Santa Monica Filtration®

DROP.2 DROP.6 DROP.6x DROP1.2 DROP1.2x DROP1.4 DROP1.4x

Drop-In UAS[®]

Updated July 2022

If your DROP is not showing some color of growth after 3 weeks, email us or ask at: www.AlgaeScrubber.net Updated instructions: www.AlgaeScrubber.net/DROP-Instructions.pdf

DROP Scrubber Placement Examples



These models can set on the bottom of the aquarium or sump:

DROP1.2 DROP1.2x DROP1.4 DROP1.4x

These models need to be raised up above the bottom:

DROP.2 DROP.6 DROP.6x

Slime Growth

If your scrubber starts out with dark slime like these pictures, clean it with a toothbrush in your sink with running water so that you see all the white surfaces.

Sometimes the slime will already have let go, showing the white below it. It still needs toothbrushing















Thank you for your purchase of the Santa Monica Filtration[®] DROPTM drop-in upflow algae scrubber[®] (UAS[®])with Green-Grabber[®] growth surfaces, patent number 9,115,008 and 9,708,207 and Chinese CN203392929U. This filter will do most of the filtering needed for your fresh or saltwater aquarium, and in most cases will do all the filtering. Part of this filtering includes helping eliminate two very important things: Algae and waterchanges. The filter works by purposely growing algae inside the filter, so that the algae consume all the "bad" things out of the water*. This is how all the oceans, reefs, and lakes are naturally filtered.

Do not drop the power supply box on the floor, or put in humid or wet area.

Do not use anything sharp or metal when cleaning because this could scratch the waterproof covering on the LEDs.

Light-Shade: Too much light will prevent algae growth. Inside the DROP.2 is a small piece of cloth, and inside the larger DROP models is a black plastic screen; these are used as light-shades to reduce the LED light until growth starts because the red light is very strong and is reflected by the white surfaces which makes the light even stronger. The DROP1.4x also has a low-power (1-plug) mode to reduce the light even more. When light is too strong the algae can't grow, and therefore you should use the shade to cover the lights until growth develops on the white surfaces, and then you can remove the shade. After some type of growth (of any color) is covering the rocks, you will not need to use the shade again unless you re-start the scrubber from scratch.

Aquarium size: The amount of water in the aquarium, or the dimensions of the aquarium, are not important. Algae scrubbers are sized instead by the amount of feeding you do. If you have other filters, or if you do waterchanges, then a single DROP scrubber can handle more daily aquarium feeding. If you feed more than the amount the DROP can handle, but have no other filters or waterchanges, you can use additional DROP filters to add up to the amount that you are feeding and then clean one filter at a time on a rotating schedule (one per week, etc). If you feed much less than the feeding amount of the DROP, the filter will just grow less until it is needed more. You cannot "over filter" with algae scrubbers the way you can with chemicals.

Note that if you have rocks which are soaked with phosphate from having been in a problem aquarium, each 10 pounds (4.5 kg) of this problem rock will add 0.2 cube a day to your feeding amounts; so be sure to account for this when choosing a scrubber size or number of scrubbers. For example, if you feed 0.5 cubes a day, but have 20 pounds of rock that came from a tank with nuisance algae problems, this rock will add 0.4 cubes a day to your feeding. This applies even if the rock was dried out and bleached, because this does not remove nutrients from the rock.

The **DROP.2** has 6 square inches (37 square cm) of one-sided growth surface, and is designed to be the only filter on a freshwater or saltwater aquarium that is fed up to 0.2 frozen cubes per day, or 2 pinches of flake food per day, or 2 square inches (12 sq cm) of nori seaweed per day, or 0.02 dry ounce (0.6 grams) of pellet food per day. It can be used in water with any phosphate level because the light is very strong in a tiny reflective white space.

The **DROP.6** and **DROP.6** each have 14 square inches (87 square cm) of one-sided growth surface, and are designed to be the only filter on a freshwater or saltwater aquarium that is fed up to 0.6 frozen cubes per day, or 6 pinches of flake food per day, or 6 square inches (36 sq cm) of nori seaweed per day, or 0.06 dry ounce (1.8 grams) of pellet food per day. The DROP.6 is for water with phosphate up to 0.2 ppm; if phosphate is higher, the Xtra LED in the DROP.6x is for water with phosphate up to 0.3 ppm.

