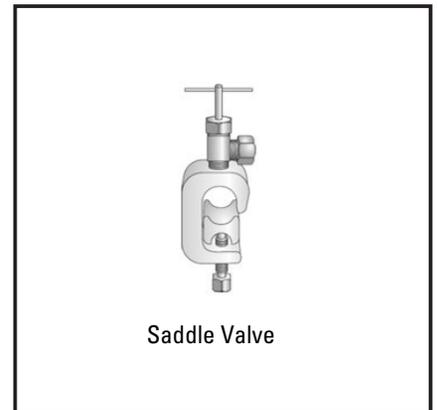
Select a cold water supply line as close to the appliance as possible.

- 1 Turn off the water from the main water supply valve. If there are other valves leading to the area, close at least one of them.
- 2 Open any taps located on the selected supply line to relieve pressure in the pipe. Turn off the tap when there is no longer any air or water escaping from the tap.
- 3 Clean the exterior of the supply line at the selected location. Wash plastic or stainless steel with water. Clean copper lines with fine steel wool.
- 4 Turn the top handle on the saddle valve until the tip of the lancing pin, located in the center below the valve, is positioned above the gasket.
- 5 Unscrew the nut holding the bottom plate on the saddle valve and remove the bottom plate.
- 6 Align the curved section of the top of the saddle valve with the curve of the top of the supply line. If you're installing the saddle valve on a copper supply line, go to the next step. If you're installing the saddle valve on any type of pipe other than copper, position it so the lancing pin is toward the front of the supply line so you can drill a small hole. Mark the supply line directly below the lancing pin. Remove the saddle valve and drill a hole slightly smaller in diameter than the lancing pin. Reposition the saddle valve on the supply line and align the lancing pin with the hole drilled into the supply line.
- 7 Place the bottom bracket over the bottom of the supply pipe, aligning the screws with the screw holes. Tighten the nut onto the screws so the bracket is tightened securely over the pipe.
- 8 Turn the top handle on the saddle valve clockwise until it will not turn anymore. There will be resistance when the lancing pin pushes through the pipe. If the pipe was predrilled, there will not be much resistance.
- 9 Turn on the water supply from the main water supply valve and any other valves that were turned off.
- 10 Check the saddle valve for leaks. Tighten the clamps if needed.
- 11 Hold a small bucket under the supply valve and slowly turn the handle counter-clockwise to test the valve. The handle will need to be turned many times to open the valve. If there is no water when the valve is open, check that water to the supply line was turned back on. If so, the lancing pin may not have been turned deep enough into the pipe. Repeat the lancing process by turning the handle of the valve clockwise until it is all the way in the pipe, and then open the valve again by turning it counter-clockwise.

Insert red 1/4" tubing into **A** RO Assembly Head inlet.

N.B - Installation kit also includes Kitchen Tap adaptor. This part is not required for installation.

N.B - Before proceeding with installation ensure your water supply is turned off.



STEP 2 Install RO Drain Connector



! WARNING

Be sure that all electrical appliances and outlets are turned off at the circuit breaker before working in cabinet area.

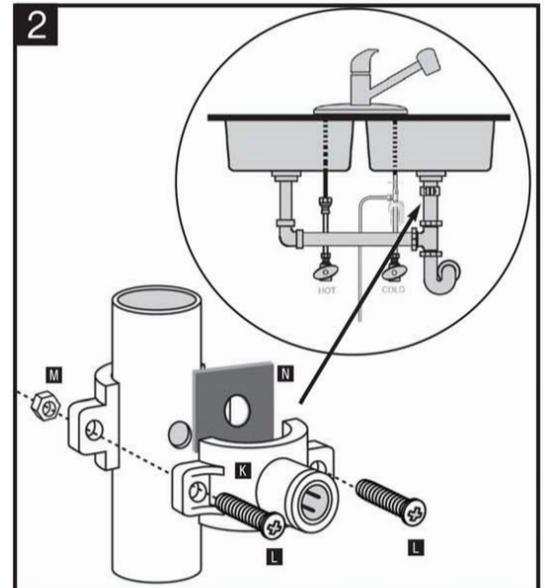
! CAUTION

Please wear safety glasses to protect eyes when drilling.

Drain Connector Installation

Choose the drain outlet location. See Fig. 1 (page 3)

- 1 Remove protective cover from back of Foam Seal **N**. Knock out center hole and align holes then attach to Drain Connector front plate **K**.
- 2 Position the Drain Connector **K** on the sink drain pipe above the drain trap. Allow room for drilling. Tighten Screws **L** and Nuts **M** securely.
- 3 Use a battery powered or properly grounded drill. Using the Drain Connector **K** port as a drill guide, drill a 7/32" hole through the wall of the drain pipe. Do NOT penetrate the opposite side of the pipe and be careful not to damage the side of the drain port fitting.
- 4 If you wish to install your drain in a remote location refer to page 10.

