



1144 Pride Drive
New Braunfels, TX 78132

Congratulations on the purchase of a state of the art calcium reactor manufactured by Precision Marine Systems. READ ALL INSTRUCTIONS and complete the warranty card and return within ten (10) days to benefit from the one (1) year limited warranty.

Calcium Reactor Models CR422 & Cr622

Instructions

Plumbing and Installation

1) Choosing water source and location of your Calcium Reactor

✓ Gravity Method

Push in one end of the blue polypropylene line to the ¼" speedfit elbow located at the end of the cross. (see fig 1). A water-tight seal is achieved simply by pushing until the tubing stops. Fasten the blue polypropylene line inside the aquarium approximately ½" below the running water level. A tip is to fasten the tube to a tooth/groove on your overflow box with a tie-wrap..

✓ Pressure Method

2) Choose an existing pressure line (i.e. protein skimmer pressure pump, water return line or other pressure pump). Cut the line and plumb in your tee. This "bleed-off line" will supply water to the Calcium Reactor. Using the Precision Marine CR plumbing kit (accessory), glue the bushing in place and attach the shut-off valve with the supplied ¼" nipple. Push in one end of the blue polypropylene line to the ¼" speedfit elbow located at the end of the cross. A water-tight seal is achieved simply by pushing until the tubing stops.

3) The red line carrying the effluent water back to the reservoir should be placed over the side of the reservoir in a fashion that the amount of droplets coming out of that line can be seen. The other end connects to the needle valve located at the top of the reactor (see figure 2). A tip is to drill a ¼" hole near the top of your reservoir and push the tubing through.

4) Thoroughly rinse media in freshwater (preferably R.O. water).

5) Remove the 6 or 12 bolts securing the reactor lid and loosen the ½" PVC union located at the top of the reactor. Remove the lid (see figure 2).

6) Fill bubble counter with water:

☞ Fill a small container with freshwater. Submerge the small barb at the end of the check valve (attached to the bubble counter) into the container of freshwater. Draw water into the bubble counter until half full by sucking on the end of the ¼" black polypropylene line. (see figure 2). Place the bubble counter back into its holder.

Plumbing and Installation Cont'd...

- 7) Place sponge on support located at the bottom of the reactor.
- 8) Carefully fill the reactor with media approximately 2 inches from the top. Note: Prior to filling, orient the gasket to cover the threaded holes on the flange preventing any media from getting into the threads while adding the media.
- 9) Place lid onto the reactor being sure the gasket mating surfaces are free and clear of debris prior to assembly to assure a good seal. Establish uniform pressure over the flange face by tightening the bolts in $\frac{1}{4}$ turn increments (using a $\frac{3}{8}$ " nut driver) according to the sequence in figure 1. Do not over-tighten.
- 10) Be sure that the PVC unions located at the top and bottom of the reactor are secured (hand-tight is sufficient), the blue water input line is connected to the water source, the red effluent line is secured at the reservoir, and the needle valve on the lid of the reactor is opened (turned counter-clockwise).

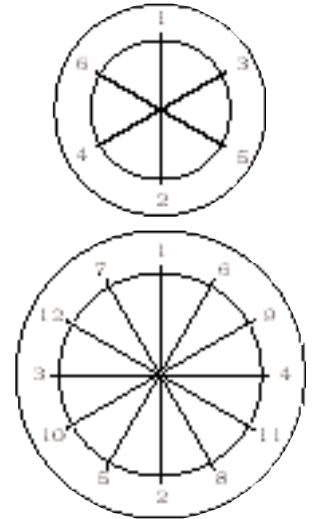


Figure 1

Priming the Calcium Reactor

- ☞ For Gravity Method, open the needle valve located at the top of the reactor and suck on the red line going back to the reservoir. This will prime the reactor. Once it has filled completely with aquarium water, close the valve carrying the water back to the sump.
- ☞ For the Pressure Method, open the needle valve located at the top of the reactor. Turn on the water pump that the calcium reactor is being fed by (your bleed-off line), and open the shut-off valve to allow water to flow to the calcium reactor. Once it has filled completely with aquarium water, close the valve carrying the water back to the sump.

