



DELTECO®

DELTECO *Nitrate Filter*

type 64 2-fold

type 64 3-fold

type 31 internal filter

Regular feeding of fishes and invertebrates can lead to a dangerous concentration of nitrate. It is beyond dispute that biological removal of nitrate makes a lot of sense in the marine as well as in the fresh water aquarium.

Biological nitrate removal:

anaerobic bacteria can reduce nitrate into other substances. This can only happen under anaerobic water conditions (free of oxygen). To ensure an effective biological nitrate removal certain pre-conditions must be fulfilled

1. anaerobic water conditions in the nitrate filter through a 'drop by drop' water supply.
2. measurable nitrate content in the aquarium water
3. regular supply of the filter with 'food' for bacteria

Starting up and maintenance

1. set the shut-off valve for the water supply to the nitrate filter to appr. 1 drop per second, allow the **DELTECO nitrate filter** to run like this for appr. one week.
Important : check the correct water supply daily
2. After one week fill one bag with **DELTECO nitrate fluid**/bacteria food appr. 1 quarter and position it in the narrow water supply chamber of the nitrate filter.
Important : use only bacteria food in the **DELTECO nitrate filter** if the aquarium is well run-in and nitrate is present in the aquarium water.

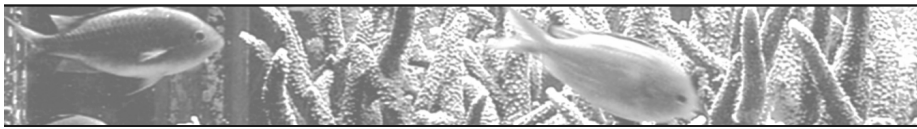
Never supply too much water and/or **DELTECO nitrate fluid** during the run-in period of the filter. This could lead to undesirable reactions.

In the beginning small amounts of nitrite will be produced however in an aquarium with an effective aerobic filter this nitrite will be immediately converted into nitrate.

3. The **DELTECO nitrate bag** can be filled to one half with nitrate fluid after appr. 1 week. One week later the **DELTECO nitrate bag** can be filled to max. three quarter. If after this period a significant nitrate reduction is not measurable at the filter outlet then either the amount of bacteria food or the water flow is too much and should be reduced.
4. The bacteria food must be renewed every 4 weeks.

DELTECO nitrate filter 3-fold

With the 3-chamber filter it is good practice not to renew the nitrate fluid in the 2 bags at once but to fill one bag every two weeks, the second bag 2 weeks later. The remaining fluid in the nitrate bags (water) should be removed before refilling the bag up to three quarters. One important 'side-effect' in the biological removal of nitrate in this way is the reduction of important trace elements. The slow but continuous supply of all the important trace elements ensure a healthy environment.



Important:

If the Deltec *nitrate filter* has not been in use for some time it has to be restarted as a new one. The same applies if the fishes have been treated with medication. In this case make sure that the function of the aerobic filter is re-established.

Use only bacteria food after the aerobic filter functions properly.

Never use too much water / bacteria food during the running-in period.

Deltec *Nitrate Filter with redox control*

The water supply of a standard nitrate filter has to be checked and adjusted on a regular basis. One method to do this automatically, is by a redox controller in combination with a solinoid valve

Installation

Position the Deltec *nitrate filter* in an area where the temperature is not below 20 ° C. Connect the water

supply to the T-piece on the filter lid. Fill the filter with aquaria water. Set the standard drip to appr. 1 drop a second.

Install a redox controller probe to one of the (plugged) holes in the lid.

Method of Operation.

After setting up the filter wait until the redox value is appr. minus 150 mV. (It could take a few days)

Set the redox controller to minus 150 mV. (This value is a good setting to operate a nitrate filter)

If the redox value does not reach minus 150 mV, reduce the water supply.

If the redox value falls below the setting of minus 150 mV, the solinoid valve will open and supply water to the second drip. (One or two drops per second)

This will cause the redox value to rise.

Although the redox controller will close the solinoid valve at minus 149 mV, the actual redox value will still continue to move up respectively down. Make sure the redox value range is somewhere between minus 100 mV and 200 mV.

All other details are as per standard Deltec *nitrate filter* .

Circulating pump

Some Deltec *nitrate filter* are equipped with a circulating pump (art. no. 64003).

This pump will ,mix‘ the water in the first two filter chambers. The flexible hose of the pressure side must be positioned in the second last small chamber (before the third filter chamber).

The water flow through the filter will give a quicker and more precise function of the redox controller.