



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 RFca4 & RFca6

### Instructions

Before installing, locate the plumbing kit inside your reactor. You should have the following fittings and other included parts:

- |                              |   |
|------------------------------|---|
| 1 - ½" Black Barbed fitting  | 1 - Length of Norprene Tubing (for CO2) |
| 1 - White Check Valve        | 1 - Short Length of ½" Red Poly Tubing  |
| 1 - Roll Teflon Tape         | 2 - Sponges                             |
| 1 - Length of ¼" Poly Tubing | 2 - Supports                            |

- ☛ In addition to the included parts, you will need a CO2 cylinder (filled) and a regulator with a needle valve. A solenoid is recommended, but is optional.

### Assembly...

Using the supplied teflon tape...

- ✓ Wrap the threads on the black barb fitting and check valve 2-3 times in the opposite direction of the threads (so that the teflon tape will not unravel when you tighten the fitting). There is only one place each of these fittings will go on your reactor. The check valve at the bubble counter and the barbed fitting at the tee at the water pump.
- ✓ Push the red ½" poly tubing into lid speedfitting and corresponding fitting at the top of intake pipe as shown in the diagram.
- ☛ To remove the poly tubing from the speedfittings, hold down the collar and pull the tubing out.

### Choosing a water source for your Calcium Reactor...

You can either bleed-off an existing pressure line (i.e. protein skimmer pressure pump or water return line), or use a dedicated powerhead/pump.

- ☛ If you choose the bleed-off option you will need to install a Tee and divert water to your Calcium Reactor. The plumbing should be ½". This method requires some basic plumbing knowledge.
- ☛ If you use a dedicated pump, a MaxiJet 1200 (or equivalent) works very well and uses the same ½" connection.

The long length of ¼" poly tubing carries the effluent (output water) back to the reservoir and should be placed over the side of the reservoir in a fashion that the water flow coming out of that line can be seen. The other end connects to the needle valve located at the top of the reactor marked "output to reservoir".

- ☛ A tip is to drill a ¼" hole near the top of your reservoir and push the tubing through.





### Set Up...

- ✓ Thoroughly rinse media in freshwater (preferably R.O. water).
  - ☛ Precision Marine recommends CaribSea A.R.M. filter media because it dissolves at a higher pH.
- ✓ Depending upon model, remove the 6 or 12 bolts securing the reactor lid.
- ✓ Place sponge on one of the supports the bottom of the reactor.
- ✓ Carefully fill the reactor with media approximately four (4) inches from the top.
  - ☛ Take care in preventing any media from getting into the threads while adding the media.
  - ☛ Place the second sponge on top of the media followed by the second support.
- ✓ Place the lid onto the reactor. Be sure the o-ring and mating surface are clear of debris prior to assembly to assure a good seal. Establish uniform pressure over the flange face by tightening the bolts in ¼ turn increments. Do not over-tighten.
  - ☛ Tighten the successive bolt opposite the previous (similar to a cylinder head on a motor).
- ✓ Be sure...
  - ☛ The PVC unions are secured (hand-tight is sufficient).
  - ☛ The ½" water input line is connected to the water source and clamped at both ends (a tie wrap is sufficient).
  - ☛ The effluent line is secured at the reservoir.
  - ☛ The needle valve on the lid of the reactor is opened (turned counter-clockwise).
  - ☛ To connect the noreprene tubing from the CO<sub>2</sub> regulator to the check valve nipple.

### Start Up...

- ✓ Be sure the needle valve on the lid of the reactor is opened (turned counter-clockwise).
- ✓ Open the bleed-off valve, or start the feed water pump.
- ✓ The reactor will slowly begin to fill.
  - ☛ It is important the needle valve is open at this time so the reactor vents properly while filling.
- ✓ Once the reactor is completely filled and water is flowing out of the effluent line, start the Eheim water pump by plugging it in.
  - ☛ The bubble counter is self priming.
- ✓ Close the needle valve (adjusting the effluent back to the reservoir) to what is best described as a "broken stream". The valve is sensitive, but you will be able to set the flow as described.
  - ☛ To start, set the valve as slow as possible without being able to count the drops.
- ✓ Open the valve controlling the CO<sub>2</sub> to the bubble counter at a rate of 1 bubble per second.
  - ☛ 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.



### Operation...

- ☛ The most accurate method of determining the proper amount of CO<sub>2</sub> is by collecting a small sample of effluent water from the reactor line and measuring the pH using a meter.
  - ☛ To start, set the flow to maintain a pH value of 7.5. Monitor 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, reduce the CO<sub>2</sub> bubble count.
  - ☛ The ideal pH of the effluent is 6.5 - 7.5 depending upon the media you are using, however it will take a few weeks to get there.
  - ☛ Slowly increase or decrease the amount of CO<sub>2</sub> 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 CO<sub>2</sub> 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.
- ↳ The alternate 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.

After 24 hours of operation, measure the carbonate hardness of the effluent water. It should be 12-20 dkh. 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 and raising the alkalinity. 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.

- ↳ To raise the pH, increase water flow or decrease CO<sub>2</sub>.
- ↳ To lower the pH, decrease waterflow or increase CO<sub>2</sub>.

### Maintenance...

With normal operation, the grain size, and the amount of media will decrease. 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](http://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: \_\_\_\_\_