

## KORALLIN Kalkreaktor

<b><u>Check List:</u></b>	1x Body (including lid, tubing, white pad, sieve, screws, integrated O-ring, etc...)
	2x Tru-union Couplings (one with integrated Bubble Counter)
	1x Eheim pump
	1x Metallic Check Valve w/ black clip
	1x White Precision Pinch Valve

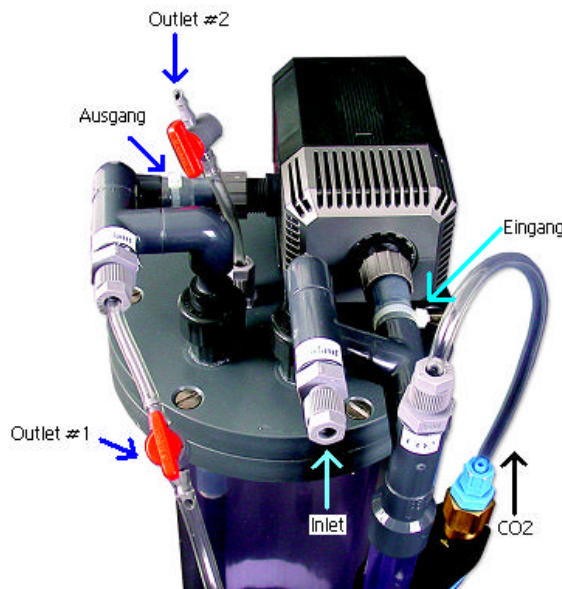
**Introduction:** Thank you for purchasing the most advanced, efficient and reliable Kalkreaktor (Calcium Reactor) from Germany. The new series now consists of models C-1502, C-3002, C-4002 & C-10002.

KORALLIN's Kalkreaktor is designed and engineered to perform consistently, forgivingly, and intelligently by actually 'communicating' with the aquarist. Its exclusive 'Non-dissolvable & Excessive CO2 Safety Feature' allows excessive CO2 to accumulate inside its reaction chamber and break the water circuit such that no CO2 can enter into your sump, or settle on top of it. Alternatively, if you choose to have a continuously running Kalkreaktor with absolutely no interruption, you can achieve this with its dual-outlet design. Aspirating-venturi technology means that it utilizes CO2 and dissolves Calcium Carbonate (CaCO3) media in the most efficient way, which results in substantial savings & convenience. Its extremely sturdy construction, with detachable attachments, makes it the most durable piece of aquaristic equipment in your system.

**Operation:** Before starting, please thoroughly rinse the internal housing of the Kalkreaktor and its attachments for 20 minutes with freshwater (to remove any residual particles and oils left from the factory).

Unscrew the 6 screws from their washers and nuts. Lift up the lid assembly (ie: Lid with attached long internal tubing, pad and sieve) half-way. Pour pre-rinsed CaCO3 media into the unit (*C-1502 takes 3kg while C-3002 takes 6.5kg*). Make sure that the media stays on top of the pad and sieve. Leave about 7 cm (3") of free space at the top after the unit is properly filled and with its lid assembly lowered and closed securely. Tighten the lid onto the body. You may need to apply some pressure onto the lid after securing each screw. Use a screwdriver and wrench if necessary.

Note the directional arrow engraved on the Metallic Check Valve. CO2 should enter from the bottom of the check valve and exit at the top. Snap the CO2 check valve onto the Bubble Counter using the black clip. Follow the illustration on this page and *loosely* attach the 2 Tru-union Couplings onto the lid. Unscrew and remove the small white nylon screw.



Position the Eheim pump such that its output can be connected to the "*Ausgang*" (outlet) tubing and its input to the "*Eingang*" (inlet). Secure the soft tubing from the 2 attachments to the Eheim pump. Now tighten the 2 Tru-union Couplings onto the lid. Make sure that all tubing is free from debris. Refer to the illustration for the proper connections. Re-sit the white nylon screw to secure the Eheim pump base onto the lid.

