MY REEF CREATIONS

MRC Calcium Reactor – Dual Chamber

Congratulations on your purchase of a MRC Calcium Reactor; the world's finest calcium reactor.

Please read all of the instructions before starting to assemble your reactor in order to assure proper assembly and operation. The reactor comes disassembled for shipping. Refer to instructions and assembly diagram for reactor set up. Failure to follow the assembly instructions could cause the reactor to fail.

Section A - Setting Up Your New Reactor

Placement of the Reactor - Place the reactor as close to your sump and CO2 tank as possible. The longer the tube length the longer it will take for adjustments to take effect. This makes adjusting a calcium reactor more difficult.

Pressure Feed Setup – This is the preferred method to hook up any reactor. For this setup we recommend using a Maxi-Jet 1200 or Mag 2 as the feed pump.

- Connect the recirculation pump to the reactor manifold.
- Connect the ½" feed tube to the feed pump and place the feed pump into the sump.
- Connect the other end of the ½" feed tube to the ½" hose barb on the manifold.
- Screw the Micro Ball Valve into the threaded hole of the top flange. Do not over tighten- hand-tighten only. Insert the 1/8" effluent line into the Micro Ball Valve and run to the sump. The preferred location is the refugium.
- Connect the 1/8" CO2 tube to the CO2 Regulator and the other end to the 1/8" barb on the manifold. Refer to the CO2 Regulator section for set up of the Regulator and Bubble Counter.
- Screw the 90 degree elbow into the top of the right chamber.
- Run the 1/8" connection tube from the 90 degree elbow on the top of the right chamber to the 90 degree elbow located towards the bottom front of the left chamber
- Fill the media chambers to within 1.5 inches of the top. Be sure not to spill any media in the O-Ring groove.
- After all the connections are complete and tight, fill the unit with water. Replace the lid on the chamber and hand-tighten the nylon thumbscrews. Do not over tighten.
- Plug in the feed pump and adjust the flow rate of the effluent line using the Micro Ball Valve to a fast drip.
- Plug in the recirculation pump.
- Adjust the bubble rate to 40 bubbles per minute.

Filling the Bubble Counter - The Bubble Counter must be in upright position when in use.

- Unscrew the top of the bubble counter.
- Fill the bubble counter with R/O water ¾ of the way up.
- Replace and hand-tighten the top of bubble counter.

Bubble Counter Setup

- Attach the 1/8" tubing from the CO_2 Regulator to the fitting to the bottom of the counter.
- Attach the 1/8" tubing to the top of the counter and then run to the 1/8" barb on the calcium reactor manifold.

CO2 Regulator Setup

- After getting your CO_2 cylinder filled, keep the main valve located at the top of the aluminum cylinder **OFF** (turned clockwise). Insert the Teflon gasket and attach the dual gauge regulator and tighten securely. The gauge on the left reads the amount of CO_2 in the cylinder, expressed in **PSI** (pounds per square inch). The gauge to the right reads the pressure of the gas leaving the regulator.
- Attach the tubing supplied to the barbed fitting on the regulator. Connect the other end to the barbed end on the check valve going into the bubble counter.
- Close the needle valve (completely turned clockwise).
- Slowly open the main cylinder valve.
- Dial in the adjustment knob on the regulator until the outlet pressure gauge reads 10 PSI.
- Slowly open the needle valve to desire setting (see Dialing in Calcium Reactor Section).
- When the cylinder pressure gauge drops below 500 PSI, it is time to consider getting the cylinder refilled.

Section B - Basic Operation

The calcium reactor operates by dissolving the aragonite within the reactor chamber(s) by lowering the pH value of the water inside the reactor tube(s) caused through the injection of CO_2. The effluent, or excess water, is high in calcium and alkalinity, and should be between 6.6 pH and 7.0 pH. The calcium reactor is best used to maintain levels, not raise them. It is recommended that you add calcium to achieve the desired level after installing the reactor and using the reactor to maintain it. The same is true for alkalinity.

Every system will have different calcium and carbonate demands from a calcium reactor. The effluent and bubble rates are recommended starting points, but will have to be adjusted to meet the needs of your system.

- Increasing the bubble count will lower the pH inside the reactor. This will increase the Carbonate Hardness (KH) and calcium (Ca) of the effluent. Lowering the pH below 6.5 will cause the media to create 'mush' or 'mud'.
- Decreasing the bubble count will raise the pH inside the reactor. This will decrease the KH and Ca of the effluent.
- Increasing the flow rate will lower the pH inside the reactor. This will decrease the KH and Ca of the effluent.
- Decreasing the flow rate will raise the pH inside the reactor. This will increase the KH and Ca of the effluent. Lowering the pH below 6.5 will cause the media to create 'mush' or 'mud'.
- We recommend the use of a ph controller. Using a controller to adjust your ph will make tuning the reactor much easier.

You can use these adjustments to achieve the desired results for your system.

Adjustment Notes:

- Monitor your system pH closely for the first few days. If your system pH drops, slow down the flow of CO2.
- Monitor your alkalinity. It may take a few weeks before you see any increase in alkalinity. DO NOT let it rise above 14 DKH. Remember each system is different and settings will vary or have to be adjusted from what is recommended here.
- When adjusting your reactor, do so in small increments of 8-10 ml/min. Adjust the effluent first and then adjust the CO_2 flow. Measure the effluent pH and maintain 6.6-7.0.

Section C - Routine Maintenance and Notes

Check the effluent flow rate and the CO_2 rate periodically as your bubble count may become erratic when your CO_2 cylinder begins to drop below 500PSI.

Refilling the media should have to be done every 3-4 months or when the level has dropped about half way. If the media becomes muddy, replace as well.

The PVC union O-ring should have a bit of grease (dielectric) applied to keep it from freezing up due to high calcium output. The O-ring provides the seal and no Teflon tape is needed.

Do not lift a full reactor by the extended flange areas.