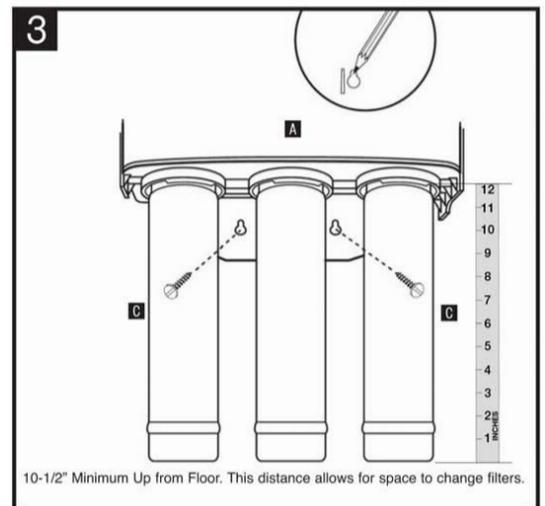


STEP 3 Install RO Filter System Assembly

The Reverse Osmosis Filter System Assembly Head **A** is mounted on Mounting Screws **C**.

The Mounting Screws **C** allow you to lift the RO Filter System Assembly without any hardware removal.

- 1 Choose an easy-to-access area under the sink to mount the RO Filter System Head **A**.
NOTE: To allow adequate space for filter changes, allow clearance of 4" - 6" below the filter to the floor. The Filter System Assembly must be mounted in a vertical position.
NOTE: Mount the Filter System Head to a solid cabinet wall or wall. If a solid surface is not available, use hollow-wall anchor bolts or toggle bolts (not included) to secure to the wall.
- 2 Using the Built-in Bracket on the back of the RO System Head **A**, mark the holes for the Mounting Screws **C** on the wall surface.
- 3 Using a 1/8" drill bit, drill two pilot holes for the Mounting Screws **C**. Insert Mounting Screws **C** into the wall with a Phillips screwdriver, leaving approximately 3/8" of each Mounting Screw **C** exposed.
- 4 Hang the RO System Head **A** on the Mounting Screws **C**.



4

STEP 4

Install Water Storage Tank

The Tank Ball Valve fitting on the Water Storage Tank may need to be tightened 3-4 turns to get a good seal. Do not over tighten.

TO INSTALL WATER STORAGE TANK:

- 1 Apply 2-3 wraps of Plumber's Tape **H** to the threads on the nipple at the top of the Water Storage Tank **E**.
- 2 Locate the Tank Connector **D**. Hand tighten onto the Water Storage Tank **E** nipple 3-4 turns, being careful not to cross thread or over tighten.
- 3 Do not connect the tube at this time. This will occur later in the assembly.
- 4 Place the Water Storage Tank **E** next to the Reverse Osmosis Filter System Assembly. The Water Storage Tank **E** can be placed upright or on its side. Use provided mount stand.

STEP 5

Install RO Tap

SELECT LOCATION OF REVERSE OSMOSIS TAP MOUNTING HOLE

You will need to select the location of the Reverse Osmosis Tap **P**. You have three options to choose from:

Use an existing sink top hole. This may be blank. This is for the spray hose or soap dispenser
(Must be between 1-3/8" and 1-5/8" in diameter)

Drill a new hole in the sink

Drill a new hole in the countertop next to the sink

- 1 Determine where you are going to install your RO Tap Body **P**.
- 2 Check to ensure the RO Tap Body **P** will mount flat against the mounting surface.
- 3 Visually review the routing of the tubes from the RO System Head **A** to the RO Tap Body **P**. Check to ensure there is adequate tube routing space between the RO Tap Body **P** and RO System Head **A**.
- 4 If drilling is needed, drill a 1-3/8" diameter hole in the mounting surface.

IMPORTANT: Drilling of surfaces made of stone or solid surface materials such as granite, marble, or other plastic resin or sinks made of porcelain and stainless steel may cause permanent, irreparable damage to the sink or countertop surface.

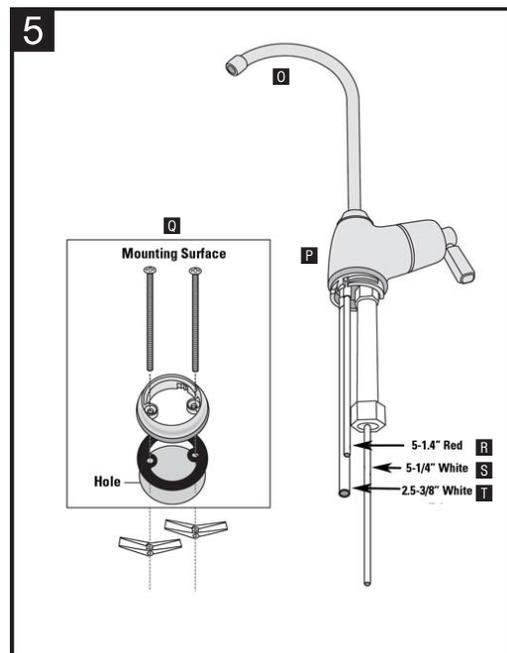
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STEP 5

Install RO Tap (continued)

