



Building Your Own Aquarium Filter

Simple, inexpensive, reliable and worthwhile.

Because the performance of our old filters (we used two filters, one as a backup) began to decline and the filters began to occasionally fail (or, before long, the water flow rate dropped significantly or we had the impression that the filtration of the water was insufficient) we decided to build a quality filter ourselves.

Type of filter: Similar to a Hamburg Mat Filter. Cubic filter sponge.

Function: Water flows through the sponge and is pumped back into the aquarium by the pump. Very high flow rate. Bio-organic bacteria cultures are present in all sides of the foam cube.

Because our new filter was working excellently, we removed and/ or de-connected the other filters (incl. under-gravel filter). The performance of our self-built filter is absolutely sufficient for our 460 litre / 120 US gallons aquarium with 21 fully-grown discus fish. (We use the motor-driven filter version.) No nitrite traces are present in the water. Even if we increase the amount of our beef heart feed, no nitrite traces develop.

Water quality: excellent

Water changes: 1 x per week, 30% – 40%, no nitrite traces, pH between 7 and 8.

Stocking density: 21 discus fish, a small school of neons.

Plant life: A variety of Echindorus plants.

Feeding: 2 – 3 times per day

Filter flow rate: An estimated 1.200 litres / 320 US gallons per hour (motor-driven filter version).

Filter – cleaning and maintenance: We have not cleaned our filter, nor do we intend to do so in the next few years. The foam sponge is self-cleaning, as it breaks down bacteria and pollutants until only a fine powder remains, which easily passes through the sponge.

Residual waste: The fishes' excrement is suctioned off using a hose.

Materials: see filter version 1 or 2.

Cost: see filter version 1 or 2.

With a few aquarium plants placed in front of the filter, the filter looks good too. For us, the reliable performance of the filter and the health of our fish is the highest priority. We have drawn up a set of instructions for you, of how to build 2 filter versions:

1. Motor-driven
2. Air-operated (with a diaphragm pump)



Please note, that this information is based solely on our own, personal experience. We offer no guarantees and accept no liability with respect to these filters. We hope to provide helpful advice for interested aquarium owners.

Hope you have fun building your filter and wishing you all the best,

Angelika Stendker

P.S. You can also purchase ready-made filter solutions at:

<http://www.JonnysAirConcept.de/> + <http://www.HMFshop.de/>

Motor-Driven Aquarium Filter

Required Materials:

1. Foam sponge, medium sized pores, size: 15 x 15 x 25 cm
2. GF plastic pipe 40 mm diameter, approx. 40 cm long, with a slit
3. GF sleeve socket 40 mm diameter
4. Motor pump, e.g. 27 W

When choosing a pump, you should make sure that the suction side of the pump can be fitted exactly onto the pipe or sleeve socket. We use this pump: AYDOR Selz L30 II, 27 Watt, 1,200 litres/hour.

Assemble all parts, in the same order as they are listed above. If required, you can fasten the pump to the pipe using aquarium silicone or plastic adhesive (Tangit).

Position the filter on the base of the aquarium and run it in (approx. 14 days).

Estimated filter performance: sufficient for approx. 20 fully-grown discus fish, with 2 – 3 feeds per day.

Estimated cost of materials: approx. 5 Euros plus costs for motor-driven pump.

Cleaning the filter: if the pores of your foam sponge are large enough, you will not need to clean the filter, as it does not clog up and as it develops an excellent bacteria culture.



Photo: overview of the parts for a motor-driven filter



Assemble all parts, in the same order as they are listed above. If required, you can fasten the pump to the pipe using aquarium silicone or plastic adhesive (Tangit).

Position the filter on the base of the aquarium and run it in (approx. 14 days).

Estimated filter performance: sufficient for approx. 20 fully-grown discus fish, with 2 – 3 feeds per day.

Estimated cost of materials: approx. 5 Euros plus costs for motor-driven pump.

Cleaning the filter: if the pores of your foam sponge are large enough, you will not need to clean the filter, as it does not clog up and as it develops an excellent bacteria culture.



Photo: Assembled motor-driven filter



1. Air-Operated Aquarium Filter with Diaphragm Pump

Required Materials

1. Foam sponge, medium sized pores, size: 10 x 10 x 15 cm
2. Plastic pipe 25 mm diameter, approx. 10 cm long, with a slit
3. GF plastic join 90° (elbow), 25 mm diameter
4. GF plastic pipe, 25 mm diameter, approx. 20 cm long
(modify the length to suit the height of your aquarium)
5. GF plastic join 90° (elbow), 25 mm diameter, with a 6 mm hole in the bend
6. 1 – 2 metre long air tube (outer diameter 6 mm), with an aeration stone
7. GF plastic pipe, 25 mm diameter, approx. 5 cm long

In addition, you will need a diaphragm pump.



Photo: Overview of Materials 1 – 7 for an air-operated filter



Assembly Instructions for Aquarium Filter with Diaphragm Pump:

Part # 1:

Use a sharp knife to cut the foam sponge to the required size. Cut a cross in the centre of a 10 x 10 cm side, going approx. 10 cm deep, using the knife. Alternatively, you can “burn” an approx. 10 cm deep hole into the foam, using a heated 20 mm diameter steel pipe.

Part # 2:

Slit this plastic pipe, using a saw or an angle grinder. (Length of slit approx. 8 cm)

Part # 5:

Using a metal drill, drill a 6mm diameter hole into the outer most point of the elbow.

Part # 6:

Push a length of approx. 20 cm of the air tube through this drill hole and attach an aeration stone to this end of the air tube.

Assemble all parts, in the same order as they are listed above. Do not fasten the parts using aquarium silicone or plastic adhesive, as you will need to change the aeration stone from time to time.

Attach the air tube to a diaphragm pump.

Position the filter on the base of the aquarium and run it in (approx. 14 days).

Estimated filter performance: sufficient for approx. 5 – 10 fully-grown discus fish, with 2 – 3 feeds per day.

Estimated cost of materials: approx. 7 Euros plus costs for diaphragm pump.

Cleaning the filter: if the pores of your foam sponge are large enough, you will not need to clean the filter, as it does not clog up and as it develops an excellent bacteria culture.



Photo: Assembled air-operated filter