*It is okay if some media drops beyond the sieve and white pad. Make sure that about 7 cm (3") of free space is present on top of the media for a clear observation of excessive CO2 accumulation as well as to prevent the pump inlet from being clogged by the media.*

**CO2 goes in this direction: CO2 Cylinder ↗ CO2 Regulator System ↗ Metallic Check Valve ↗ Bubble Counter**

**OPTIONAL:** Through your retailer, you may purchase Subminiature Quick Disconnect Couplings (with shut-off) that can be connected to the intake of the Metallic Check Valve. Get 2 additional couplings for the *Ausgang* & *Eingang* for a complete mobile and drip-free Kalkreaktor.

**OPERATION:** Do not plug in the Eheim pump yet. Open “*Entlüftung*” (Outlet 2) and siphon aquarium water from a higher source to fill the Kalkreaktor via “*Eingang*” (Inlet) and evacuate the air from the unit via the Outlet 2. The Bubble Counter fills itself up during air-evacuation at this stage. One unique feature is that water can never evaporate out of this counter since it runs on the same circuit.

The best place for the “*Ausgang*” (Outlet 1) & “*Entlüftung*” (Outlet 2) tubes is about 2 cm above the water level, this way you can see and count the exact effluent drip rate from both.

As the Kalkreaktor is completely filled with aquarium water, you may now stop the siphon and close the air vent (*Entlüftung*). Check to make sure that water does not leak out of the Kalkreaktor in any way. Use the included airline elbows to position the airline tubing over your sump or aquarium.

*Please note that when you take water out from ONE of the 2 outlets only, the Kalkreaktor behaves like this:*

1. Outlet 1 (default) – Non-dissolvable Excessive CO2 Safety Feature in ON mode. Water circuit will be broken by non-dissolvable excessive CO2 to protect overdose and intoxication. Outlet 2 must be closed.
2. Outlet 2 (alternative) – Non-dissolvable Excessive CO2 Safety Feature in OFF mode. Continuous functioning with minimal interruption even under excessive CO2 or air microbubble condition. Outlet 1 must be closed.

*But for an ultimate consistent, forgiving and maintenance-free function, we recommend the following:*

Use an optional small powerhead (such as the MaxiJet 400 or Rio 90) to actively feed water into the Kalkreaktor. It serves three purposes:

- ↗ It is a much more reliable water feeding method than siphoning or self-suction
- ↗ It pressurizes the Kalkreaktor to enhance water / CO2 dissolution
- ↗ It enables the Kalkreaktor to expel trapped air more easily

Now, allow water to drip out from Outlet 1 as described below. Simultaneously, connect an airline tubing to Outlet 2 and take water out slowly at 1 – 2 drips / min. Water should now exit from Outlet 1 at a fast rate (ie: 40 drips / min. or higher) as well as from Outlet 2 at a much slower rate.

**Dry your hands** and plug in the Eheim. When the pump runs properly, it should be silent. Trapped air or loose particles may cause the pump to be noisy. To fix the former, you may open the “*Entlüftung*” (air vent) further and tilt the Kalkreaktor until the trapped air is evacuated. To fix the latter, you may need to disassemble the pump and remove the loose particle.

**Dosage:** Because water chemistry and calcium demand of every aquarium varies, the exact dose will have to be ascertained by the practitioner over experience and water testing. Start with an effluent drip rate of 40 drops / minute from the “*Auslauf*” (Outlet 1), CO2 bubbling rate should begin at 10 bubbles / minute. KH in the effluent should be at least 25 ° (at the beginning, the KH

needs to be at a minimum of 30 °). Make sure that no microbubbles are entering the Kalkreaktor from your sump or tank (e.g. from protein skimmer). If bubbles accumulate inside the Kalkreaktor (provided that it is CO2 and not air), reduce the CO2 bubbling rate and/or increase effluent drip rate. If no gas is present inside the unit, raise CO2 quantity a little. The best CO2 pressure can be obtained when the working gauge on your CO2 System reads 10 - 15 psi (or 1.0 - 1.2 bar) – **NOTE: Numbers & units vary w/ different brands of CO2 System.**

The pH of the effluent drip should be between 6.5 - 6.9 and a KH reading of 25 ° - 60 °.