INSTALL REVERSE OSMOSIS TAP

- 5 Locate and organize your RO Tap install parts. See packing list on page 1
- 6 Route the 3 tubes **R**, **S**, **T** attached to the RO Tap Body **P** through the RO Tap Base **O**, but don't connect the RO Tap Body **P** to the RO Tap Base **O** yet. Then route the 3 tubes **R**, **S**, **T** through the hole in the sink until 12" of tubing remains above the sink. Lay RO Tap Body **P** on the counter top.
- 7 Mount Tap Body **P** to the sink hole by pushing the toggle bolts through the hole until the RO Tap Body **P** is flat against the sink surface. Position the toggle bolts to catch under the lower surface of the sink or counter, but ensure that they will not obstruct the tap stem from sitting in place. Loosely tighten the toggle bolts until the RO Tap Base **O** is mounted loosely to the surface.
TIP: Make sure to keep the "wings" of the toggle bolts free to allow all tubing and tap stem room
TIP: Install the tap base with the bolts at 5 and 11 o'clock positions to have the handle positioned at 90 degrees to the right
- 8 Hold the RO Tap Base **O** firmly and mount the RO Tap Body **P** to the RO Tap Base **O** by turning 1/4 clockwise to lock. Ensure the RO Tap Body Handle is positioned to your liking.
TIP: If there is not enough clearance for the tubing and the stem, the toggle wings may need to be adjusted to create more clearance.
- 9 Turn the RO Tap Body **P** 1/4 turn counter-clockwise and remove the tap enough to tighten the RO Tap Base **O** togglebolt screws firmly. Do not over-tighten.
- 10 Mount the RO Tap Body **P** to the RO Tap Base **O** and turn 1/4 turn clockwise until it locks.
- 11 Mount the RO Tap Spout **O** to the RO Tap Body **P** by screwing spout nut to body.

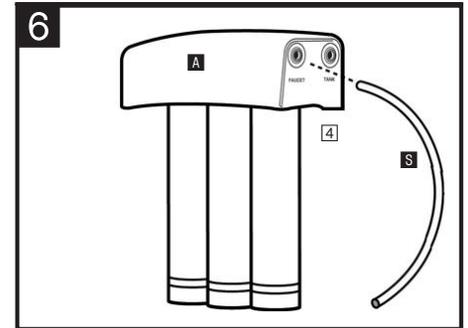


STEP 6

Connect Tubing

Install 1/4" Plastic Tubing for Water Supply Line from System Head Outlet to RO Tap

- 1 Locate the 1/4" White Plastic Tubing **S** that is already attached to RO Tap Body **P** (see page 7 illustration).
- 2 Determine the length necessary to connect to the RO System Head **A** Outlet (labeled "FAUCET").
- 3 Cut the tubing squarely with sharp utility knife.
- 4 Wet the end of the 1/4" White Plastic Tubing **S** with water and push it into the RO System Head **A** Outlet (labeled "FAUCET") approximately 5/8", until it stops.



STEP 6

Connect Tubing (Continued)

FROM AIR GAP TAP TO RO ASSEMBLY

- 1 A Locate 1/4" Red Plastic Tubing **R** already attached to the air gap barb on the RO Tap Body **P**.
- 2 A Determine length necessary to connect to the drain outlet on the RO Membrane Filter **B.2**.
- 3 A Cut 1/4" Red Plastic Tubing **R** square and to length with sharp utility knife.
- 4 A Insert Restrictor **L** into end of 1/4" Red Plastic Tubing **R**.
- 5 A Remove black plug from RO Membrane Filter **B.2** drain port by pushing on white collar while pulling plug with other hand. Discard plug.
- 6 A Insert 1/4" Red Plastic Tubing **R** all the way into the fitting on bottom of RO Membrane Filter **B.2** approximately 5/8" until it stops.
- 7 A Pull on the 1/4" Red Plastic Tubing **R** to be sure it is held firmly in the fitting.

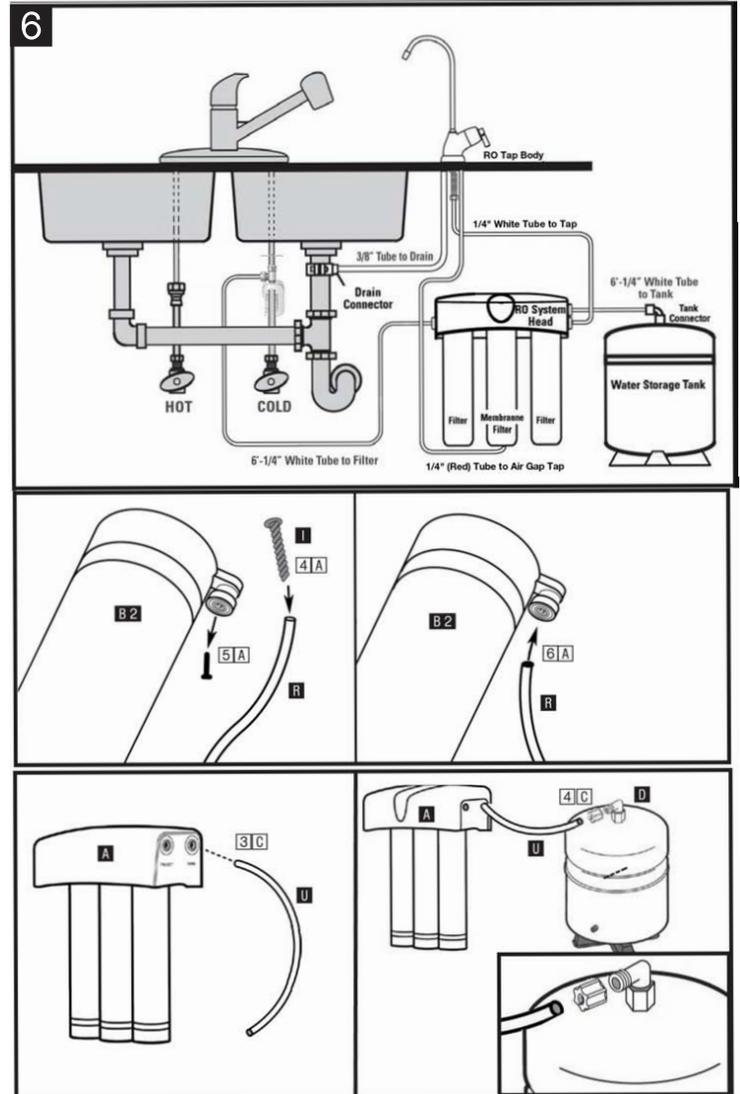
CONNECT 3/8" TUBE FROM REVERSE OSMOSIS TAP TO DRAIN ADAPTER

