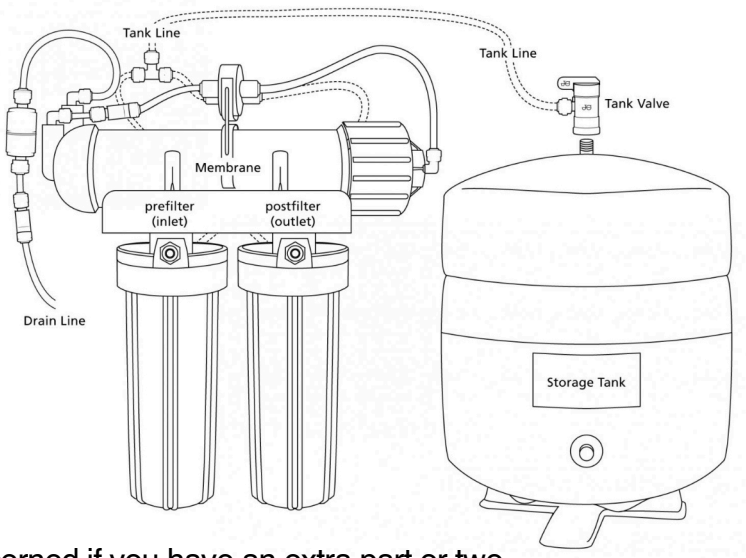
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Black & White Reverse Osmosis Unit Installation Instructions

Thank you for purchasing our Black & White Reverse Osmosis Unit. The unit is designed to be as easy to install as possible. The instructions are a little detailed because of the number of parts. Don't hesitate to call for advice if you get stuck. Before beginning, please take a moment to review the contents of the box to ensure that your unit is complete.



Often our Black & White units are custom built to your order, so don't be concerned if you have an extra part or two. Here is a list of what is essential:

- Reverse Osmosis Unit
- Pressurized Storage Tank
- Inlet Installation Kit
- Drain Saddle Installation Kit
- Ledge Faucet & Installation Kit
- Tank Installation Kit
- Handheld TDS Tester
- RO Membrane (Installed)
- Pre & Post Filter Cartridges (Installed)
- Filter Housing Wrench

You will probably need most of the following tools & supplies to complete the installation.

- A set of open end wrenches and/or a couple of good crescent wrenches.
- Sharp scissors or clippers to cut tubing.
- Electric drill.
- Phillips screwdriver.

Recommended Order of Installation

For each step, follow **the instructions included with the installation kit**.

1. Install the ledge faucet using the manufacturer's instructions and parts included with the faucet.
2. Establish a source of water for the RO unit by installing the inlet valve kit.
3. Establish a drain connection by installing the drain saddle kit. Or, by running the drain line to a suitable drain location.
4. Install the tank valve on top of the storage tank. Just screw the valve down several turns onto the stem. No tool necessary, and don't over tighten. (The small capped valve on the side near the bottom of the tank is to add air at the time of the unit's annual service. Your tank has been pre-aired before shipment, so for now leave it alone.)
5. Setup the unit & tank. Place the storage tank and the RO unit where you want them under the sink. The unit can be wall mounted or simply stood in a secure location. Remember that you're going to have to service both the tank and the RO unit, so avoid making them inaccessible.

Connecting the Unit

Complete the installation by attaching the tank, inlet, drain and faucet tubing to your unit:

- The **black inlet tube** is attached to the front of the pre-filter housing.
- The **blue faucet tube** is attached to the front of the post-filter housing.
- The **yellow drain tube** is attached to the drain saddle installed on your drain pipe.
- The **white tank tube** is attached to the tee fitting on the top of the unit.

Once these connections are made, the unit is installed.

Startup & Rinse

When all connections are made, start the unit by the following procedure.

1. Open the ledge faucet and leave it open. Close the tank valve (blue handle perpendicular to the tubing.)

2. Turn on the inlet valve and let water flow into the unit. Gurgling and hissing are normal.

3. Check for leaks.

4. After five to ten minutes, water will begin to drip from the open faucet and eventually level off to a small stream or fast drip. This is normal.

5. Allow water to flow from the faucet for about an hour to thoroughly rinse the membrane, then close the faucet and open the tank valve. Water will now begin to collect in the storage tank.

6. Allow water to fill the tank for two or three hours, then open the faucet and let the tank empty. Water flow from the faucet should now have enough flow and pressure to fill a glass normally. Again, gurgling, hissing, and spluttering are normal. When the faucet returns to the small stream or fast drip, the tank is empty. Close the faucet and let the unit collect water. You can now use the unit at any time (although you won't have a lot of water for a half hour or so).

Operation of the unit is fully automatic from this point. As you use water, the unit will turn on automatically and refill the tank.