At the beginning, do not raise the KH more than one degree / week. The optimum reading in your tank should be between 8 – 13 ° KH. After reaching this value, reduce the effluent drip rate. In certain high calcium demanding systems, you may need to give the Kalkreaktor a jump-start by dosing Mineral-Plus™. But for most systems, the S-Plus™ is all you will need for a complete trace element replenishment with the use of the Kalkreaktor. Both products can be purchased from your Korallin Kalkreaktor retailer.

Here's the formula to reach a specific KH in the effluent (*for rough reference only*):

$$\text{KH} \times \text{Effluent Drip Rate} = \text{CO2 Bubbling Rate}$$

For example: To get a KH of 35 ° in the effluent and at a drip rate of 60 drops / min., you will get 35 ° x 60 = 2100. Move the decimal place 2 spaces forward and it indicates a suggested CO2 bubbling rate of 21 / min.

As you can see, if your system has high demand for calcium, simply increase BOTH the effluent drip rate and the CO2 bubbling rate to maintain a high enough KH in the effluent. Make sure that no excessive CO2 is accumulated inside the Kalkreaktor at all times.

**Maintenance:** When it is time to replace the media, disconnect the lid from the attached internal long tubing, carefully give the lid a few twists until it detaches from the soft silicone tubing. When you want to reconnect, simply wet the soft silicone tubing and reverse the procedure.


Change 100% of the Calcium Carbonate media every 4 - 8 months (depending on your system's calcium consumption rate) to preserve the freshness of the media. Mark the top level of the media with a tape or crayon in order to see how much and when the media has been dissolved and decreased in size. We recommend changing the media when 2 - 3" has dissolved. However, only by water testing can you really determine when the media has become exhausted. Grain size is a concern, avoid small grain size media that obstructs water flow and impairs the performance of the unit.

A 5-lb CO2 Cylinder usually lasts around 1 year at 10 bubbles / min. rate, 24 hours / day. Use only medical / beverage-grade CO2 in a brand new tank whenever possible. For more information on CO2 usage, please ask your dealer for the two articles 'CO2 System' & 'CO2 – FAQ'.


Due to the unique design of the KORALLIN Kalkreaktor, no pH Controller is required for its function. But a pH Controller is recommended for maximum safety (during power outage) as well as for convenience (to measure pH).

### **Trouble-shooting & FAQ:**

1. My effluent cannot reach a KH of 25 ° or above, what am I doing wrong?

 Check to make sure the Eheim pump is not obstructed and the Kalkreaktor has been evacuated correctly. Have you followed the guidelines to reach *optimum* CO2 bubbling and effluent drip rates? Remember that CO2 saturation should be as close to 100% as possible.

2. How can I achieve a 100% CO2 saturation condition?

 CO2 saturation is one of the most important things in running a Kalkreaktor. Even if you are only 20% under this saturation level, your effluent power (KH) has been lowered by about 40%! To determine a close to 100% CO2 saturation condition, please adjust the initial CO2 dosage to a level that will cause *some* accumulation inside the Kalkreaktor after a few hours. Then turn back down the CO2 dosage a tiny bit from this level. You are now

close to a 100% CO<sub>2</sub> saturation condition. Remember, the effluent KH should be higher than 25 ° (40 ° or higher is preferred in many systems).

3. Define *optimum* CO<sub>2</sub> bubbling & effluent drip rates.

~~✍~~ A slight increase in the current CO<sub>2</sub> bubbling rate and/or a slight decrease in the current effluent drip rate causes a minor CO<sub>2</sub> accumulation inside the Kalkreaktor.

4. Gas starts to accumulate inside the Kalkreaktor nearly daily, what should I do now?

~~✍~~ Accumulated CO<sub>2</sub> means that the current effluent drip setting does not allow for all the CO<sub>2</sub> entering the Kalkreaktor to be dissolved *on time*. Decrease the CO<sub>2</sub> bubbling rate and/or increase the effluent drip rate slightly should eliminate the problem. Eliminate the source of air microbubbles if necessary (eg: From skimmer return or your overflow).

5. My Kalkreaktor does not suck up water actively.

~~✍~~ Use a small powerhead (optional) to feed water into the Kalkreaktor actively (NOTE: This is the recommended method). You will also want to use a media with the proper grain size.

