The best filter for your aquarium

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A quick guide to the best filter for your aquarium setup. Which filter suits you best and they're pros & cons.

What is the best filter for your aquarium?

As with most of these 'what's the best' questions there are multiple answers. The answer you need will depend on your aquarium setup, your livestock, your plant life, and your future plans. In this article we'll look at the different types of filters available, their optimum use, and, ultimately, what is the best filter for your aquarium.

Types of aquarium filtration

There are three elements to aquarium filtration; Mechanical, Biological, & Chemical. Some filters will incorporate one, most two, and some all three. These are referred to as 'stages'. A single stage filter only does one of these jobs, and three stage filter does all three.

Mechanical filtration

Mechanical filtration is simply the removal of physical particles in your water. This is done by water passing through a fine mesh sponge, floss or filter sock. The particles are caught and collected as the water passes through. The keeper is then responsible for removing the extracted particles. This element of the filtration works best if it is cleaned regularly, we would suggest weekly. The cleaning process removes these particulates from the aquarium completely. Leaving a mechanical filter uncleaned means that it will become biological. And all those particulates will be broken down by

bacteria. Believe it or not, in some situations this can be a bad thing.

Chemical filtration

The addition of chemical media like carbon or phosphate remover. These clear your water. In terms of how it looks, these often appear as bags, cartridges, or baskets full of resin or activated charcoal. If you have owned an aquarium, I’m sure you will know how wonderful it looks after a water change. This is because certain dyes or tannins from and fish waste build up over time, tinting the water. Replacing this water removes a percentage of the problem. Using chemical filtration gives you that squeaky clean appearance all the time, but they must be replaced regularly. Usually every 3 to 6 weeks

Biological filtration

This is the breaking down of harmful organic matter like ammonia, nitrate, & nitrite. This is done by providing an area designed to encourage the growth of ‘good’ bacteria. This 'good' bacteria consumes the toxins & 'bad' bacteria you want to get rid of, so everyone’s happy. A true biological filter works best if it is left alone. Some of the bacteria are sensitive and cleaning them reduces the biological population. However, this is only possible if the biological stage is preceded by a mechanical stage that is cleaned regularly.

In some simple internal filters, there is only a sponge, which works as both mechanical and biological. In this case regular cleaning is not only unavoidable but necessary. This next bit is important so you will certainly hear It again before the end of this article…ready?…**never, ever clean a biological filter in tap water**. Chlorine in tap water is there to kill bacteria, you are trying to culture beneficial bacteria in your biological filter to keep your fish alive. Always use water that has been removed from the aquarium to clean out a biological filter element.

Types of aquarium filters - which is the best filter for your aquarium?

Sponge filters

Super simple and great for small tanks with minimal or small livestock such as small betta or shrimp aquariums. They're also good options for hospital or breeding tanks.

An air pump sucks your water through an intake surrounded or covered by a sponge. This removes larger debris and particles.

This takes care of the mechanical filtration. Lots of sponge filters also have a biological stage built in. It can take a little while for this to establish itself if you're starting fresh. Their general efficiency is limited and they must be cleaned out weekly. If you don't clean them out they can get clogged, giving poor results but also potential leaks and floods.

It's important to check if your sponge filter automatically restarts in the event of a power outage. Water chemistry can change very quickly in small tanks so it's important that your filtration is as consistent as possible.

Pros	Cons	Ideal for
Inexpensive	Limited filtration - weekly water changes still advised	Nano tank
Easy to set up	May offer biological filtration too, but only effective in longer-term tanks	Betta tank
	Weekly maintenance for sponge	Shrimp tank

Internal / submersible filters

Guess where these go...

There are a whole range of internal filters for small & medium tanks. They can be 1, 2, or 3 stage (containing mechanical, biological, & chemical filtration) filters that can be powered by either an air pump or electricity.

These filters can be particularly useful if your tank doesn't have enough space around it to use a HOB (hang on back) filter.

Some of the more premium electric models that cater for all 3 stages will have sufficient flow rate to deal with up to around 250 litres, easy enough for a small planted or community tank provided you don't overstock on fish. The filters that only cater for 1 or 2 stage filtration, and are powered by air pump, are usually not ideal for planted or full community tanks. This type s far less common these days as electric powered internal filters of all shapes and sizes have become increasingly more readily available.