- 1 B Locate the 3/8" White Plastic Tubing **I** already attached to the RO Tap Body **P**.
- 2 B The other end needs to be attached to the collet on the sink Drain Connector **K**.
- 3 B Cut 3/8" White Plastic Tubing **I** as needed to route in as straight of a run as possible, without loops, dips, low spots or kinks.
- 4 B Cut the end of the 3/8" White Plastic Tubing **I** square with a sharp utility knife.
- 5 B Insert all the way into the fitting approximately 1" until it stops.
- 6 B Pull on the tube to be sure it is held firmly in the fitting.

CONNECT TUBING FROM RO SYSTEM HEAD TO WATER STORAGE TANK

- 1 C Use the remaining 1/4" White Tubing **U** from Step 6 and determine length necessary to connect the Tank outlet (labeled "TANK") on RO System Head **A** to the Water Storage Tank **E**.
- 2 C Cut 1/4" White Plastic Tubing **U** square with a sharp utility or knife.
- 3 C Wet the end of tubing and Insert into compression nut of Tank Connector **D** fitting. Which was connect to tank previously.
- 4 C Tighten compression nut to secure tubing to Tank Connector **D**.
- 5 C Insert the other end of 1/4" White Plastic Tubing **U** into the outlet of the RO System Head **A** (labeled "TANK") approximately 5/8" until it stops.

NOTE: Tubing lengths should allow for the removal of the assembly from the mount screws for servicing. If tubing lengths are shortened for neater appearance, it may be necessary to keep the assembly on the mount screws for service.



STEP 7

Install RO System and Drain In Remote Location

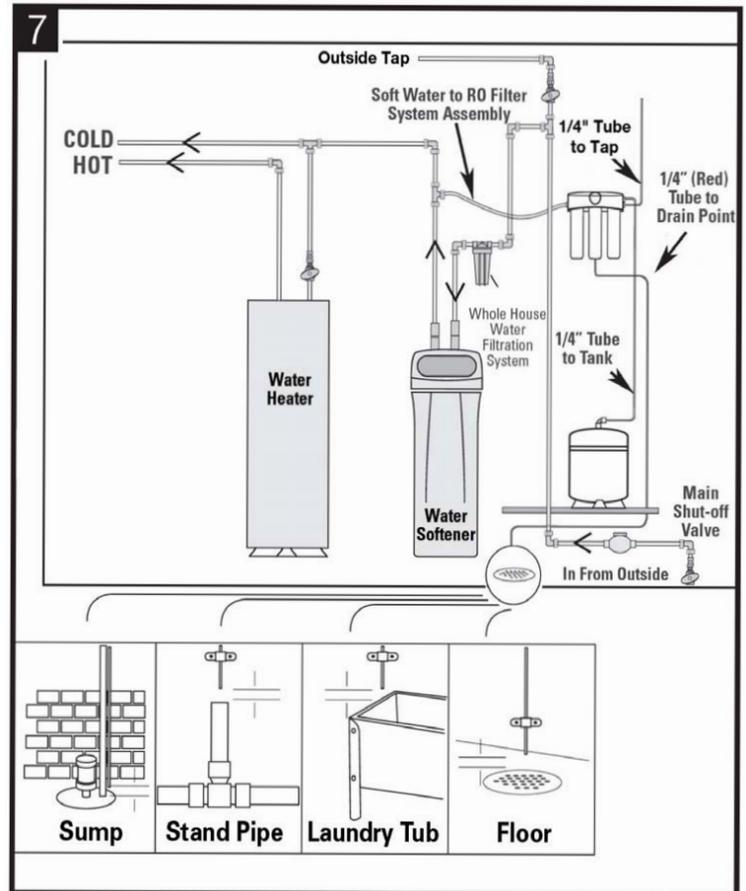
INSTALL A REMOTE DRAIN POINT AND AIR GAP (Remote Location)

You can also run the drain tubing to an existing drain in the house. A floor drain, laundry tub, standpipe, sump, etc. are suitable drain points.

Always be sure to provide an air gap between the end of the hose and the drain point. This will prevent water from backing up into the system.

TO INSTALL A REMOTE DRAIN POINT, COMPLETE THE FOLLOWING STEPS:

- 1 Remove the 1/4" Red Plastic Tubing **R** from the RO Tap Body **P** by pulling gently.
- 2 Determine if this length is long enough to reach the drain point. If it is, then insert Restrictor **I** in end of tubing and then insert this end of tubing into drain port on RO Membrane Filter **B2**.
- 3 If not, replace the 1/4" Red Plastic Tubing **R** with an adequate length of tubing to reach the drain point. Then insert Restrictor **I** in end of tubing and then insert this end of tubing into drain port on RO Membrane Filter **B2**. Refer to Step 6 in manual on how to disconnect and connect tubing.
- 4 Run the tubing to the drain point and secure at the end with a bracket (purchased locally). Provide a 1-1/2" air gap between the end of the tube and the drain.
- 5 Remove 3/8" White Plastic Tubing **L** from RO Tap Body **P** and discard.
- 6 Tap will not have 1/4" or 3/8" tubing attached to the airgap barbs in the RO Tap Body **P** for remote installation.



