BULK REEF SUPPLY® | BRS **UNIVERSAL** RO/DI SYSTEM INSTRUCTIONS

6 Stage Universal

U

6 Stage Universal Plus

U+

6 Stage Universal Water Saver Plus

UWS+

Please ensure all parts are included and undamaged.
If a part is found missing or damaged, please contact our customer service department.

BRS LIMITED LIFETIME WARRANTY

System Features

150 GPD Upgrade Kit UWS+

75 GPD Dow Filmtec RO Membrane

Glycerin Filled Pressure Gauge U+ UWS+

Triple Stage TDS Meter U+ UWS+

Side-mounted Dual Stage DI Resin Canisters

Double O-Ring Mur-Lok Fittings

150 GPD Water Saver Upgrade Kit UWS+

Auto Shut Off Valve

Flush Kit U+ UWS+

Glycerin Filled Pressure Gauge U+ UWS+

Red Intake, Black Waste Water, Blue Output Tubing

1 Micron RO.Z Sediment Filter

BRS Universal 1 Micron Carbon Blocks

FEATURE KEY:

U+ Universal Plus

UWS+ Universal Water Saver Plus

Parts Kit

Filter Wrench

Float Valve

Self-Piercing Saddle Clamp

Insta-Test Free & Total Chlorine Test Strips

Inline Ball Valve

EZ Angle Stop Adapter

Garden Hose/Utility Sink Adapter

Diverter Valve

Drain Saddle Clamp

Faucet Diverter Adapter Kit

System Operation

During operation, the 6 Stage Universal & 6 Stage Universal Plus systems will each produce up to 75 gallons of purified RO water per day or approximately three gallons per hour. The 6 Stage Universal Water Saver Plus will produce up to 150 gallons per day or approximately six gallons per hour.

- **Hot water should never be used** with the RO system as it can damage the RO membrane and may also contain additional contaminants. For this reason, only water from the **cold** water supply should be used.
- For optimal results, water pressure should be at least 50 psi entering the membrane. If operating pressure is under 50 psi, a reduction in water production and a lower rejection rate may be experienced. If water pressure is approaching 35 psi, consider adding a booster pump to increase performance.
- A ratio of 4:1 waste water to purified RO water is normal. The waste water from the black line contains the dissolved solids from the source water and should not be used in your aquarium.

Getting Started: Test Your Water

Use the included Insta-Test Free & Total Chlorine Test Strips to determine the type of disinfection used in your water supply. You will use this information for system maintenance and filter replacement. You will get one of the following results:

- Zero total and free chlorine: In most cases this means you are on well water and there is no disinfectant used.
- Total and free chlorine results are the same: This indicates your city's water supply is using chlorine.
- Zero or close to zero free chlorine and between 1-5 ppm total chlorine: This indicates your city is using chloramines as a disinfectant. Chloramines are chlorine reacted with ammonia. Chloramines are harder to remove than chlorine so please pay close attention to the filter replacement schedule later in the instructions.

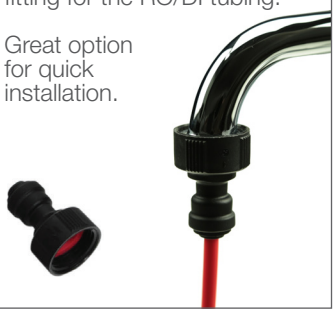
Set-up & Maintenance:

1 Turn the water supply to the connection point off.

2 Choose your connector/adapter from the below options, and install.

Garden Hose/Utility Sink Adapter NON-PERMANENT

- Thread onto a hose, laundry sink faucet or fittings with similar threads.
- Provides a quick connect fitting for the RO/DI tubing.
- Great option for quick installation.



Faucet Diverter Valve NON-PERMANENT

- Easy installation, attaches to the majority of kitchen faucets. Adapter ring included for faucets the valve does not fit.
- Built in valve switches water flow between faucet use and RO/DI system.

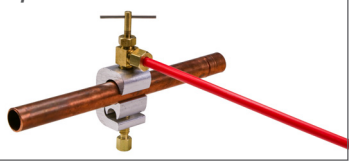
- Connect RO/DI unit by sliding red tubing over the barbed connection on the faucet adapter.