Pros	Cons	Ideal for
Space saving	Filtration ability varies between models	Nano, Betta, Goldfish & Shrimp tanks
More efficient & better filtration than sponge filters	Highest end filters may be as expensive as equivalent HOB alternatives	Planted tanks with low numbers of fish or shrimp
Air pump & electric options	Maintenance requires entering your tank water - chemistry changes	

HOB (Hang On Back) filters

A great option for any tank. HOB filters, as you may expect, hang on the side of your tank. They have an intake tube that carries the water up to the filter body for cleaning before being re-delivered to the tank via the outflow.

The returning water provides a great opportunity to provide surface agitation. You need some movement in the surface of your water to allow oxygen in and CO2 out, many HOB filters return the water via a ‘waterfall’ style grate or vent for this purpose.

HOBs offer 2 or 3 stage filtration and an easy maintenance option. With everything outside the tank it is easy to clean filter media & sponges, and replace chemical filtration media.

The biggest obstacle with HOB filters is getting them to fit on a standard aquarium. Sets like the fluval edge, actually come with a bult in HOB, but most existing tanks either have a bracer system around the top or a lid that would need modification to allow them to fit. There are a number of ranges of rimless tanks available which would allow for a HOB, but unless you have one of these its

worth double checking how you are going to fit one before you buy.

HOB filters are also fairly limited in the UK, there are only a couple of manufacturers currently doing them

Setup is a little trickier than the first two, but not by much. Organising where you want your intake tube and outflow vent is pretty much the only consideration.

Premium HOB filters can be as effective as Canister filters and are often used for mid to large planted tanks.

Pros	**Cons**	**Ideal for**
Cost effective 2 or 3 stage filtration for pretty much any sized tank	Increases aquarium evaporation more than sponge, internal, or canister filters	Small to medium community tank
Easier to maintain than canister or sump filters	Powerful intake or outflows can injure delicate fish or shrimp.*	Planted & aquascaped tanks
Filter pads & filter media setup is flexible & can be easily customised	May be noisier than other systems with external electric pump & returning water	As secondary filtration & water circulation to very large canister filtered tanks
	Motors can burn out if not kept submerged	

*Altering the end of your intake by covering with a bit of sponge can help prevent this. Some filters will also have adjustable power settings to mediate this effect.

Canister filters

Powerful and have been the filter of choice for professional & experienced fishkeepers. They are suitable for tanks from 100 litres up to..well you name it! Extremely large tanks often have multiples of the largest external filters available.

Canisters are external filters, usually hidden within the stand or cabinet of the tank. Water is pulled through the intake and returned through the outflow.

The beauty of a cannister filter is that they offer a much larger filter volume than an internal filter, without taking up any space. They are an enclosed system so there is no evaporation and they can be easily disconnected from the tank and cleaned without spilling any water…most of the time!

There are also some nice “tricked out” versions available, some with built in UVs like the Betta external filters, and others like the OASE biomaster, which have managed to offer a separate mechanical prefilter that can be easily removed, leaving the biological portion to do its thang. Something that’s only really seen in sump filters or expensive pond filters.

Canisters can house multiple filter pads that can filter microscopic debris and ‘polish’ the water. You can also usually customise your exact setup of chemical & biological filtration inside it, too. They do usually cost more than other types of filter, take more effort to setup & maintain, & are more complicated in general.

Pros	**Cons**	**Ideal for**
Highest flow rate of any filtration system	Usually more expensive than HOBs & premium systems may be very costly to install	Larger aquariums 50-500 gallons
Multiple layers of filter pads remove all debris & polish water	Complicated & can be messy to maintain	Densely planted community & aquascaped tanks
Media stages & intake/outflow are completely customisable	Out of sight filters can do a lot of damage if they leak & go unnoticed	Tanks with a large population of species that create a lot of waste i.e. cichlids or goldfish

Sump or ‘wet/dry’ filters

Historically sumps have been mainly used for marine aquariums, but you’ve only got to lift up the skirt of any aquatics shops tropical section these days to know that they are (in the main) run using sumps.

External filters are great, they really are, before the mainstream use of sumps they were the absolute pinnacle of aquarium filtration. However, it is said that sumps are to external filters, as external filters were to internal filters….granted this quote isn’t on a par with “to be or not to be” but the increase in ease and space external filters offer over internals, is equalled by that offered by sumps.