The **DROP1.2** and **DROP1.2x** each have 28 square inches (170 square cm) of one-sided growth surface, and are designed to be the only filter on a freshwater or saltwater aquarium that is fed up to 1.2 frozen cubes per day, or 12 pinches of flake food per day, or 12 square inches (72 sq cm) of nori seaweed per day, or 0.12 dry ounce (3.6 grams) of pellet food per day. The DROP1.2 is for water with phosphate up to 0.4 ppm; if phosphate is higher, the Xtra LED in the DROP1.2x is for water with phosphate up to 0.5 ppm.

The **DROP1.4** and **DROP1.4x** each have 17 square inches (105 square cm) of two-sided growth surface (accounting for strings and overlap areas), and are designed to be the only filter on a saltwater aquarium that is fed up to 1.4 frozen cubes per day, or 14 pinches of flake food per day, or 14 square inches (87 sq cm) of nori seaweed per day, or 0.14 dry ounce (4 grams) of pellet food per day. The DROP1.4 is for water with phosphate up to 0.6 ppm; if phosphate is higher, the Xtra LED in the DROP1.4x is for water with phosphate up to 1.0 ppm, which is a very high amount of phosphate for a saltwater aquarium.

Air Bubble Tubing Adjustment: Inside all the DROP scrubbers (except the DROP.2) at the bottom, is the end of the air bubble tubing where the air bubbles come out and flow up the white rocky surfaces; the air comes out of little slots cut into the tubing (the slots are very small and hard to see). These slots are not the same as the HOG scrubbers; HOG scrubbers have long cuts with crosscuts. Instead, the DROP scrubbers have just a tiny small slot, and these slots can be moved around a bit, and opened up a bit with a toothpick to adjust the flow if needed. We test all DROP scrubbers under water and adjust the little slots before packing them; so they all operated with bubbles properly before shipping. They might even still be a little wet.

The DROP.6 and DROP.6x have a short segment of air tubing on the bottom beneath the white rocky wall at the back, and this tubing has two little slots. The DROP1.2 and DROP1.2x and DROP1.4 and DROP1.4x have a circle of tubing on the bottom: The DROP1.2 and DROP1.2 have a slot on the back and both side walls. The DROP1.4 and DROP1.4x have a slot under all four walls. Test the bubbles under water, with the door

open, to make sure the bubbles are flowing before you close the door. The bubbles do not have to be perfect, because as growth occurs the slots will change their bubble output anyway, and the growth will re-route the bubbles.

Filter Position: This DROP filter is to be set into your aquarium or sump water. It does not matter where it goes, because it will filter the same. If you want air bubbles to go into your water, then set the filter lower under the water surface; if you don't want air bubbles to go into your water, position the filter so the top part of the filter is slightly above the water surface. Wherever you put the filter, the air tubing should go up, not down. Some red light does come out of the holes on the bottom, so you may have to account for this when deciding where to put it. This red light will decrease as growth increases. Some red light also comes out of the top.

The **DROP1.2 and DROP1.2x and DROP1.4 and DROP1.4x** have a plate on the bottom of the filter which covers the holes; this helps block light from coming out of the bottom and also allows you to set the filter all the way down on the bottom of the aquarium or sump, even if it's sitting on sand. The **DROP.2 and DROP.6 and DROP.6x** do not have this plate so you should not set it down on the bottom; instead suspend them up higher, by securing the plastic hook (provided, and connected to the air tubing) to something outside the aquarium. Or you can try using different things inside the aquarium (rocks, wood, etc) to hold the filter in place, up off the bottom.

Light Timer: For saltwater, the red light (LED) in the filter can be put on a timer or controller so that it stays on for part of the day and off for the rest of the day; freshwater however can be attempted without a timer. A good starting point is 18 hours of LED light per day. If the growth is good after a few weeks, you can try up to 22 hours per day. If the growth has lots of bright yellow or clear or bald areas, then decrease the hours by 2 per day. Bright yellow or clear growth means you need less hours; black growth means you need more hours. Eventually you will find the overall best number of hours for your aquarium. If you need to turn the LED off longer because the aquarium is in a bedroom, you can, but the filtering might be reduced. No matter how many hours, however, always start with the black shade provided because the red light is too strong to allow algae to grow with all the white surfaces reflecting the light.