EZ Angle Stop Adapter SEMI-PERMANENT

- Under-sink, out of the way connection.
- Fitting only works on flexible water line.
- Installs inline above water shut off valve and flexible tubing to faucet.
- Removeable.
- Compatible with 3/8" thread size *(other sizes sold separately)*

Self-Piercing Saddle Valve PERMANENT

- Makes a permanent connection to your household water supply.
- Use on copper pipe up to 5/8" thick.
- This fitting actually pierces the copper line.
- ***Cannot be removed, permanent installation.***



3 *Optional* - Install Inline Ball Valve

Installing the ball valve is optional. The ball valve is commonly used to turn the RO/DI system on and off. To install the ball valve:

1. Cut the **red** water supply line in an easily accessible location. Be sure that the cut ends are clean, even and smooth.
2. Firmly push the ends of the hose into the ball valve.

4 *Optional* - Install Drain Saddle Clamp

Drain saddle clamps are installed on standard PVC 1½" OD drain pipe, above the trap and as close to the sink drain as possible. Do not install the clamp close to disposal outlets or clogging may occur.

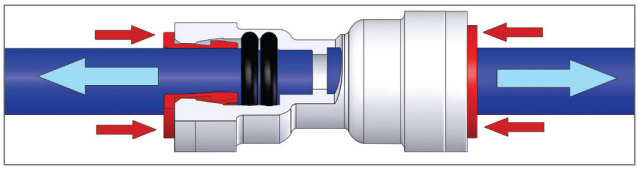
For this installation you will need a magic marker, adjustable wrench and a drill with a 3/8" drill bit.

1. Separate the drain clamp and use the clamp half with the push connect fitting as a guide to find a suitable location for the clamp. The location should be at least a few inches above the trap and as close to the sink drain as possible. Place a mark where the hole will be drilled.
2. At this mark, drill a 3/8" hole through ONE side of the pipe and clear away burrs.
3. Peel the backing from the gasket in the parts bag. Position the gasket centered around the freshly drilled hole.
4. Position both halves of clamp on the pipe. Be sure to line up the drain clamp hole with the hole in the pipe. Secure with included bolts and nuts.

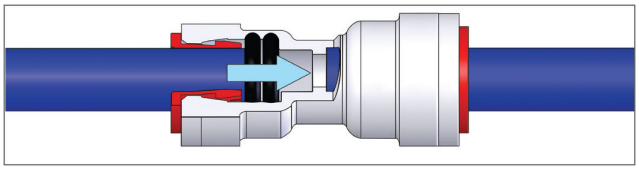
5 Install your RO system.

RED Tubing - intake from home water line **BLACK** Tubing - waste water **BLUE** Tubing - output of purified water suitable for use in your reef tank.

1. Attach the water source to the **RED** line of the RO system using the installed connector/adapter.
2. Direct the **BLUE** line from the RO system to the "in" of the dual DI.
3. Direct the **BLUE** line on the "out" of the dual DI to a suitable collection/storage container.
4. Guide the **BLACK** line down a drain or to optional installed drain saddle clamp. Water from the black line is referred to waste water and is not to be used in the aquarium.



Remove tube by holding the round retention ring tightly against the fitting and pull the tube.



Push connect fittings are connected by firmly pushing one end of the tube into the fitting.

6 Prime your RO system.

The RO/DI unit must be run for one hour before using product water. Ensure that all fittings and hoses are correctly hooked up. *This process should be repeated when carbon blocks or membranes are replaced.*

1. Turn on the household water supply.
2. Allow the system to run for one hour to flush fine particles from the carbon block(s) and preservatives from the RO membrane. (This is a good time to check all fittings and connections for leaks).
3. Discard any water produced during the initial period (first hour).
4. Your system is now ready for use.

7 Maintain your RO system.

Replacement Filter Kit: 6 Stage Universal (SKU 208833)

Filter life depends on many different factors including total water production and the quality of the source water. A general rule of thumb is to replace sediment filters and carbon blocks every six months to insure proper system performance and ease of use. However, replacement requirements vary based on the source water.

