derKroon mechanics Ltd.

LTH100 LaCl3 Reactor – Instruction manual Rev.2.1
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Operating and maintenance instructions for LTH100 LaCl3 Rx

All LTH100 versions

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Thank you for purchasing a derKroon Mechanics LTH100 Lanthanum chloride reactor.

You must thoroughly read and understand this user manual before operating the equipment, paying particular attention to the warning and safety instructions.

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1. OVERVIEW

The use of Lanthanum to **completely eradicate phosphate** in reef aquariums is a method that is widely spreading over reefers around the world.

A Lanthanum chloride solution (LaCl3) is fed to the reactor with a peristaltic pump via a quick fitting located at the base of the reactor whilst aquarium water is constantly circulating through the reactor. The doses should be as small and as frequent as possible (i.e. 1 ml/hour/24 hours/day). Flocculation then occurs, which is filtered by the media in the second chamber of the Lanthanum reactor.

We have set up a LaCl3 Solution online dosing calculator to do the math for you. Just fill in your tank volume, current and target phosphate levels and the calculator will output a precise dosing schedule:

http://www.derkroon.com/store/products/lanthanum-reactor/lacl3-calculator

Once phosphate is under control, you can still use the reactor as a two-stage fluidized bed reactor, second stage calcium reactor chamber, zeo reactor or any combination.

The two chambers are independent features, this modular design allows for easy cleaning, disassembly and/or media exchanging.

2. INSTALLATION

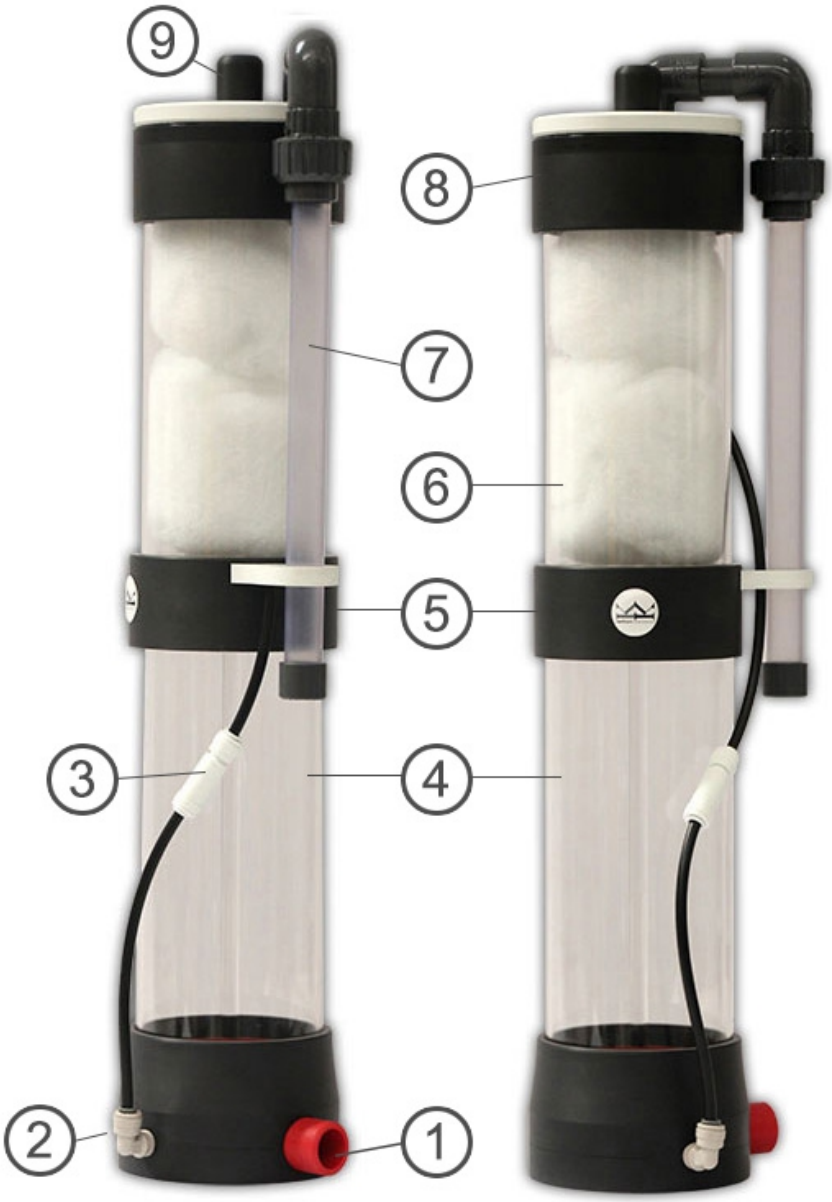
2.1 Unpacking

Unpack your reactor from packing box with care, do not use sharp knifes and/or tools.

The package contents should be as follows:

1 x LTH100 Lanthanum chloride reactor
1 x 100 cm ¼" hose
1 x Check valve
1 x Warranty sheet
2 x derKroon Mechanics stickers
1 x Operating Manual

If any of this items is missing, please contact your derKroon Mechanics dealer. If you bought this unit directly from derKroon Mechanics Website please contact us at info@derkroon.com.



2.2 Planning your setup

Basically, you can install your LTH100 in two ways:

1.) In-sump: The reactor is operated inside the sump or other filtration container or,
2.) Dry: The reactor is operated outside the water.

