

TROUBLE SHOOTING

Problem: pH level in aquarium is low

Solution: Carefully and gradually reduce CO₂ input.

Solution: Carefully and gradually adjust the water outlet flow control valve (part no.10) to achieve a slower flow rate, such as approximately 90 drops per minute (1.5 drops per second).

Solution: Increase aquarium circulation flow.

Solution: Increase ventilation around your aquarium.

Problem: pH level in aquarium is high

Solution: Carefully and gradually increase CO₂ input.

Solution: Carefully and gradually reduce the water flow exiting the V²React.

Please note: pH levels in your aquarium will be different at various times during the day and this means that the pH measurement you obtain will also vary depending on the time of day that the test is carried out. Excess CO₂ can affect pH level but will not affect alkalinity level.

Problem: Calcium level in aquarium is low

Solution: Carefully and gradually increase CO₂ input.

Solution: Add a calcium supplement to raise the calcium to the desired level and continue to use calcium reactor to stabilise and maintain correct level.

Problem: Calcium level in aquarium is high

Solution: Carefully and gradually reduce CO₂ input or stop CO₂ input until desired calcium level is achieved.

Solution: Carefully and gradually reduce the water flow exiting the V²React

USEFUL TIP: After carrying out any changes to CO₂ dose rates or water outlet flow rates allow at least 24 hours before re-testing water parameters.

Please note: as no two aquariums are the same, and water parameters within the aquarium continuously change, it may take time and patience to achieve the desired result and the installation and operation of this calcium reactor should be carried out in conjunction with regular testing of both the water exiting the V²React and your aquarium water.

AQUARIUM VOLUMES AND MEDIA REQUIRED

V2React 600

For aquariums up to 600 litres/130 UK gallons. Requires 3 litres/2.5kg of media.

V2React 1000

For aquariums up to 1000 litres/220 UK gallons. Requires 4 litres/3kg of media.

V2React 1500

For aquariums up to 1500 litres/330 UK gallons. Requires 6.5 litres/4.5kg of media.



Tropical Marine Centre
Solesbridge Lane, Chorleywood, Hertfordshire WD3 5SX

Technical Information Lines

Tel: +44 (0)1923 284151 Fax: +44 (0)1923 285840

Open between 9am - 5pm Mon to Thurs/9am - 12pm Fri.

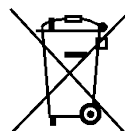
www.tropicalmarinecentre.co.uk london@tropicalmarinecentre.co.uk