~~✍~~ Other alternative water-feeding methods:

1. Siphon water into the Kalkreaktor from a higher level
2. Use a Reducing T-Piece to divert a small portion of water from your main or other water lines into the Kalkreaktor. A control valve is also beneficial in this setup

6. Do I really need special CO<sub>2</sub>-Proof Tubing?

~~✍~~ Some regular airline tubing allow as much as 30% of CO<sub>2</sub> to escape through its wall. Never use silicone tubing; which is the most permeable. Ask your dealer for special CO<sub>2</sub>-Proof Tubing that allows less than 1% of CO<sub>2</sub> to leak out.

7. Do I need to dose any trace elements into my aquarium? I assume that a Kalkreaktor takes care of the Calcium & Magnesium requirements?

~~✍~~ Actually, the UltraPure German CaCO<sub>3</sub> media can take care of Calcium, Alkalinity & pH requirements only. We recommend the use of S-Plus<sup>TM</sup>; which replenishes all other essential trace elements (particularly Magnesium, Iodine, Strontium, & more than 20 others) and vitamins. Most elements are complexing agents, so only the required quantity is being freed and be utilized by your animals. The excess is complexed into a matrix. This is the most intelligent replenisher we have encountered. S-Plus<sup>TM</sup> and the Kalkreaktor should be used together for complete trace element replenishment.

8. Can the low pH output of the Kalkreaktor affect the pH of my aquarium adversely?

~~✍~~ First of all, it is impossible for the effluent pH to drop below 6.5. Below this value, no more CO<sub>2</sub> can be dissolved into the saltwater. You may want to re-calibrate the pH Electrode if it registers a value on the effluent of 6.5 or lower. The answer is NO. The low effluent pH does not suppress the pH value in your tank but instead raises it after your system has stabilized. Some users allow the effluent to drip onto a dish with aeration, then let the water overflow into their sumps. This method will bring up the pH value in the effluent water sample but it will also lower its KH value. So, do it only with moderation.

9. How can aeration lower the KH values from the effluent?

~~✍~~ The maximum concentration of Ca & KH depends on the CO<sub>2</sub> concentration in the water. If we aerate too much air into the effluent, too much CO<sub>2</sub> is exhausted out and Ca & KH will precipitate out.

10. I am dosing in only 10x CO<sub>2</sub> bubbles / min. and I still get a large gas accumulation inside the Kalkreaktor over a few hours. Also, my effluent KH is only at 15 - 20 °, if I decrease the bubbling rate or/and increase the effluent drip rate as instructed above, the effluent KH will be EVEN lower, what should I do?

~~10~~ This is due to the Eheim pump that may not functioning properly and eventually loses its power in recirculating and maintaining the water level inside the Kalkreaktor. Please disassemble the Eheim according to its instructions and rinse the impeller housing really well. Use a small powerhead to feed water into the Kalkreaktor. Take water out from BOTH Outlet 1 & 2 as described above.

11. I am using the recommended powerhead method to feed the Kalkreaktor, both my CO2 rate and effluent drip rate are consistent and within normal limits, my Eheim pump is working perfectly fine, but I still have gas accumulated inside the Kalkreaktor over a few hours, what is wrong?

?? Please check your airline tubing which feeds water into the Kalkreaktor, it is probably clogged due to algae growth from your intense reef lighting. Try to use our special black CO2-Proof Tubing instead under such conditions. Now, clean the inside of the tubing really well to resume the proper water flow into the Kalkreaktor.

**Conclusion:** The recommended maximum tank size is only for reference use. Actual calcium consumption rate depends on the bio-load, water chemistry and the nature of the organisms. We wish you best results and a lot of pleasure with your C-1502 / C-3002 / C-4002 / C-10002!



*By using this product, you have automatically agreed to use a 'Ground Fault Circuit Interrupter' in your main aquarium power line as well as to wear 'protective eyewear' for maximum safety. You should always handle this product with caution and keep it away from children & pets. Bayside Aquarium Supply, Inc. cannot be responsible for any personal and property damage resulting from the use of this equipment.*

If you do not agree to the above, please send this product back to your Aquarium Dealer for a refund.

<p><b><i>One-year warranty against leakage due to factory defect Two-year guarantee for the Eheim pump</i></b></p>
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