Whilst not impossible, it can be challenging to fit a sump to an existing aquarium. There are things called syphon boxes that help to transfer the water from tank to sump, these have the same limitations as hang on back filters especially when you aquarium has a thick set of bracer bars around the top.

Where sumps really come into their own, is when they are part of a new set up. They do occupy most of the cabinet, holes have been predrilled in the base of the tank, and pipe work is included that transfers the water between the tank and the sump. People often get hung up on these holes and whether the water is going to fall out of the the tank and flood the sump. Please just bear in mind that pretty much every tank in store is run using a sump, including our 15,000 litre shark tank! If we have that much faith in these things you can too.

Compared to every other form of filtration, sumps have a massive capacity. They also allow you put things like heaters and pumps neatly hidden away beneath the tank. It’s simple to create the mechanical/biological separation we talked about earlier. In many cases, the water from the aquarium will first pass through socks or filter floss in a sump before going any further. This initial mechanical filtration can be easily removed and cleaned, all you have to do is open the cabinet door. Sumps also give you the opportunity to put in treatments and additives that get instantly mixed and distributed evenly around the aquarium.

Pros	Cons	Ideal for

High levels of biological filtration	Filtration not adequate to used be itself in most aquariums	Marine & reef tanks of all sizes
Little noise - the passive gravity led system only requires a small pump to return water to the tank	May require tank modifications to incorporate	Professionally aquascaped aquariums*
Some sumps also have stages to hold additional filter media	Expensive & complex	

For a quick peek at an example of one of these tanks follow the link to a YouTube video by Green Aqua in Hungary!

Extra filter considerations

Flow Rate

As a rule of thumb, you want to turn a pond over once an hour, a tropical or coldwater aquarium 4 times per hour and a marine tank 10 times per hour. So a 100 litre tropical tank should have a flow rate of 400 litres per hour (lph). This isn't set in stone but we recommend it.

Extra flow rate improves oxygenation in your aquarium and it also helps to carry any rubbish towards the filter rather than it settling on your sand or gravel. There are certain groups of fish that prefer high flow environments (many people also recreate riverbed biotope aquariums) & it always creates an extra dimension of interest when you theme the tank like this.

Flow is one thing, but flow dynamics are another. Your tank shape, decoration and direction of flow can make the difference between tranquil and tumble dryer. If you've picked the perfect filter for your tank, but you're worried the tail of your fancy goldfish will end up looking like a wind sock in hurricane season, then you can look at using spray bars or diffusers to calm the pressure of the flow down whilst maintaining the turnover rate.

There are even some very nifty glass bulbs that are often used in planted aquariums to quiet down the flow even further, like one of those little hats they put on the end of a trumpet, nice! (yes, yes, we know it's called a mute)

Technology

Newer doesn’t always mean better. Sumps, for example, use the oldest & simplest principles, and are pretty much just a glass box divided into sections. Sometimes the more tech on your filter, the more there is to go wrong. Try and balance your experience & competence with the complexity of your equipment. There have been a lot of weird and wonderful manifestations over the years, luckily most of the filters on the market today have resulted from decades of evolution. Fluval external filters for example are on the 07 version, if I squint and look up to the sky, I can almost remember what a Fluval 403 looks like.

Filters should be easy to maintain, economical to run, and provide a great environment for your tank. That’s it. Just double check that spares are readily available in most stores. Getting a cheap filter is great but having it break on you only to realise you can’t get a spare impeller shaft from your local fish store is a bit of a recurring nightmare.

Brand

It’s quite clear that a number of our customers have their favourite brands and that is great to see. There are some amazing quality brands out there, and also some that aren't so amazing. Generally speaking, those that have been in the game for a decent amount of years are good to go. Having said that, OASE have only been in the aquarium game for a few years and already offer a top notch range of external filters. In fairness they lead the pack (in our eyes) with pond filters and have done for over 30 years, so they really know their stuff.

A well-known popular brand will also be easier to source replacement parts of filter media for. Advice should also be easier to come by with a product people are familiar with.

Our recommendations for 'best filter for your aquarium'

Large tanks - Fluval FX Series

https://shirleyaquatics.co.uk/product/fluval-external-aquarium-canister-filter-fx-series

The Fluval FX6 is a great option for larger tanks. This filter is self-priming and so well made it's almost entirely leak proof. Fluval have even developed an accessory kit you can buy that allows you to carry out water changes with it!