V²React Calcium Reactors

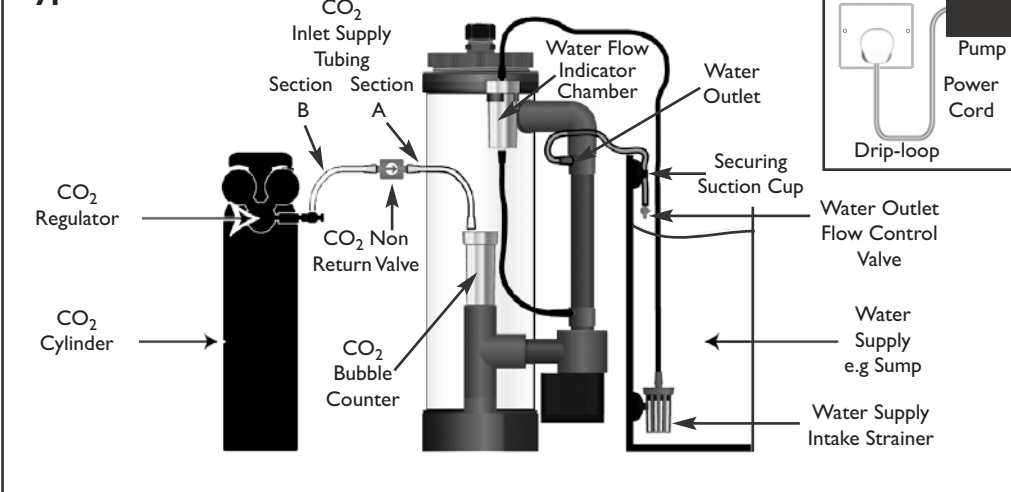
INSTRUCTIONS FOR INSTALLATION AND USE

Important Safety Information - Please Read Carefully

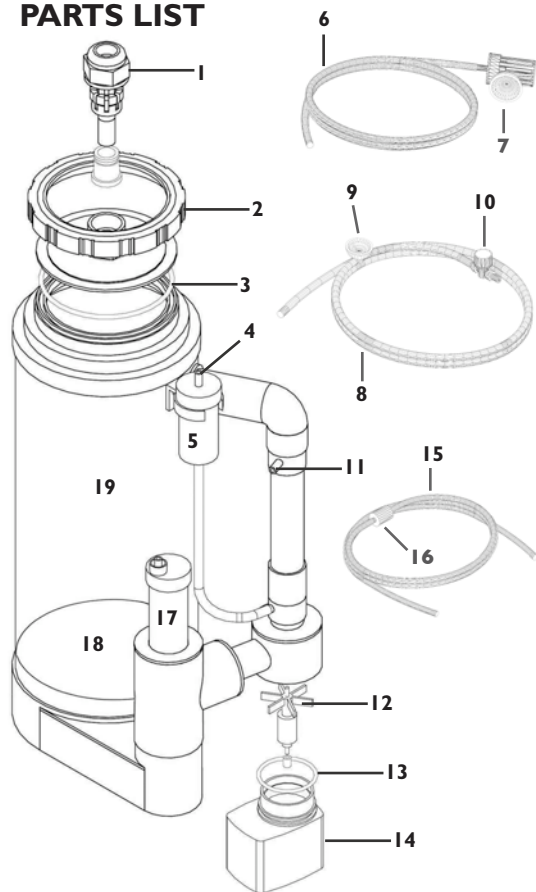
- Always isolate the pump from the mains electricity before installing or carrying out any maintenance to the calcium reactor.
- Power to the pump must be supplied through a Residual Current Device (RCD) with a rated residual operating current not exceeding 30mA.
- To ensure the pump continues to maintain a steady water flow, it must be cleaned regularly to ensure it does not become clogged with debris or detritus.
- Pump rating: 220-240V, 50Hz unless marked otherwise.
- Do not operate any appliance if it has a damaged cord or plug, if it is malfunctioning, or if it has been dropped or damaged in any way.
- This unit is designed to be used indoors and is not suitable for any outdoor applications.
- Ensure the calcium reactor is safely positioned before operating.
- Always leave a drip-loop in the pump cable to prevent water running down the cable and reaching the power source (see picture below).
- Dispose of this unit responsibly. Check with your local authority for disposal information.



Typical Installation



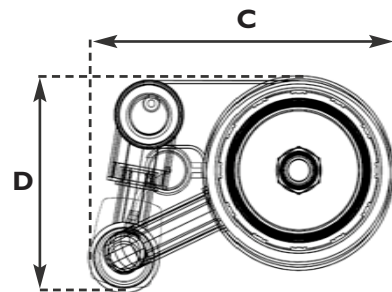
PARTS LIST



1. pH probe holder assembly including watertight gasket and gasket plug (order code: 5500)
2. Lid assembly (order code: 5501)
3. Lid O ring (order code: 5502)
4. Water inlet
5. Water flow indicator chamber (order code: 5503)
6. Water supply intake tubing - sold by the metre (order code: 5504)
7. Water supply intake strainer including securing suction cup (order code: 5505)
8. Water outlet tubing (order code: 5504)
9. Securing suction cup for water outlet tubing (order code: 5506)
10. Water outlet flow control valve (order code: 5507)
11. Water outlet
12. Pump impeller (order code: 5508)
13. Pump O ring (order code: 5509)
14. Pump (order code: 5510)
15. CO₂ inlet supply tubing (order code: 5504)
16. CO₂ inlet tubing non return valve (order code: 5517)
17. CO₂ bubble counter
18. Media support foam
 - (A) V²React 600 (order code: 5511)
 - (B) V²React 1000 (order code: 5512)
 - (C) V²React 1500 (order code: 5513)
19. Reaction chamber
20. 5ml syringe (order code: 5518) (not shown)
21. CO₂ pressure regulator (order code: 5386) (not shown)