Tip: Sometimes trapped air or carbon fines will cause cloudy or grey water.

This is normal and it will go away as you use the system. Some filters require more rinsing and a longer break in period. Running more water will almost always improve the issue.

Maintenance

RO systems are generally low maintenance, requiring only annual service. Like any filter, this depends on water quality and usage. Regular maintenance and inspection are highly recommended to keep your unit running well and producing clean and healthy water.

Recommend maintenance schedule.

Every Year	**Every 3—5 Years**	**Every 5—10 Years**
Replace pre and post filter cartridges.	Replace RO membrane if needed.	Replace storage tank.
Test membrane TDS performance.	Check tank pressure.	Replace pre and post filter o-rings.
Inspect for leaks and lubricate pre and post filter o-rings.		

Don't hesitate to use the water. Reverse Osmosis thrives on work. Don't hesitate to use it to cook spaghetti, and especially, give it to your pets and plants. They'll love it, and the unit will run all the better for the workout. If you have problems, please call right away. We want the unit to work perfectly for you, so let us know if it doesn't perform to your satisfaction. (Most of our business comes from referrals from satisfied customers, so we do our best to keep everything running well.)

Using Quick Connect Fittings

Quick connect fittings make an easy and extremely secure connection.

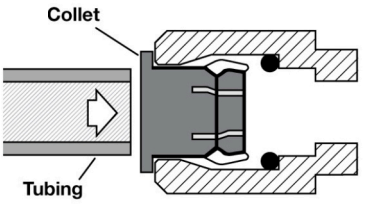
To connect, be sure the end of the tubing is cut square, then push the tubing in until it bottoms out.

To disconnect, push in on the collet (the small plastic collar that encircles the tubing) with your fingernail and pull the tubing out simultaneously.

If the unit has been in use, you will not be able to remove the tubing from the fitting until water pressure has been released.

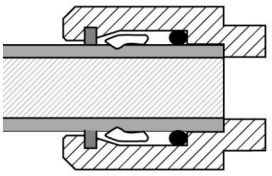
If you remove the tubing and reinsert it, trim off a small portion of the end of the tubing to ensure a leak-free reconnection.

1.



Push tubing straight in as far as it will go.

2.



Tubing is secured in position.

Using Your TDSTester

This is a simple but very reliable tester that measures the Total Dissolved Solids (TDS) in water. It gives a reading in parts per million (ppm) of all the dissolved solids, good or bad. Dissolved solids in water are mainly its mineral content. If your tap water, for example, has a TDS reading of 250 parts per million, that means that the total content of the minerals dissolved in the water make up 250 parts per million of the total volume. For practical purposes, TDS measurement is a very effective way to test you reverse osmosis unit's performance.

To operate:

1. Remove the cover from the bottom of the tester, then turn on the unit by pressing the On/ Off button. The display should read 000.

2. Insert the tip of the tester (the end where the cover was) into the water to be tested. A half inch or so deep is plenty. You'll ruin the meter if you submerge it too deeply.

3. Read the numbers on the display. The number you see is the TDS (Total Dissolved Solids) of the water expressed in PPM (parts per million).

4. The Hold button and the Temp button are features you probably won't need. Hold locks the number on the display so it won't go away and Temp measures the temperature of the water.

5. When you're finished, turn the tester off. Leaving the tester on will drain the batteries.

Note: The tester is factory calibrated. You won't need to calibrate it.

Testing the RO Membrane

Measure the TDS of your tap water, then measure the product water for comparison. The RO water should be about 1/10th or less the reading of the tap water. In other words, if the tap water reads 250, the reverse osmosis water should read around 25 or less. What you are measuring is the performance of the reverse osmosis membrane. As long as you get a respectable TDS reading, the membrane does not need to be replaced. Typically, reverse osmosis membranes last three years or longer.



Important: When testing your new unit, wait until it has run for a few days to ensure a reliable reading. It takes quite some time for the membrane and filters to settle into their best TDS reading.

If you are servicing the unit, take your test before changing the carbon filters. New carbon filters will corrupt the reading considerably and read much too high. The meter will read the manufacturing residue from the carbon filters.