In case you decide to operate your LTH100 reactor outside the sump (external or 'dry' installation), please take care of the following:

- The retaining knob (9) should be gently tightened and its o-ring lubricated.
- The o-rings located at lid (8) and flange (5) should be lubricated on a regular basis, or when the reactor is dismantled for maintenance.

For lubricating o-rings you can use inexpensive vaseline grease, this will prevent damage and extend eventual replacement.

2.3 Setup and connections

- Take apart the water out (7) pipe by releasing the PVC union at the top. Leave it standing on its guide.
- Remove the lid (8) by unscrewing the retaining knob counter-clockwise, this will allow the lid to be pulled off the reaction chamber (6). This might be a bit hard the first time, use your thumbs while your hands grab the reaction chamber (6). Again, the use of vaseline grease in the lid o-ring will make this easier.
- Place the supplied filter floss in the filter chamber (6), paying attention to not leave gaps where water can flow avoiding the media.
- Firmly replace the lid (8) into position (the acrylic truss rod will help centering it) and replace the water out pipe (7) in place. You can turn the lid a bit if the water out pipe does not run vertical. Screw on the retaining knob (9) again to secure.
- Place your reactor on a flat surface inside the sump, and allow water to fill the reaction chamber (4).
- Connect a suitable water pump (a small tank volume turnover through the reactor is preferable, ie: 250 l/h pump for a 1.000 l tank volume, so the LaCl3 solution has enough time to bind phosphate before water exits the reactor) to the water in fitting (1).
- A pump with adjustable flow or a ball valve is recommended between the pump and the reactor in order to fine tune water turnover.
- Turn on the pump and wait until water exits through the water out pipe (7) and all trapped air is gone.

A very good practice is to place the reactor in a spot where the treated water that exits the reactor is aspirated then by the skimmer pump, so any residual lanthanum chloride or floc will be removed from system. When this is not possible, you can alternatively run the outlet through an additional 5 micron filter sock.

Connect one end of the supplied ¼" tubing to the LaCl3 inlet (2) located at the base of the reactor and the other end to a dosing pump (available as an option). Install the supplied check valve anywhere in between, paying particular attention to the flow direction marks printed on the valve.

3. DOSING LaCl3

Find the best dosing schedule for your particular needs by using our Online LaCl3 Solution dosing calculator, available here:

http://www.derkroon.com/store/products/lanthanum-reactor/lacl3-calculator

Please Note: To achieve best results, please feed LaCl3 to the LTH100 Lanthanum reactor in doses as small and as frequent as possibe.

Let's put an example:

Tank volume: 500 liters
Current phosphate level: 0.5 mg/l
Desired (target) phosphate level: 0.03 mg/l
Desired treatment duration: 10 days.

The calculator will suggest you a total LaCl3 solution volume of 58 ml to reach a target phosphate level of 0.03 mg/l for a 500 l. tank with a 0.5 mg/l phosphate level before treatment.

At this point, you should determine the treatment duration (in which timespan should you dose the 58ml of LaCl3 to the reactor).

For an overall 10 days treatment duration, you must dose 5.8 ml of the LaCl3 solution daily (58 ml total / 10 days = 5.8 ml/day). Thats perfectly doable, as it is a volume that most dosing pumps are capable of in terms of resolution, but, what happens if you choose 60 days as treatment duration?, this will give you a daily dosing of 0.97 ml, and will be out of most dosing pumps minimum dosage range.

Adjust the resulting daily dosing accordingly to your dosing pump minimum resolution, so it is fed to the reactor in small dosages instead of a full 5.8 (6ml) shot.

WARNING: NEVER ADD THE LaCl3 SOLUTION DIRECTLY INTO THE TANK, AS THIS MAY RESULT IN INJURIES TO LIVESTOCK.

IF AQUARIUM WATER BECAMES CLOUDY, INMEDIATLY STOP YOUR DOSING SCHEDULE AND START WITH LOWER DOSAGE ONCE IT CLEARS UP AGAIN.

Maintenance dosage: after primary treatment has been done, you can still apply a maintenance dosage schedule to prevent phosphate from raising again. Start with 1 ml every 2-3 days and adjust as necessary.

4. MAINTENANCE

Some maintenance operations must be followed in order to run your LTH100 reactor safe and trouble-free. Please follow this guidelines and adapt them to your particular needs.

Daily:

Check the water flow through the outlet, if a decrease in flowrate is noticed, stop the water pump and proceed to exchange filter media with new one, as it will eventually clog due to LaCl3 flocculation. **THIS is the time when you are really exporting phosphate out of the tank permanently.**

Measure phosphate concentration at the outlet when dosing pump is on, it should be significantly lower than the phosphate level of the tank. If not, water flow through the reactor should be lowered, as LaCl3 is not having enough time to bind phosphate.

Every 3 days:

Check for correct operation of dosing pump, check if LaCl3 can enter the reactor freely by blowing through the ¼" tubing BEFORE the check valve. If not, clean the check valve, tubing and water inlet speed fitting it with osmotic water.

Every week:

Check the points above and also clean and rinse completely the filter chamber by removing it from the flange.

4. TROUBLESHOOTING

If you are experiencing any problems operating or installing your LTH100, you can either contact us directly at: info@derkroon.com or visit our support page at http://www.derkroon.com/support

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