Parts Required for Installation and Operation

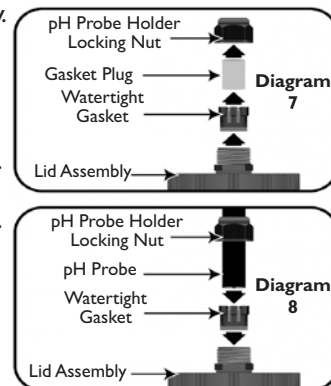
1. CO₂ supply cylinder (not supplied)
2. Media (not supplied)



	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)
V²React 600	380	350	191	191	330	270
V²React 1000	374	340	198	198	320	245
V²React 1500	371	340	243	243	325	230

4. Remove the watertight gasket and gasket plug from the cap assembly.
5. Remove the gasket plug from the watertight gasket.
6. Slide the pH probe holder locking nut onto the pH probe (see diagram 8).
7. Slide the watertight gasket onto the pH probe.
8. Re-position the watertight gasket and probe into the V²React lid.
9. Carefully re-secure the pH probe holder locking nut.
10. Re-connect and re-attach the water intake strainer (part no.7).
11. Switch on the water supply pump (part no.14).
12. Ensure that all connections have been made correctly and that there are no leaks.

USEFUL TIP: The optimum pH inside the reaction chamber should be approximately 6.5.



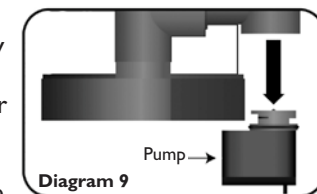
MAINTENANCE

Caution: To avoid possible electric shock, special care should be taken when using any electrical appliance near water.

Caution: Always isolate the pump from the mains electricity before installing or carrying out any maintenance to the calcium reactor and remove the water supply intake strainer (part no.7) from the aquarium or sump.

1. Check regularly to ensure that the water flow through the calcium reactor is as required. We strongly advise that this is checked daily.
2. The V²React Calcium Reactor should need very little adjustment and maintenance once set up correctly. However, it is common for deposits to build up on some of the fittings/components and therefore it is recommended that the calcium reactor is cleaned periodically.
3. Clean and remove any build up of calcium/salt deposits on the water intake strainer and the water outlet control valve.

USEFUL TIP: If calcium deposits are present, soak parts in a diluted vinegar or kettle descaling solution and then thoroughly rinse with fresh water before use.
4. Ensure that the water intake strainer and the water outlet control valve do not become clogged and are not restricted.
5. Check all connections regularly to ensure they are tight and secure.
6. Check regularly to ensure CO₂ is being dosed correctly.
7. Replace coral gravel media as required.
8. If, for any reason, the water level in the CO₂ bubble counter has dropped, inject fresh water to re-attain required level (see page 4, point 11).
9. During routine maintenance it is advisable to ensure that the lid O ring (part no.3) is checked for any signs of degradation and replaced accordingly. Spares available through your local stockist (part no.5502).
10. Clean water supply pump (part no.14) regularly to ensure it is free and clear of detritus.
11. The V²React pump can be removed from the calcium reactor by simply twisting the pump through approx. 45° and carefully pulling downwards (see diagram 9). However, please first ensure that all water has been emptied from the calcium reactor or that you have a bucket or similar vessel underneath the reactor to collect any water remaining in the reactor. Please note that if you decide to remove the pump during maintenance ensure that the pump, impeller and pump O ring are re-positioned correctly and securely as failure to do so could result in leaks or operating problems. A small amount of vaseline or silicone grease can be used to help ensure a watertight connection. Pump spares are available from your local supplier.



GENERAL OPERATION

1. Allow the calcium reactor to stabilise and operate for at least 24 hours before making any adjustments.
2. After a period of 24 hours the pH of the water exiting the V²React should be at a lower level than that of your aquarium. This will indicate that the reactor is operating correctly.
3. If after 24 hours the pH of the water exiting the V²React is the same as that of your aquarium then carefully increase the amount of CO₂ bubbles injected into the CO₂ bubble counter to approximately 30 bubbles per minute (1 bubble every 2 seconds).
Please note: The adjusted CO₂ bubble dosage should only be maintained until the desired pH level is achieved and care should be taken to avoid excessive CO₂ in the aquarium.

USEFUL TIP: After carrying out any changes to CO₂ dose rates or water outlet flow rates allow at least 24 hours before re-testing water parameters.