STEP 8 Sanitize, Test and Purge System

SANITIZE THE SYSTEM

Sanitizing is recommended immediately after installation of the SPECTRUM Pressure Twist-Lock (PTL) RO filter system. It's also recommended after servicing inner parts. It is important that the person installing or servicing the system have clean hands while handling inner parts of the system. Complete the following steps to sanitize the system.

- 1 Make sure the water supply to the RO Filter System Assembly is off.
- 2 Open the Reverse Osmosis Tap. If the Water Storage Tank is not already empty, allow the water to completely empty.
- 3 Find the pipette **G** included in package and common household bleach (5.25%).
- 4 Disconnect the 1/4" White Plastic Tubing **U** from the Water Storage Tank **E** by unscrewing the nut from the Tank Connector **D** fitting.
- 5 Add 3 ml. of bleach into the open end of Water Storage Tank **E** 1/4" White Plastic Tubing **S**. Handle bleach according to manufacturer's instructions.
- 6 Re-connect Water Storage Tank and 1/4" White Plastic Tubing **S** to Tank Connector **D** fitting.
- 7 Sanitizing the RO Filter System Assembly will be completed during the pressure test and purging following steps below.

NOTE: The bleach must be completely removed from the system before drinking the RO water. See purging instructions below.

PRESSURE TEST THE SYSTEM

IMPORTANT: Complete the sanitizing procedures above before pressure testing.

- 1 Open the cold water supply valve to the RO Filter System Assembly. See page 3, Fig. 1
- 2 Open the kitchen tap. This will purge air from the plumbing system. Close kitchen tap when water runs smooth.
- 3 Ensure RO Tap is closed.
- 4 Pressure will start to build in the RO Filter System Assembly in about 2 hours. Carefully inspect all fittings and connections while the RO Filter System Assembly builds pressure. Check for leaks and fix if any are found by ensuring all tubing is cut square and fully inserted. Also ensure tubing doesn't have a scratch, dent, or notch at the end. If so, cut 1" off squarely and re-insert. If problems exist, refer to the troubleshooting chart.

NOTE: When the RO Filter System Assembly is first pressurized, water may "discharge" from the tap air gap hole until air is passed from the RO Filter System Assembly.

PURGING THE SYSTEM

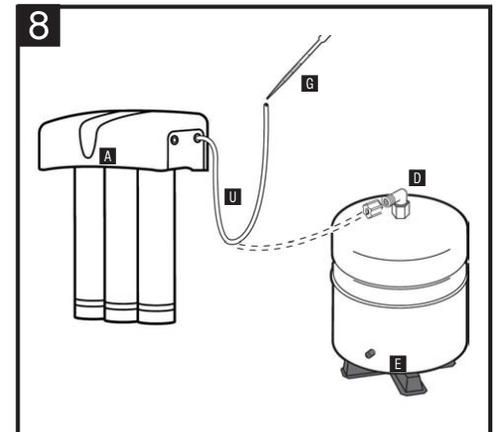
- 1 Open the Reverse Osmosis Tap and let water flow through the system for a 24 hour period.

NOTE: The flow rate will be very slow during the purge.

- 2 Close the Reverse Osmosis tap after the 24 hour purge is complete.
- 3 Your Reverse Osmosis system is ready for use when the purge is complete.

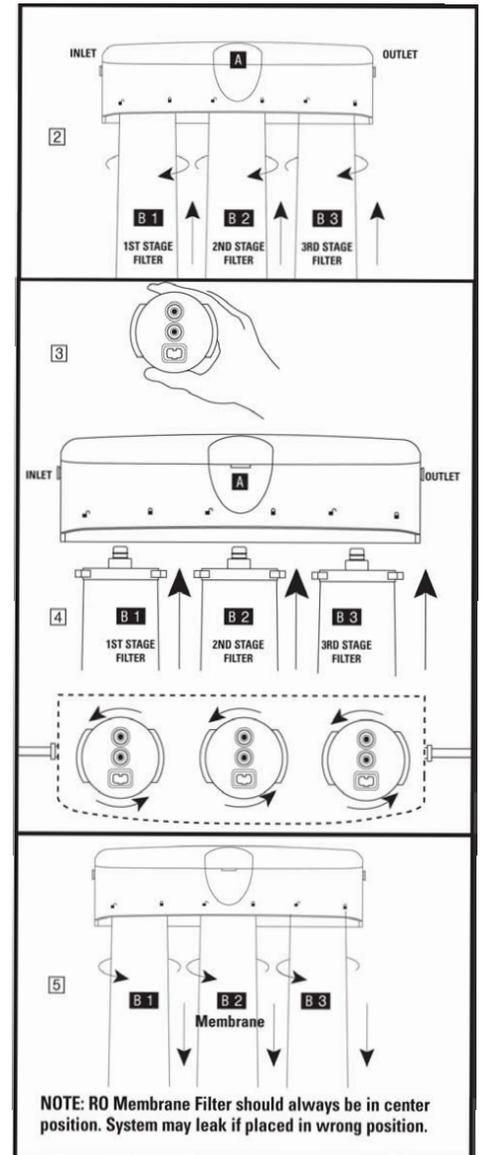
Review the following operating features before using your Reverse Osmosis System:

You will not have filtered water immediately. It will take 1-3 hours to completely fill the storage tank to create liberal flow from the tap. The flow rate from the Reverse Osmosis system will be less than your kitchen tap. Water will run to the drain while the Reverse Osmosis is filtering water, even when you are not using it. You may hear a water going to the drain – this is normal. Water going to the drain will automatically stop when the storage tank is at capacity.



