

Aquarium Filter and Filtration System Maintenance

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Maintaining a healthy aquarium involves not only incorporating the proper equipment in the initial installation, but also providing water conditions that are optimal for the specific organisms that are being kept. A large part in maintaining these water conditions lies in the regular maintenance of the filtration system. There are three types of filtration that most systems employ; Mechanical, Chemical, and Biological. Each type of filtration requires regular maintenance, but differ in both the procedure and the frequency of the cleanings.

Mechanical

Mechanical media, usually in the form of sponges or pads, is a material that is used to trap debris out of the aquarium's water, and is located in a place where the water is forced through it. Maintenance on this part of the filtration is crucial in controlling excess nutrients within the aquarium. Shortly after a particle is trapped within the mechanical media, it begins to be broken down by bacteria and fungi, resulting in ammonia added to the nitrogen cycle. This results in an elevated biological loading on the aquarium. If not cleaned regularly, the excess levels of nitrates and phosphates in the aquarium will lead to both algae and overall aquarium health problems.



Regular maintenance should include rinsing the pads or sponges in order to remove the particulate matter. If the media has become too clogged with debris, and can not be easily cleaned, it should then be replaced. Rinsing this material in the aquarium water removed during a regular water change versus rinsing it in tap water will preserve the beneficial bacteria colonies, and will prevent any toxic ammonia spikes in the aquarium. The frequency of cleaning this material will depend both on the stocking level of the aquarium and the level of nitrates within the system. The greater the levels of either of the two, the more often that this material should be cleaned. Generally, it is recommended to clean every other week, but the frequency should be adjusted depending on the biological loading of the aquarium.

Chemical

Chemical media is useful in treating many different types of problems associated with aquarium water. Chemical media is typically granular in form, but may also be offered in pad form. The chemical media should be located directly after the mechanical media within the aquarium's filtration system. Activated carbon is the most common chemical media used on a regular basis. Activated carbon adsorbs dissolved organics and medications, and removes odors and any coloration of the aquarium water. Activated carbon should be replaced when the clarity of the aquarium water diminishes or when odors become evident. For most aquariums, activated carbon will remain effective for a period of 1 to 2 months.



Other types of chemical media are targeted at removing specific toxins and metals from the aquarium water such as ammonia, phosphate, silicate, nitrate, copper, and heavy metal removers. These media are useful for emergency and general maintenance when problems occur with these specific toxins and metals in aquarium water. Maintenance on these media should be performed as directed in the instructions on the specific product label.

Biological

Biological media is responsible for harboring the large numbers of bacteria that are responsible for the nitrogen cycle and thus ultimately for keeping the water free of both ammonia and nitrites that are toxic to the inhabitants. This material should offer a large surface area and be incorporated into the filtration system where both the water flow and oxygen content are high.

The biological media should be placed after both the mechanical and chemical filtration. The water is then filtered from any debris and is chemically treated prior to passing over the biological media. This brings back the importance of maintaining the mechanical media. It is important that debris is not allowed to pass the mechanical filtration and enter the biological media.

Maintenance for the biological media is limited and needs to be performed carefully without destroying the beneficial bacteria. If, over time, the media becomes clogged with debris, it is important to rinse the media in aquarium water to remove the debris. It is normal for all biological media to become covered in a slime-like film, and should not prompt you to clean the media. Most biological media should never have



to be replaced unless it has been physically damaged.



Equipment

Performing regular maintenance on the aquarium's equipment will improve both the performance, and the lifespan of this equipment. The routine for this maintenance should be explained in the original manual that is included with the equipment. The procedures that follow are only general guidelines, and the manufacturer's recommendations should always be followed.

It is best to perform maintenance on the equipment during your regular water change and filter maintenance. At this time, the power to the equipment has been disconnected and the filter and pumps can be safely serviced. Whether your system includes a power filter, canister filter, power heads, or a sump with a water pump, they all have a motor and impeller within them.

General maintenance on all of these types of equipment include removing the motor's impeller and cleaning collected debris off of the impeller and from the impeller's housing. Follow the manufacturer's guidelines for removing the impeller. Once removed, clean the impeller of any debris and inspect the impeller for any damage. If the impeller is missing any blades, or the blades contain any cracks or nicks, replace it.



Next, clean all of the filter parts, including all housings, intake and outlet pipes, and the main body of the filter. Following the manufacturer's recommendations and lubricate any of the necessary parts and seals prior to reassembling the unit. Lubricants that are typically suggested include petroleum jelly and liquid silicone. Some external pumps need to be oiled periodically with an oil that is appropriate for that pump. Follow the manufacturer's suggestions for this maintenance and log the date that the pump has been oiled. This will help you remember when oiling is required and will ensure that the pump receives the necessary amount of oil. After all of the necessary maintenance has been performed, re-assemble the filtration unit and re-install it on the aquarium. Many types of filters must be primed before operation. Priming the filter typically involves filling the filter with water so the necessary siphon can be started. Follow the instructions for this procedure in the literature provided with the unit.

Conclusion

Even with the numerous recent advances made in filtration technology, these 'new age' filters still need to be maintained and cleaned periodically in order to provide the proper water conditions needed by the inhabitants. By monitoring your water quality and observing the health of the aquarium inhabitants, in time, you will achieve a maintenance schedule that will become routine and will require less effort and planning.