4. The calcium reactor can be run 24 hours a day, but usage should be adjusted according to levels of calcium demand and depletion in the aquarium and in conjunction with regular water testing.
5. We also advise regularly monitoring and testing the calcium and dKH levels of the water exiting the calcium reactor. These levels should be slightly higher than those of the water inside your aquarium, assuming the levels in your aquarium were originally within the normal range.

USEFUL TIP: The amount of CO₂ that you dose into the V²React and the required water flow through the V²React unit will vary depending on the individual requirements of your aquarium. This can be ascertained through regular water tests, and the dosage rate of CO₂ and the water outlet flow rate should be adjusted accordingly. When using a calcium reactor and dosing CO₂ the pH level in your aquarium may be lower than usual. This is normal, but if the pH level in your aquarium has dropped significantly please refer to problem 1 in "Trouble-Shooting Guide" on back page.

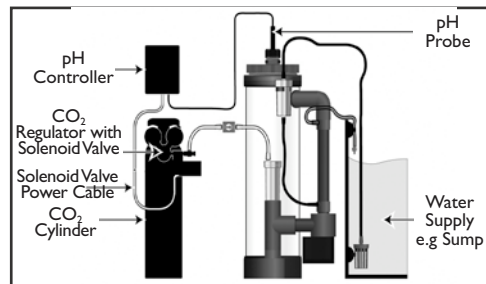
USEFUL TIP: If your aquarium has a high calcium demand and you have adjusted the CO₂ supply to allow for this you may encounter a slight build up of excess CO₂ within the reaction chamber (part no.19) of the V²React. This is easily identified by a drop in the water level within the reaction chamber. This can easily be rectified by un-screwing and temporarily removing the lid assembly (part no.2) which will allow the excess CO₂ to be released and the water level within the reaction chamber to be corrected. If this regularly occurs, we advise that you slightly reduce the amount of CO₂ being dosed.

OPERATION WITH A pH MONITOR/CONTROLLER

V²React Calcium Reactors incorporate a pH probe holder (part no.1) so they are also ideal to be incorporated into more advanced aquarium set-ups where pH monitors/controllers are to be used. For such applications a pH probe can be easily installed into the main body of the V²React by following the simple steps highlighted below:-

1. Switch off the water supply pump (part no.14)
2. Remove the water supply intake strainer (part no.7) from the aquarium or sump.
3. Carefully unscrew the pH probe holder locking nut (see diagram 7).

Please note: The CO₂ regulator supplied with this V²React Calcium Reactor is only suitable for basic installations and cannot be used in conjunction with a solenoid valve.



CALCIUM REACTOR ASSEMBLY

The V²React Calcium Reactor is supplied almost fully assembled to ensure it is ready to use as soon as possible after unpacking.

CALCIUM REACTOR GENERAL INSTALLATION

V²React Calcium Reactors are designed so that they can be conveniently positioned either externally or internally in a sump or aquarium.

1. Ensure that there is adequate space in or around the aquarium or sump to allow the calcium reactor to be installed correctly with sufficient space to carry out maintenance and to attach to your CO₂ supply.

USEFUL TIP: The V²React Calcium Reactor is supplied with a specific length of water supply intake tubing which ensures the optimum performance of the unique water intake system.

2. The following approximate volumes of water will need to be prepared or taken from your aquarium ready to fill the calcium reactor later during installation:-

V²React 600 - 3 litres

V²React 1000 - 4 litres

V²React 1500 - 6.5 litres

3. We highly recommend coarse coral gravel (6-10mm grain size) as a media for the V²React Calcium Reactors. This is available through all TMC stockists. Please go to: www.tropicalmarinecentre.co.uk to find your local supplier.

The quantities required are as follows:-

V²React 600 = approximately 2.5kg of coarse coral gravel.

V²React 1000 = approximately 3kg of coarse coral gravel.

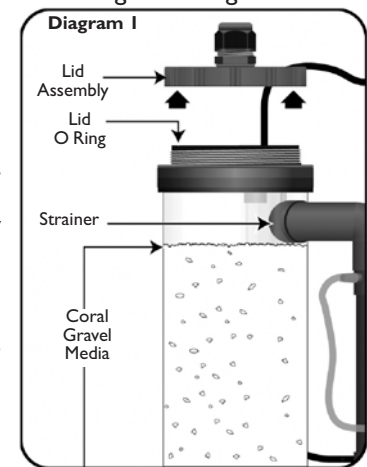
V²React 1500 = approximately 4.5kg of coarse coral gravel.