Another great feature is the stacking media baskets. You can customise the filter media you want to use and the seals between them funnel the water through them. There are also valves built in (similar to those in both a human & Zebra fish heart!) that prevent water from leaking or flowing back into your tank.

[image of a zebra-fish that has the same valve system as used in the Fluval FX6 filter, which may means it's the best filter for your aquarium.]

The lovely Zebra fish has heart valves similar to humans (& the Fluval filter) that prevent liquid flowing backward!

Pros	**Cons**
High capacity, high performance filter is professional quality	Premium price
Long feature list - self priming pump & variable motor for optimum performance	Filter is too powerful for sub 250 gallon tanks - doesn't come in smaller versions
Additional kit allows pump to be used for water changes	Likely still need secondary filtration for really big aquariums

Medium tanks - OASE Biomaster

We specifically said earlier in this article that canister systems were unsuitable for smaller tanks but there is always an exception. Sometimes, if you have a heavily planted tank or a large community of 'high-waste' fish like goldfish, you'll need something with a bit more oomph.

We've been fans of OASE for a long while and are so happy to say that their aquarium offering is just as good as their pond range. The Biomaster is a real jewel in the crown for their 'indoor' range.

Pros	Cons
Easy clean pre-filter module	Not the cheapest option
Practical venting button for effective water suction to get started quickly & easily after installation or cleaning	
Shut off & safety lock prevent unwanted water leakage	

Small tanks - The world is your oyster, here are some of the best options for your smaller aquarium

Fluval 'U' Series (£25.99 - £62.99)

Fluval U Series Underwater Filters provide complete and efficient 3-stage filtration, including BIOMAX biological filtering (U2, U3 and U4 models), to create superior aquarium water quality. They provide the option of setting the flow output in 3 different positions, a key benchmark in underwater filtration. The Adjustable 3-Way Flow Control feature (U2, U3 and U4 models) lets you position the water flow output to meet your specific needs. The Top Output setting provides maximum circulation and oxygenation, the Integrated Spray Bar setting provides a gentle, even flow for planted aquariums, and the Bottom Output setting is for deep water agitation.

Fluval U Filters also include a convenient flip-top lid that allows quick and easy access to the filter cartridge for maintenance or replacement including Fluval’s Clean & Clear cartridge (HA499). Packed with special high performance resins, Clean & Clear is proven to reduce phosphate and nitrate while preventing the spread of algae, providing you with a cleaner, clearer aquarium and healthier fish for longer intervals.

In addition, Fluval U Filters offer installation versatility: they can be installed vertically against the aquarium wall to create currents or customised flow patterns; or they can be placed horizontally in shallow water tanks or to create decorative features such as waterfalls. Offering outstanding 3-stage filtration, increased water movement and vital aeration, Fluval U-Series internal filters are the perfect

solution where external filtration is not possible.

- U1 for up to 55 litres – 250 litres per hour
- U2 for 45-110 litres – 400 litres per hour
- U3 for 90-150 litres – 800 litres per hour
- U4 for 130-240 litres – 1000 litres per hour

Eheim Pick Up Internal Filter Range (£19.99 - £32.99)

This filter is fixed inside the tank with suction holders. The special feature of the pick up concept is that the pump unit remains in the tank when the filter canister is taken out together with the filter sponge. The motor body at the bottom sucks in the water and conveys it through the filter sponge. Afterwards the cleaned water is returned to the tank through the adjustable outflow nozzle. EHEIM pick up is fully equipped and immediately ready for use. The carbon sponge from the EHEIM range of accessories is particularly suitable for newly installed tanks or after medication treatment.

- 45 – Suitable for small aquarium sizes up to 45 litres, Output: 50 LPH, Size: Size: 135 x 50 x 63mm
- 60 – Suitable for tanks up to 30-60 litres Output : 150-300 LPH Size: 163 x 75 x 96mm
- 160 – Suitable for tanks up to 60-160 litres Output : 220-500 LPH Size: 218 x 75 x 96 mm
- 200 – Suitable for tanks up to 100-200 litres Output : 220-570 LPH Size: 275 x 75 x 96 mm

So the best filter for your aquarium is...

Whichever one best suits your setup right now! If you're still unsure feel free to fly around the website a bit more or come visit us in store!