Air Pump: The DROP filter requires an air pump to make the air bubbles which make the air/water interface turbulent inside the growth compartment; this is what makes scrubbers filter so well, much better than chaeto, which has no air/water interface turbulence. The DROP.2 and DROP.6 and DROP.6x can use any small aquarium filter. The DROP.1.2 and DROP1.2x have more growth walls and need a larger pump, preferably one with two air outlets combined into a single outlet. The DROP1.4 and DROP1.4x have all four walls covered in growth surface and need the most air, so a twooutlet pump combined into a single outlet, or even a four-outlet pump (with a control knob to adjust flow) combined into a single outlet, is preferred. If you don't currently have the pump you need, just use what you have in the mean time; it will not hurt the filter to start with less air. The Danner AP-4 is a good adjustable two-outlet pump; the Danner AP-8 is a good adjustable four-outlet pump. It is the air bubbles which move water into the growth compartment and up the growth surfaces, and also which supply carbon dioxide CO2 from the air (after the CO2 from the water is used up) to the surfaces, which allow algae to grow fast in the filter. CO2 in the water is used up quickly, and without additional CO2 from the air, the growth rate would be limited like it is with chaeto reactors. The air pump should run 24 hours a day, however you can turn it off or reduce the flow for a few hours when you turn the LED light off, but make sure the LED light is actually off, so you do not burn the algae. An easy way to reduce air flow if you don't have a control knob is to tie a knot in the air line. And try to place the air pump above the aquarium so water does not drain out if the power goes off; a check valve (1-way valve) could also be used and is standard equipment at any aquarium store.

Filter Cleaning: Algae scrubbers absorb nutrients out of the water and into the growth quickly (about five times faster than chaeto reactors), and this growth should be cleaned when the growth gets thick which is usually every 5 to 10 days. If the growth is not thick by 10 days, check to see if it is covered in slime, especially a dark or black slime as shown in the color pictures. Slime needs cleaning with a toothbrush in your sink with running water so that the white surfaces can be seen again; this will allow more light to reflect, which is what is needed to get through black growth. Newer filters usually have to run for more days than older filters do before thick algae grows. Just check it every few days to make sure the bubbles are still flowing properly, and the light is on for 18 to 22 hours (for saltwater). Also, if you are using the filter on a brand new tank that you have not started feeding yet (for example, if it is still cycling), then there will be very little growth at all until you start feeding the animals. Do not use anything sharp, or metal, when cleaning because this could scratch the waterproof covering on the LEDs.

Once your filter has grown algae (any type: green, brown, black), you can feed some of it to your animals at any time by just pulling some algae from the filter, or by opening up the filter (turn off the red LED lights first) and letting the animals go in it. By feeding your animals from your filter, your animals get very fresh live growth and no additional nutrients (nitrate, phosphate, etc) are added to your water. This feeding simply takes nutrients from your aquarium water and converts (grows) them into food so that they can be put back into your animals. It's very much like growing your own food in a garden. Generally, the more you can feed your animals from your filter instead of from packages, the "cleaner" your aquarium will be because the nitrate, phosphate etc. that were accumulating in your water are now helping your animals to grow. If your aquarium is freshwater, the thin stringy growth inside the filter will probably start flowing out of the filter anyway (or the fish will learn to pull the algae out), so you will end up feeding your fish even if you didn't plan to if the DROP is in the main aquarium.

For cleaning, remove more growth from the compartment than you would for feeding. The removed growth can of course be thrown away but it also makes great plant fertilizer, pet food, and beauty (seaweed) baths and skin wraps. In saltwater, the bright green growth that sometimes looks like Easter basket filler is actually Sea Lettuce (Ulva fasciata), and if it is thin green hair, then it is probably Cladophora. In freshwater, it is probably Spirogyra. And remember that if the growth never seems to turn green and always stays brown, it is still filtering because brown absorbs lots of nutrients from the water. And black absorbs the most, which is why it's black.

Other Filters: Although a DROP scrubber can be the only filter on your aquarium (which is how you would operate it to be the lowest cost and easiest way), it can also be operated with most other aquarium filters and additives. One exception might be additives that kill algae, or medications that contain copper, depending on how much you use. Carbon dosing (not GAC carbon filters) such as Zeo or pellets, can also reduce scrubber growth if used heavily. Chaeto reactors and macroalgae refugiums, while they won't reduce scrubber growth, will usually die when your scrubber gets fully functional because your scrubber will out-compete them for nutrients. DROP scrubbers can, however, be used on planted aquariums that have algae problems to help remove the nuisance algae dust coating from the plants. And one trick you can do with refugiums is to use the DROP as your light-and-flow for a refugium, by leaving the DROP lid open and positioning the DROP so that the red light hits the macroalgae in your refugium. The bubbles still need to rub the textures in the DROP, but they can also rub the macroalgae in your refugium, thus allowing both to grow.