Please ensure the coral gravel is washed thoroughly before use.

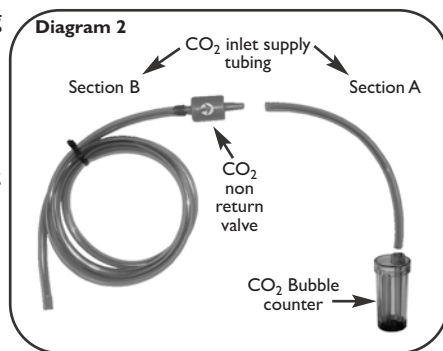
USEFUL TIP: The easiest way to clean the coral gravel is to pour it into a bucket or similar vessel and place it under a continuous supply of fresh water ensuring that the gravel is vigorously stirred and that all waste material is drained away. Once the coral gravel is clean the water in the bucket will be clear and not cloudy or discoloured.

4. Remove the calcium reactor lid assembly (part no.2) and using a jug or similar vessel carefully pour the clean coral gravel into the calcium reactor until it reaches a level just below the strainer inside the body (see diagram 1).
5. Locate and identify the water supply intake tubing assembly (part nos.6 & 7), the water outlet tubing assembly (part nos.8, 9 & 10) and the CO₂ inlet supply tubing assembly (part nos.15 & 16).
6. Remove the cable ties that are securing the three different tubing assemblies so that they are ready for use.

USEFUL TIP: Use scissors rather than a knife to remove the cable ties to prevent any possible damage to the tubing.



7. Attach and secure the water supply intake tubing assembly (part nos.6 & 7) to the water inlet (part no.4) on the water flow indicator chamber (part no.5).
8. Attach and secure the water outlet tubing assembly (part nos.8, 9 & 10) to the water outlet of the calcium reactor (part no.11).
9. Disconnect the shortest section of the CO₂ inlet supply tubing (section A - see diagram 2) from the CO₂ non return valve and attach and secure this to the CO₂ bubble counter (part no.17).



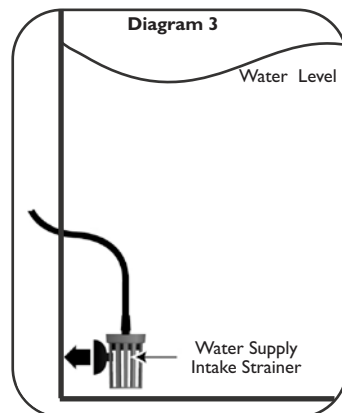
10a. FOR SUMP INSTALLATION

1. Water Intake Tubing

If you are planning to install the calcium reactor inside or outside a sump, locate the water supply intake strainer at the lowest point in the sump and use the suction cup on the intake strainer to correctly secure it (see diagram 3).

2. Water Outlet Tubing

Locate the end of the water outlet tubing and, via the suction cup, secure it approximately 2.5 - 5cm above the water level in the sump (see diagram 4).



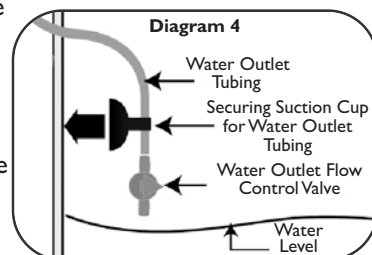
10a. FOR AQUARIUM INSTALLATION

1. Water Intake Tubing

If you do not have a sump and are planning to connect the calcium reactor directly to your aquarium ensure that the water supply intake strainer is located approximately 10cm below the water surface of the aquarium (see diagram 5).

2. Water Outlet Tubing

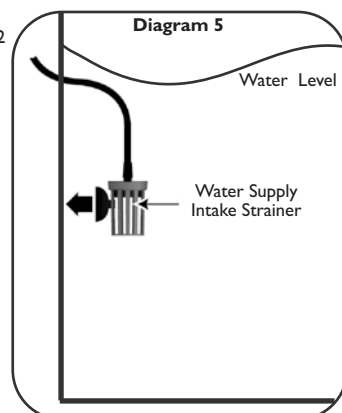
Locate the end of the water outlet tubing and, via the suction cup, secure it approximately 2.5 - 5cm above the water level in the aquarium (see diagram 4).