Twist-Lock™ Filter Replacement

- 1 Turn off the cold water shut-off valve to the RO Filter System Assembly.
- 2 Turn each Twist-Lock™ Filter **B 1**, **B 2**, **B 3** from right to left until it releases. Gently pull down on each used Twist-Lock™ Filter to remove it from the RO System Head **A**. Discard the used Twist-Lock™ Filters.
NOTE: Place a pan or bucket under the RO Filter System to catch any water drips.
- 3 Hold each new Twist-Lock™ Filter with the label facing to the left slightly. The two nozzles on top of each Twist-Lock™ Filter should be toward the back of the Twist-Lock™ Filter. If holding properly, the two extended flanges on top of the Twist-Lock™ Filter should be out to each side.
NOTE: When viewing the Twist-Lock™ RO System from the front, the **B 1 and **B 3** are both PTL-CB filters. These filters must be positioned on either side of the center position while the **B 2** is the PTL-RO or Membrane and must be positioned in the center position .**
- 4 Lift each Twist-Lock™ Filter straight up into the RO System Head **A** until the two nozzles seat into the ports and the two extended flanges on top of the Twist-Lock™ Filter are fully engaged into the RO System Head **A**.
- 5 Turn each Twist-Lock™ Filter from left to right until it stops.
- 6 Turn on the cold water shut-off valve and the RO Tap and check for any leaks. If there are leaks, refer to the troubleshooting information on page 15 of the installation instructions.
- 7 Pressure Test and purge system per Step 8.



SPECIFICATIONS – QUALIFIED SYSTEM PERFORMANCE

Because the performance of a Reverse Osmosis Membrane is highly dependent upon pressure, temperature and TDS, the following should be used for comparison purposes only.

	U.S.	Metric
Membrane Production ¹	35 ± 7 gpd	(106–159 lpd)
Membrane TDS Reduction ¹	96.6% minimum	96.6% minimum
System Production ²	19.4 gpd	73.4 lpd
TDS Reduction ²	97.5%+ typical	97.5%+ typical
Maximum TDS	2000 ppm	2000 ppm
Maximum water hardness @ 6.9pH	10 gpg	2.64 gpL
Maximum Chlorine in water	3.0 ppm	3.0 ppm
Supply water pH limits	4-10	4-10
Drain (reject water) Flow	3–5 x product flow	3–5 x product flow
Empty Storage Tank Precharge	5–7 psi air	35–48 kPa air
Storage Tank Capacity ²	2.8 gallons	10.6 liters
Supply water pressure limits	40-100 psi	280-689 kPa
Supply water temperature limit	40-100°F	5-40°C
Efficiency ³	19%	19%
Recovery ⁴	30.6%	30.6%

¹ Industry standards measure RO Membranes performance with no back pressure on the product water, at 60 psig (414kPa) and 25°C. Further conditions on the above are 250 ppm TDS and a 30.6% recovery rate. Production rate and TDS reduction figures are for a new Membrane that has been rinsed for 24 hours. The production rate of a new Membrane can decrease by 10% per year or more, depending upon the scaling and fouling tendencies of the Feed Water.

² Measured at 50 psi, 25°±3°C, and 717 mg/l TDS per NSF/ANSI Standard 58.

³ Efficiency rating means the percentage of the influent water to the system that is available to the user as reverse osmosis treated water. Under operating conditions that approximate typical daily usage.

⁴ Recovery rating means the percentage of the influent water to the membrane portion of the system that is available to the user as reverse osmosis treated water when the system is operated without a storage tank or when the storage tank is bypassed.

Non-potable Water Sources: Do not attempt to use this product to make safe drinking water from non-potable water sources. Do not use the system on microbiologically unsafe water, or water of unknown quality without adequate disinfection before or after the system. This system is certified for cyst reduction and may be used on disinfected water that may contain filterable cysts.

Arsenic Reduction: This system shall only be used for arsenic reduction on chlorinated water supplies containing detectable residual free chlorine at the system inlet. Water systems using an inline chlorinator should provide a one minute chlorine contact time before the reverse osmosis system.

Nitrate/Nitrite Test Kit: This system is acceptable for treatment of influent concentrations of no more than 27mg/L nitrate and 3mg/L nitrite in combination measured as N. It is certified for nitrate/nitrite reduction only for water supplies with a pressure of 280 kPa (40 psig) or greater. This system is supplied with a nitrate/nitrite test kit. Product water should be monitored periodically according to the instructions provided with the test kit.

Product Water Testing: The Reverse Osmosis System contains a replaceable membrane cartridge critical for the effective reduction of total dissolved solids (TDS). Replacement of the reverse osmosis membrane cartridge: The reverse osmosis system contains a replaceable membrane cartridge critical to the efficiency of the system. This membrane should be replaced every 18 months, or more often based on your local water. Only replace the reverse osmosis membrane with a part approved for use in your Reverse Osmosis system.