Bulb Replacement: The LED lights cannot be replaced.

* Water Changes: If you have been doing water changes to reduce nitrate, phosphate, or nuisance algae, then an algae scrubber filter will greatly reduce the need for them and may possibly eliminate them. When algae grow in the filter, they consume nitrate, nitrite, phosphate, ammonia/ammonium, metals, CO2, and some toxins; so it's just a matter of growing enough algae inside the filter to do the filtering you need, compared to how many nutrients you are putting into the tank with the food you feed (that is why the DROP filter is sized for a certain amount of feeding per day). However, this filter (and algae in general) do not supply calcium, alkalinity, magnesium or strontium to the water. So if you wish to reduce or eliminate water changes, you will need to supplement any calcium, alkalinity, magnesium or strontium that you were using water changes for. Ponds or freshwater aquariums, which may only need alkalinity (hardness) to be maintained, may get enough alkalinity from just doing evaporation top-offs with tap water.

Power Supply: Do not put the power supply box in a humid area, or get any water on it, or drop it on the floor. The power supply box is the black box on the power cord. Also do not let salt spray accumulate on the power supply box. The power supply box is best placed far away from the aquarium, reservoir, sump, stand or cabinet, so that if water is spilled then the power supply box will not get wet. Setting it high up off the floor is a good idea.

The DROP filter LED lights use a low voltage that is perfectly safe. The LED is sealed in a triple waterproofed manner; this prevents corrosion from fresh and saltwater. The UL, Canadian UL, and CE approved power supply works on both 120 or 220 volts; it converts

and isolates the 120 or 220 volt mains to the safe low voltage which is isolated from the water, meaning that even if the LED were not sealed at all you could put the LED into the water and it would continue to work and nothing would happen. The power plug is for North America so if you need to plug into a different type of outlet you'll need to get a plug-adapter (available at any hardware, electronics, home improvement store, or online) or just cut the plug off and attach your own 2-prong plug from a hardware store. Also, it is recommended that you use a GFCI or RCD safely plug, available at any aquarium, hardware, electrical or home improvement store, or online. The power cord is actually the same as a laptop computer cord with a C7 connector (the connector looks like a figure eight), so you can swap your laptop cord with your DROP if you want to.

Troubleshooting:

Lights have stopped working: If the little light on the power supply box is on, all of the red lights should be on with the same brightness. However, sometimes people will drop the black power supply box on a hard floor and this will bend some of the components inside, causing the red lights to go out. This can sometimes be fixed by tapping the power supply on a hard wood surface such as a desk, on all the sides of the power supply. Try harder each time, on different sides, until the red lights come back on. Also, sometimes water gets inside the power supply box from drips, sprays, or condensation in humid areas like sumps. This can be solved by setting the power supply in warm sunlight for several hours, or on top of a warm surface (like your aquarium lights) for several days. If none of the above works, or if only a few of the red lights are operating, contact us for a solution.

Reduced Bubbles: Sometimes a white lime carbonate buildup that looks like salt will occur inside the air tubing where the bubbles come out, and this will slow down the airflow and bubbles. To fix this (or prevent it from getting thick), push a paper clip or toothpick into the holes where the air bubbles come out; and break the hard white buildup up into small pieces so they will blow out. This is done in the **DROP.2** from underneath, straight up through the hole in the box. On larger DROP models you can remove the black end-plug from the tubing and lightly squeeze the tubing with pliers. Then blow air or water through the tubing from the air-pump end and this should blow out the hard white pieces out of the tubing.

The **DROP.6 and DROP.6x** just need the tubing to be pulled forward, and the end-plug removed, then you can insert a paper clip or toothpick inside. Then blow air or water through the tubing from the other end; this should blow out the hard white pieces out of the tubing. Also pinching the air tubing helps break apart the buildup. When putting the end-plug back in, don't put it all the way in; just put it in half-way like it was shipped so you can get it out easily again.

For the **DROP1.2 and DROP1.2x and DROP1.4 and DROP1.4x** pull the circle of tubing up and forward out of the clip that holds it, and remove the end-plug, then you can insert a paper clip or toothpick inside. Then blow air or water through the tubing from the other end; this should blow out the hard white pieces out of the tubing. Also, pinching the

air tubing helps break apart the buildup. When putting the end-plug back, don't put it all the way in; just put it in half-way like it was shipped so you can get it out easily again.