GE ROSave.Z 1 MIcron Depth Sediment Filter

Sediment filters should be changed when they become clogged with dirt and sediment.

The best way to identify when a sediment filter has been exhausted is by monitoring the water pressure feeding the membrane. As the filter gets clogged it will reduce pressure feeding the membrane and thus reduce system performance.

For systems which do not include a pressure gauge, we recommend monitoring the sediment filter visually and changing as it becomes visually dirty or every six months.

BRS 1 Micron Universal Carbon Block

This filter has been specifically designed to treat well water and both of the most popular water treatments including chlorine and chloramines. Please refer to the results of your test strips from the "Getting Started" portion of these instructions to help determine your replacement schedule.

Chlorine - The BRS Universal Carbon Block set has a useful life of up to 35,000 gallons of water treated with chlorine. Please note this is the total volume of water that has passed through the filter set which includes waste and product water. It is likely the filter set is good for approximately 8,000 gallons of product water. This number can be doubled with use of the 150 GPD water saver upgrade kit. Concentration of the disinfectant, pH, and temperature will affect the performance and useable life of the filter set.

Chloramines - The BRS Universal Carbon Block set has a useful life of up to 10,000 gallons of water treated with chloramines. Please note this is the total volume of water that has passed through the filter set which includes waste and product water. It is likely the filter set is good for between 2,000 – 2,500 gallons of product water. This number can be doubled with the use of the 150 GPD water saver upgrade kit. Concentration of the disinfectant, pH, and temperature will affect the performance and useable life of the filter.

Well water or other untreated sources – While it is typically not important to treat for disinfectants, the carbon block set is an important component of the filtration because they treat for pesticides, herbicides, petroleum by-products, volatile organic compounds (VOC) and other pollutants in ground water. We suggest changing the carbon block set every six months in this case.

Regardless of the amount of water filtered or amount of chlorine breakthrough, carbon blocks should be changed at minimum once every 12 months to prevent biological fouling or bacterial growth.

Color Changing DI Resin

Color Changing DI Resin is designed to be the final polish on the water and will remove a vast majority of elements that passed through the RO membrane. The DI Resin is color indicating and will turn from a blue/black color to a golden brown color from the bottom up as it depletes. When the entire container changes color, it is an indication that the cartridge needs to be replaced with new resin. The universal system comes with two DI stages which dramatically increases total contact time with the water and effectiveness of the DI stages.

If your system came with a TDS meter installed, you can use it to confirm the DI resin cartridge has been exhausted. Move the switch on the TDS meter to "Line 2." If the TDS measures anything higher than zero (0) it is time to replace the resin from the first canister. Remove the cartridge from the RO canister and discard the exhausted resin. Reload the cartridge with fresh DI resin.

Please note that the color change is an ***indicator*** of the depletion of your DI resin and certain water parameters could interfere with the color changing process. The TDS meter is the actual measurement of the DI resin performance and should be used to identify when the resin needs to be replaced.

RO Membrane

The RO membrane is located in the white cylinder on top of your filter/RO system and only needs to be replaced approximately every three years or when the TDS emitted from the membrane begins to rise.

Included and Optional Features

Dual Inline TDS Meter DM-1

U+ UWS+

Measures the total dissolved solids (TDS) in your water supply. TDS is a common tool used to estimate the purity or quality of water source.

On the Plus and Water Saver Plus models, the three probes come pre-installed on the dual DI unit. Line one (1) reads the water coming from the reverse osmosis system and monitors the membranes performance. Line two (2) is installed between the two DI stages which will help you identify when the first DI cartage has been depleted and needs to be replaced. Line three (3) monitors the TDS of the final DI stage and the quality of the product water the system is producing. The product water should read zero TDS.

Please note: RO system needs to operate for 10 minutes before an accurate reading can be achieved.

Glycerin-Filled Pressure Gauge

U+ UWS+

Displays the water pressure entering the RO membrane. The gauge is installed in-line between the last carbon block and the RO membrane.