Reverse Osmosis System Maintenance

PRE FILTER/POST FILTER MAINTENANCE

The pre-filter and post-filters are replaceable activated carbon cartridges, model number PTL-CB. They are located in the 1st and 3rd positions of the 3-stage system. It is recommended to replace the pre-filter and post-filter cartridges at least every 6 months of product water use. The pre-filter and post-filter ARE BOTH PTL-CB cartridges. You may need to replace these filters more often with a great deal of use or a high level of incoming sediment. This will protect the RO membrane from being destroyed by chlorine and plugging with sediments. You may notice a slower output of product water as the pre-filter and post-filters build up with sediments. Replace the pre-filter and post-filter cartridges when this occurs. See below for instructions.

RO MEMBRANE CARTRIDGE MAINTENANCE

The Reverse Osmosis membrane is a tightly wound membrane located in the center position of the 3-stage system. The membrane reduces the dissolved solids and organic matter. The life of the Reverse Osmosis membrane depends on the pH and hardness of the supply water. (see specifications). Membrane life is shorter with higher pH. For example, if supply water pH is under 7.5, the cartridge may last up to 18 months. However, membrane life may be as short as 6 months if the pH is as high as 8.0. Higher pH weakens the membrane and causes pin-hole leaks. It's time to replace the Reverse Osmosis membrane when the production rate and the quality of the output water drops. The output water may begin to taste different, indicating solids and organics are passing through the Reverse Osmosis membrane. See Reverse Osmosis membrane replacement.

The Reverse Osmosis membrane output and flow rate is greatly determined by three factors: 1. Temperature of incoming water. The lower the temperature is directly proportional to the slower flow rate. All Reverse Osmosis membranes are tested at 25°C. However, incoming water should not exceed 38°C. You need to ensure that the Reverse Osmosis system is placed in a climate controlled area and does not have the potential to freeze. 2. TDS (total dissolved solids) present in the incoming water. More TDS requires more time for the membrane to filter and remove. Ensure incoming TDS does not exceed 2000 ppm. 3. Incoming water pressure is one of the key factors determining the flow rate of the RO membrane. Higher pressure will enable a higher flow rate. Pressure must be above 40 PSI for proper operation. You may need to install a Booster Pump or Permeate Pump if your pressure is below 40 PSI.

REVERSE OSMOSIS MEMBRANE REPLACEMENT

Complete the following steps to replace the filters.

1. Remove (turn to the left) the Twist-Lock™ pre-filter cartridge first from the system to relieve pressure on the Reverse Osmosis filter.
2. Turn the Twist-Lock™ Reverse Osmosis filter to the left and remove the Reverse Osmosis filter.
3. Remove the Twist-Lock™ post-filter cartridge.
4. Discard all of the Twist-Lock™ filters in a proper manner.
5. Install new Twist-Lock™ filters in reverse order: 1) post-filter, 2) Reverse Osmosis, 3) pre-filter. Turn cartridges to the right to secure them to the system.
6. Purge the Reverse Osmosis System per the instructions in step 8.

PRE-FILTER & POST-FILTER CARTRIDGE REPLACEMENT

Complete the following steps to replace the filters.

1. Remove the Twist-Lock™ pre-filter cartridge, by turning to the left, from the system.
2. Remove the Twist-Lock™ post-filter cartridge, by turning to the left, from the system.
3. Discard the Twist-Lock™ filters in a proper manner.
4. Install new Twist-Lock™ filters in reverse order: 1) post-filter, 2) pre-filter by turning filters to the right to secure them to the system.
5. Purge the Reverse Osmosis System per the instruction in Step 8.

DRAIN FLOW RESTRICTOR

The drain flow restrictor is vital for proper operation of the Reverse Osmosis membrane. The restrictor keeps water flowing through the membrane at the proper rate. This is to ensure the system produces the best quality product water. Periodically check the restrictor assembly to be sure it is clean and unrestricted. If the drain flow assembly requires service, review Step 6 (4A). Disassemble and assemble as shown.

CHECK VALVE

The check valve is vital for proper operation of the Reverse Osmosis system. The check valve ensures that the product water is flowing in the proper direction, and does not allow it to flow backwards.

AUTOMATIC SHUT-OFF

The automatic shut-off conserves water when the storage tank is full by turning the system off until more product water is needed.

REVERSE OSMOSIS TROUBLESHOOTING GUIDE LOW WATER QUANTITY

Possible Cause

Incoming water temperature is cold

Incoming water has extremely high level of Total Dissolved Solids (TDS)

Low incoming water pressure.

Carbon pre-filter is clogged.

Reverse Osmosis Membrane is fouled

Air pressure in holding tank is incorrect.

Solution

The water temperature is one of the key factors in the performance of the PTL-RO membrane. The higher the temperature, the higher the flow rate, and vice versa. All PTL-RO Membrane elements are tested and rated at 25°C. Ensure the PTL-RO is installed in a heated area of the home.

Incoming TDS level is one of the key factors determining the flow rate of the PTL-RO membrane. More TDS requires more time for the membrane to remove – no solution is required. Ensure incoming TDS does not exceed 2000 ppm.

Incoming water pressure is one of the key factors determining the flow rate of the PTL-RO membrane. Higher pressure will enable a higher flow rate. Pressure must be above 40 PSI for proper operation. You may need to install a Booster Pump or Permeate Pump if your pressure is below 40 psi.