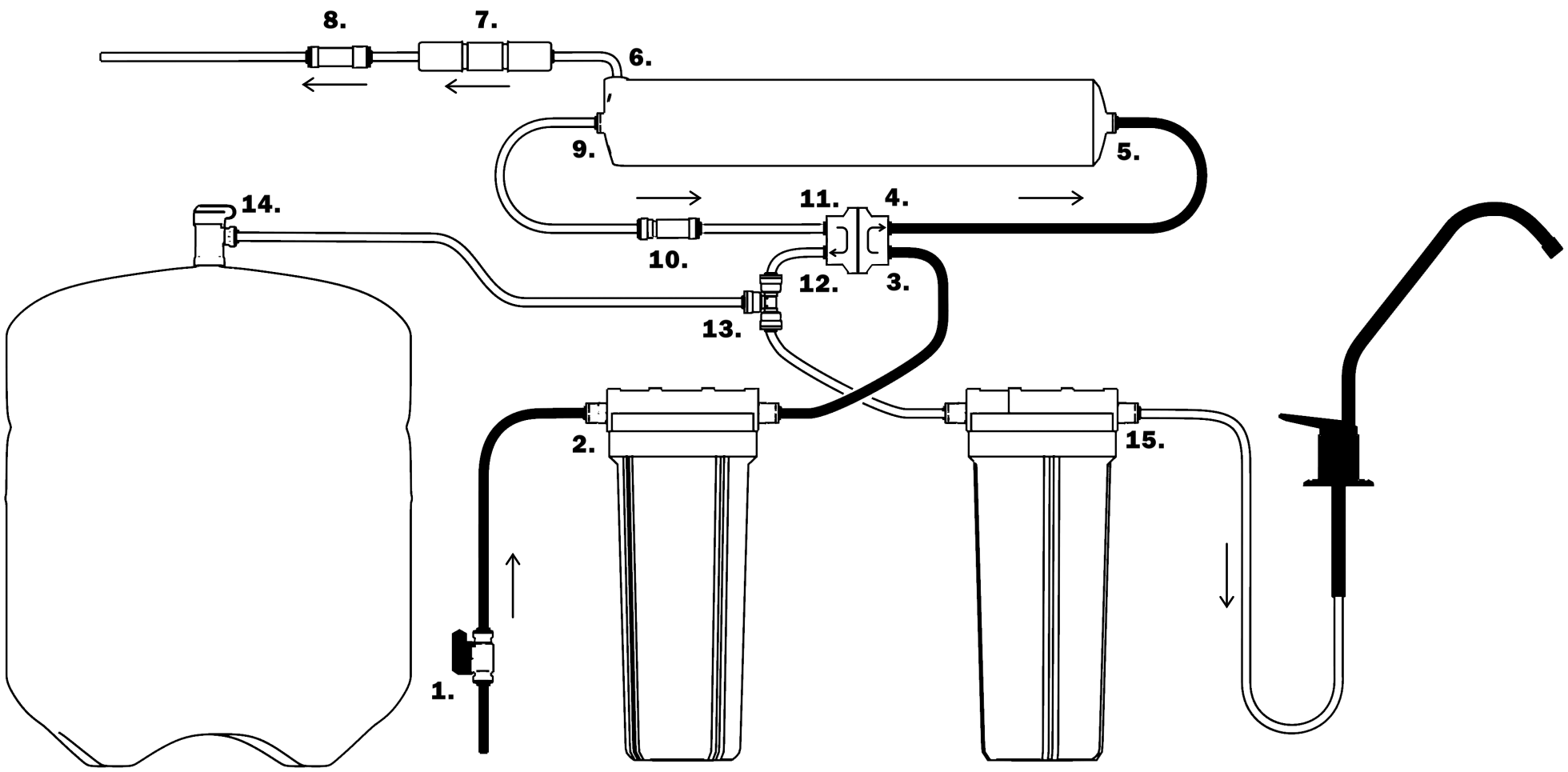
Testing RO systems with Remineralizing Filters

Many systems we sell use a "remineralizing media" filter as the final stage of filtration. These filters contain a blend of calcium and magnesium media, which dissolves into the water as it leaves the storage tank and travels to your faucet.

If your system has a remineralizing filter installed, testing the performance of the RO membrane as described above will not be as effective a measurement of membrane performance. The RO membrane will still significantly reduce your TDS reading, but the test results of the water at your faucet will be artificially elevated by the freshly dissolved calcium and magnesium and will be consistently higher than a system without a remineralization filter.

There are different solutions to this issue. The simplest is to test your system 1-2 weeks after installation and take note of the TDS reading. As you use the system, this reading should slowly decrease as the minerals dissolve and lose potency.

A sudden increase in TDS reading beyond the noted "baseline" reading taken shortly after installation or filter replacement is the best indication that the RO membrane may require service or replacement.



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Black & White RO, 3 Stage

1. Inlet shut off valve
2. Inlet pre-filter (cold water)
3. ASO Valve (IN PORT)
4. ASO Valve (OUT PORT)
5. Membrane Inlet
6. Membrane Drain port (brine)
7. Drain Line Flow Restrictor
8. Drain Line Check Valve
9. Membrane Outlet (permeate)
10. Permeate Line Check Valve
11. ASO Valve "TANK" Port
12. ASO Valve "TANK" Port
13. Tank Tee
14. Tank Shutoff Valve
15. Outlet to Post-Filter (to faucet)