Operation

- 1) Start the water pump and wait until the water clears in the reaction chamber. Open the needle valve carrying the effluent water back to the reservoir through the $\frac{1}{4}$ " red polypropylene line. The water flow from the outlet valve, back to the reservoir, is best described as a broken stream. Adjust the flow with the needle valve to achieve this. The valve is sensitive, but you will be able to set the flow as described. Note: To start, set the valve as slow as possible without being able to count the drops. *Do not flow too much water through the reactor to start! The alkalinity in your aquarium will rise too quickly and the pH will fall by flowing too much water through the reactor.*
- 2) Attach the included tubing from the regulator on your CO₂ bottle, to the nipple at the check valve (see diagram). Open the valve controlling the CO₂ to the bubble counter at a rate of 1 bubble per second. The CO₂ rate is relative to the water flow rate through the reactor.
 - ☞ To raise the pH, increase water flow or decrease CO₂.
 - ☞ To lower the pH, decrease waterflow or increase CO₂.

Operation Continued...

- 3) The most accurate method of determining the proper amount of CO₂ is by collecting a small sample of effluent water from the reactor (red line), and measuring the pH using a meter. To start, set the flow to maintain a pH value of 7.5. Watch the aquarium pH to be sure it is not falling rapidly. It is expected to see the pH in the aquarium fall slightly, but should not drop below 8.0. If it does, cut back on CO₂. The ideal pH of the effluent water is 6.5 - 7.5 depending upon the media you are using, however it may take a few weeks to get there. Slowly increase or decrease the amount of CO₂ to maintain this value. The idea is to watch the pH in your aquarium as you lower the effluent water pH to 6.5 - 7.5. The amount of CO₂ required is relative to the water flow through the reactor. The lower the pH, the faster the dissolution of media, and the more calcium is released. If for any reason you do not understand the above instructions, contact your dealer for clarification, this is very important and simple once set-up.
- 4) The other method of setting your calcium reactor is to measure the alkalinity in your tank and adjust the calcium reactor to maintain the target value. Be sure to follow the above steps to be sure the pH value in the tank isn't falling below 8.0.
- 5) After 24 hours of operation, measure the carbonate hardness of the effluent water. It should be 12-20dkh. The calcium level in the aquarium should be between 380 - 500ppm. From this point, how quickly your calcium reactor releases calcium, depends upon the media you are using. Aragonite dissolves the fastest, releasing calcium. There are other medias available on the market which do not break down as quickly, resulting in a longer time before you start to see your calcium level increase. Consult with your dealer for media selection. Continue the addition of Calcium until your reactor begins to release calcium. Once you have your reactor dialed in, few, if any adjustments are needed.



Figure 2

Maintenance...

With normal operation of your carbon reactor, the grain size, and the amount of media will decrease. The compacting of the media will decrease the flow of water through the reactor. We advise cleaning and refilling the reactor at three-month intervals. The Eheim water pump is supplied with a 2-year manufacturer's warranty. Read the included warranty card and have your dealer stamp it. Follow water pump maintenance instructions as outlined in the manual.

Lastly, we at Precision Marine would again like to thank you for purchasing one of our products. All Precision Marine components are Hand-built with pride in the U.S.A.



Precision Marine Systems

1144 Pride Drive
New Braunfels, TX 78132

830-626-2401
830-626-2402

www.precisionmarine.com

Limited Warranty

Precision Marine Systems, Inc. warrants this product against leakage due to defective sealant and workmanship defects as follows:

For a period of one (1) year from the date of purchase, Precision Marine Systems, Inc., will at its option either replace or repair the defective product when used and installed within the guidelines of the instructions. After this one (1) year period, you must pay for all repair charges. All repairs must be performed by Precision Marine Systems.

Drilling holes anywhere in the filter or in any other way altering the filter after the original manufacture by Precision Marine Systems, Inc. at their home offices in Houston, Texas will void all warranties. This warranty does not cover any damage due to accident, misuse, abuse, negligence, or your failure to follow FILTER INSTALLATION INSTRUCTIONS.

To be effective, warranty card must be signed by purchaser and dealer and mailed along with a copy of the original sales receipt to the address listed above within ten (10) days of purchase. We suggest that you retain the dealers dated bill of sale as evidence of the date of purchase.

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THIS WARRANTY CARD MUST BE SIGNED BY BOTH THE PURCHASER AND DEALER AND MAILED ALONG WITH A COPY OF THE ORIGINAL SALES RECEIPT WITHIN TEN (10) DAYS OF PURCHASE.

BUYER'S NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

STORE NAME: _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

FILTER TYPE/MODEL _____ DATE PURCHASED _____

I HAVE THOROUGHLY READ AND UNDERSTAND THE ABOVE WARRANTY AND FILTER INSTALLATION INSTRUCTIONS.

CUSTOMER'S SIGNATURE: _____

DEALER'S SIGNATURE: _____