Replace Filter with model number PTL-CB

Make sure incoming water pressure is within operating limits. Make sure drain line is not clogged. Correct cause of fouling or replace RO Membrane.

Empty water from holding tank. Air pressure in valve stem should be between 5 - 7 PSI. Increase psi similar to adding air to bicycle tire.

LOW WATER PRESSURE FROM DISPENSING TAP

Possible Cause	Solution
Air Pressure in Holding Tank is incorrect. This is the #1 reason for low flow from Reverse Osmosis Tap.	Open tap and empty water from holding tank. Shut off feed water to system and remove holding tank from under sink. (The tank is easier to work on.) Locate the air valve stem (just like on a car or bicycle tire) and add air. If there is still water in the tank, continue to add air until all the water is removed. Once all the water is removed, continue to add air and pressurize to 5 – 7 PSI. Re-install the tank under the sink, turn on the feed supply to the system and allow the tank to fill.
Carbon Post Filter is clogged.	Replace Post Filter with model number PTL-CB
Heavy water use. Holding Tank is empty.	Allow Holding Tank to refill.
Low Water Production.	See previous section on Low Quantity of Water From Holding Tank.

PRODUCT WATER IS HIGH IN TOTAL DISSOLVED SOLIDS (TDS)

Possible Cause	Solution
Clogged Pre-filter.	Replace Pre-Filter with model number PTL-CB
Low incoming water pressure.	Incoming water pressure must be above 40 PSI. Install a Booster Pump or Permeate Pump.
Reverse Osmosis membrane is expended.	If Membrane life is unusually short, find and correct the problem. Replace PTL-RO Membrane after 18 months.
Product water and drain water lines are reversed.	Correct plumbing according to installation instructions.
No water to drain. Drain Flow Restrictor is clogged.	Remove tubing from membrane drain port, cut 1" length off end of tubing and add new restrictor.
No water to drain. Air Gap Tap is clogged.	Remove tap body from tap base and disconnect air gap ¼" tubing. Ensure there are no obstructions – clear them out. Replace Air Gap Tap. Remove tap body from tap base and disconnect drain 3/8" tubing. Ensure the drain connector is properly aligned with the hole in the drain pipe. Ensure there are no obstructions – clear them out.
New Carbon Post-filter has not been rinsed completely.	Drain Holding Tank twice to rinse new Carbon Post-filter.TDS.
The incoming feed water TDS has increased.	An increase in feed water TDS will also give an increase in Product Water TDS.

Possible Cause

Water leaks from tap spout.
Leaks from connection to the tap.

Solution

Ensure the tap spout is properly seated. Repair or replace the tap.
Check and fix compression fittings to tap. Repair or replace the tap.

TASTES AND ODOURS IN PRODUCT WATER

Possible Cause	Solution
Carbon Post Filter is exhausted.	Replace Filter with model number PTL-CB
There is foreign matter in Holding Tank.	Follow the clean, flush and sanitizing procedures. Replace all filters.
Product water and Drain water lines are reversed.	Correct plumbing according to installation instructions.
Dissolved gases in feed water.	Pre-treat feed water to remove gasses.
Increase in Product Water TDS.	See High TDS in Product Water Section.

LEAK FROM AIR GAP HOLE IN TAP

Possible Cause	Solution
Air Gap is clogged.	Remove tap body from tap base and disconnect air gap ¼" tubing. Ensure there are no obstructions – clear them out.
Drain line is clogged.	Remove tap body from tap base and disconnect drain 3/8" tubing. Ensure the drain connector is properly aligned with the hole in the drain pipe. Ensure there are no obstructions – clear them out.
Drain flow rate is too high.	Replace Flow Restrictor.

QUICK CONNECT FITTINGS LEAK

Possible Cause	Solution
Tubing is crimped or bent at connection	Remove tubing, cut 1" off squarely – making sure to not crimp. Use a very sharp utility knife. It is not recommended to use side-cutting or diagonal-cutting pliers. Wet the tubing end and insert 5/8" until fully inserted.
Tubing is not cut squarely	Remove tubing, cut 1" off squarely – making sure to not crimp. Use a very sharp utility knife. It is not recommended to use side-cutting or diagonal-cutting pliers. Wet the tubing end and insert 5/8" until fully inserted.
Tubing does not enter fitting at 90° angle – not enough tubing	Re-route tubing to allow it to enter fitting at a straight 90° angle. If not enough tubing to allow, remove tubing and use a longer piece. Remove by pressing in the white collar while pulling the Plastic Tubing out with your other hand.

CAUTION

- These filters are not water purifiers. Do not use with water that is microbiologically unsafe or of unknown quality without adequate disinfection before or after the system. Systems certified for Cyst reduction may be used on disinfected waters that may contain filterable Cysts.
- This unit is not designed to filter sulfur (rotten egg odour). Use of carbon filters to treat sulfur may intensify taste/odour problems.
- Please comply with all state and local regulations regarding the installation of water treatment devices.
- The contaminants or other substances reduced by the water filter device are not necessarily in your water.

Operation/Maintenance Data

These units are intended for non-commercial use. They should be used only in ambient air temperature of between 2°C and 38°C. Placement of these units in direct sunlight or use of electrical heating equipment on these units must be avoided. Replace filter cartridge when and as directed in the installation/ operation instructions included with each cartridge. Replacement filter cartridges are available from your supplier.