Proper RO membrane performance is very dependent on maintaining proper pressure feeding the membrane. Greater than 50 psi is ideal, less than 35 and you will likely need to install a booster pump.

A significant decrease in the operating pressure would indicate that the pre-filters (and in particular the sediment filter) need to be changed.

Membrane Flush Kit

U+ UWS+

The membrane flush kit is a ball valve installed on the black waste water line that bypasses the flow restrictor. Opening this valve increases the flow through the waste line and flushes deposits off of the RO membrane. Flushing the membrane increases membrane life and system performance.

On a RO system that is only used a few times a month flush the membrane for 1-2 minutes before and after each use. If you use the system frequently flush the system for 3-5 minutes a few times each month.

Please note: In normal operation this valve should be closed. If you are unsure if the valve is closed, check the flow rate out of the black waste water line. When the valve is closed for normal operation, the flow out of this line will be slower.

150 GPD Water Saver Upgrade Kit

UWS+

This kit is designed to double the water output while maintaining the same volume of waste water which essentially cuts the waste to product water ratio in half.

This is done by running two 75 gallon per day membranes in series. Doubling the volume of product water without significantly increasing overall flow rates through the pre-filters will almost double the amount of product water you can produce with a single set of pre-filters.

This effect can be particularly noticeable if your water supply has chloramines where filters are quickly consumed.

Frequently Asked Questions

Q: Is it normal for the DI stage to not fill completely with water?
A: Yes, air gets caught in the top of the canister and has no way to escape. This does not interfere with system performance, but if desired open the canister slightly while the unit is running to allow the air to escape. Retighten the canister when the water reaches the top.

Q: Is it normal for TDS to be higher when the system is first turned on?
A: Yes, this is called “TDS creep” and normal on all RO systems. Please allow the RO system to run for 10 minutes before testing TDS.

Q: Is it okay to leave water in the canisters between uses?
A: Yes, it is advised to keep them wet between uses and to store in a cool, dark location.

Q: How often should I use the flush kit?
A: We suggest flushing the membrane for a few minutes before and after use. There is an auto flush kit available if you would like something more automated. *(SKU: 200209)*

Q: My pressure gauge reads less than 50 psi, do I need a booster pump?
A: The membrane will not perform “optimally” below 50 psi but the reduced performance may not be substantial enough to warrant a booster pump. As you approach 35 psi the performance drop will become significant and you will likely want to purchase a booster pump. *(Kit: 200216)*

Q: What is a normal TDS reading?
A: TDS from most tap water will be in the 100-300 range but many sources can be well over 500. Normal product water from RO membrane will be around 98% of your tap water’s TDS under optimal conditions. Tap water with a TDS of 300 should be around six coming out of the membrane. Product water emitted from the DI resin canister should be zero. Please operate the system for ten minutes prior to testing for TDS, readings will always be higher when the system is turned on initially.

Q: My DI resin seems to be depleting quickly, what’s wrong?
A: Useable lifespan of the DI resin cartridge will vary widely. Someone feeding the resin from their RO membrane with one TDS will have approximately five times the useable life as someone feeding it with five TDS. Outside of that, carbon dioxide in your water supply or a poorly performing RO membrane are the biggest causes.

Q: My system doesn’t seem to be making a lot of water, what’s wrong?
A: Please keep in mind that 75 gallons a day is approximately three gallons an hour. The flow will be slow and close to a constant trickle. If it is slower than that, it’s almost always because your flush kit is open or your home’s water pressure is low and there is less than 50 psi feeding the membrane.

Q: Can I reduce the amount of waste water my system produces?
A: The waste water is a critical component of a properly functioning RO system. The best way to reduce the volume of waste water to product water ratio is to install a second membrane* in series which will effectively cut this ratio in half. *(*Water Saver Upgrade Kit, SKU: 200432)*

NEED HELP? **Customer Service Hours:** M-TH 7am - 7pm | F 10am - 4pm CST

Phone: 763-432-9691 **Email:** support@bulkreefsupply.com **Live Chat:** bulkreefsupply.com