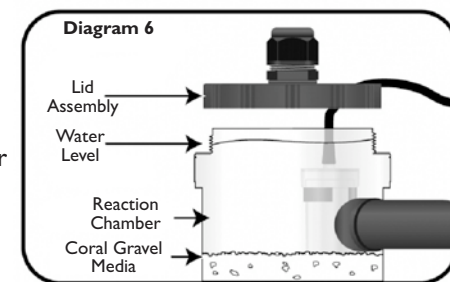
11. Fill a cup or similar vessel with fresh water and, using the 5ml syringe, carefully inject 15ml of fresh water into the CO₂ bubble counter (part no.17) via section A (see diagram 2) of the CO₂ inlet supply tubing. This will take 3 full syringes.

USEFUL TIP: If you ever need to re-fill the CO₂ bubble counter with water we recommend that you leave section A of the CO₂ inlet supply tubing attached to the CO₂ bubble counter and simply disconnect the CO₂ non return valve and section B and carefully re-inject water using the 5ml syringe (see diagram 2).

12. Now re-attach the CO₂ non return valve and the remaining length of CO₂ inlet supply tubing (section B - see diagram 2) to the CO₂ inlet supply tubing (section A - see diagram 2) that you have already secured to the CO₂ bubble counter.



13. Using the prepared aquarium water carefully fill the calcium reactor until the water level inside the calcium reactor is just below the lid (see diagram 6).
14. Ensuring that the lid O ring (part no.3) is positioned correctly, replace the calcium reactor lid assembly (part no.2) and securely hand tighten (failure to do so could result in leaks).
15. Locate the CO₂ pressure regulator (this can be found in the bottom box of the V²React packaging) and make the necessary connections to the CO₂ cylinder (please refer to the instructions supplied with the CO₂ regulator).



PRE-START UP

1. Before switching on the calcium reactor and starting up the CO₂ we recommend that you use a reliable test kit to first test your aquarium water to obtain your calcium, alkalinity and pH concentrations.

USEFUL TIP: The optimum concentrations of calcium, alkalinity/carbonate hardness and pH in a marine aquarium are as follows:-

Calcium (Ca)	400-440mg/l (ppm)
German Carbonate Hardness	7-10dKH
pH	8.1-8.4

2. Ensure that all tubing connections have been made correctly and securely. Failure to do so could result in leaks.
3. Switch on the calcium reactor pump (part no.14).
4. Although the calcium reactor pump is self-priming, due to the possibility of trapped air in the reactor and tubing it may take a few moments for the unique water intake system to start and for water to be drawn into the reactor.
5. Once the water intake system is operating you should see a steady flow of water passing through the water flow indicator chamber (part no.5). If this does not happen after a couple of minutes there may be excess air in the water outlet tubing. To help clear this air, remove the end of the water outlet tubing from the sump or aquarium and hold it below the level of the calcium reactor until the air clears and water is flowing freely. Re-position and re-attach the end of the water outlet tubing to the sump or aquarium as per 10a or 10b (point 2, page 4).
6. Ensuring that you have correctly followed the installation instructions supplied with the CO₂ regulator, now turn on the CO₂ supply.
7. Adjust the CO₂ regulator so that 15-20 CO₂ bubbles are dosed into the CO₂ bubble counter per minute (this equates to 1 bubble every 3 or 4 seconds).
8. Now adjust the water outlet flow control valve (part no.10) so that the water outlet flow from the reactor into the sump or aquarium is approximately 60 drops per minute (1 per second). **Please note:** when adjusting the water outlet flow control valve you may notice a corresponding change in the water flow within the water flow indicator chamber - this is perfectly normal.

OPERATING PRINCIPLE

By constantly dosing CO₂ into the V²React the pH level of the water inside the main body (reaction chamber) will begin to fall. At low pH levels, such as 6-7, the media (coral gravel) will slowly start to dissolve, releasing calcium bicarbonate and other trace elements which are readily consumed by corals and are essential for their growth.