Alternately (or in addition, if the tube is totally clogged) some vinegar could be put into the tubing using the syringe supplied, and it will dissolve the buildup in a few hours; however to do this the filter needs to be kept out of the water for an hour or two, and the algae in the filter needs to be kept wet so it does not dry out. All DROP scrubbers have the ends of the air tubing on the bottom of the filter, which allows you to set the filter in a bowl or plate with ¹/₂" (6mm) of vinegar, if desired. This is an easy way to clean out the tubing, and the vinegar will not reach most of the algal growth surfaces. Throw away the vinegar when finished, and wash it out of the tubing in your sink; do not wash any vinegar it into your aquarium.

Completely Black Growth: Some aquariums, even if you are not feeding them much each day, have huge accumulations of nutrients (usually phosphate) in the rock and sand/gravel after years or even decades of use without good phosphate removal. These situations will cause a black "oil" or "tar" to grow in the scrubber because phosphate is now being removed quickly from your aquarium for the first time. These large concentrations of nutrients, like phosphate, will cause black growth. Not to fear: Since the black growth contains lots of phosphate, you can be assured that the filter is indeed working and is removing these nutrients from your aquarium. However if the white textures are completely covered in black growth (see color picture examples) and there is no more white to be seen (only black everywhere), then this would be a case for needing to take the filter to your sink and using a toothbrush to remove most of the black growth from the textures. After only 3 to 5 days you may need to clean it in the sink again because black growth gets thick fast due to the rapid transfer of nutrients out of the water and into the growth. But at some point enough nutrients will be removed from your aquarium that green growth will start growing in the filter and you can then (if saltwater) do in-place cleaning/harvesting which does not require taking the unit to the sink. How many months this takes depends on how much rock, sand, and water you have, how many DROP filters you are using, and how many other phosphate filters (including water changes) are helping with the phosphate removal. Note: Canisters, sponges, floss, socks, skimmers and bio media do not remove phosphate. In all cases of black growth, run the lights as much as possible, up to 24 hours per day, and do not use the light-shading material.

Black and White Surfaces: Black "oil" or "tar" growth filters the most, but does not attach well to the textures. So if you are getting the high-nutrient black growth described above, but the air bubbles are blowing the growth away, then you will see patches of white where the black growth let go. To get through this phase, reduce air bubbles a little bit (by pinching the air line, or tying a knot in it), so that the black growth will not be washed away. Once green growth starts, you can go back to full power air bubbles. And as in all cases of black growth, run the lights as much as possible, up to 24 hours per day, clean every 3 to 5 days in your sink, and do not use the light-shading material. (And then use this black growth for great fertilizer.)

Completely White Surfaces: If your tank is new, or if your tank has low nutrients because lots of nuisance algae in the tank is absorbing the nutrients, or if you are running a low-nutrient system such as zeo or carbon dosing, your DROP scrubber textures may stay "paper white" with absolutely no sign of tan, brown, green, or any other color growth for several weeks because the LED light is too strong compared to how many nutrients are in the water. This is solved by placing even more light-shading material inside the filter; any material such as a stocking, plastic screen, black cloth, black TV dinner tray, or some other material which will block more of the light but still let the bubbles escape. Position the shade material so that all of the LEDs are covered. After some tan, brown, green or other growth covers the white textures, you can remove some of the shading material. The **DROP1.4x** should continue to be operated in low power (1-plug, for the 2 LEDs on the back wall) mode until the growth surfaces fill up with some type of growth and you cannot see the white surfaces.

Algae On Rocks Increases: If after running your DROP scrubber (or any scrubber) for several months and you have been removing lots of growth from it, and you start seeing more (not less) algae growth on the rocks in your aquarium, what probably is happening is that phosphate is coming out of the rocks. This is good! This is usually the case when the phosphate in the water measures "zero", and the algae that is starting to grow on the rocks is green, long, and concentrated in certain spots; usually near the top and on sharp rock edges and points. Another indicator will be that there will be no algae growing on clean plastic or glass (with no coralline) even if these parts are up at the top, because plastic and glass do not absorb phosphate. The rock algae will increase for a while, and when the phosphate in the rock is used up by your DROP scrubber, the rock algae will start turning yellow and letting go, sometimes in large chunks which get caught in filters or pumps. The time for all this to happen can be from a one to three months, depending on how much phosphate was in the rock, how many DROP scrubbers you have, and how many other filters you have.

Dimensions: The **DROP.2** is 2.5" wide x 4" tall x 1" thick (6 cm wide x 10 cm tall x 2.5 cm thick). It requires at least 3" (7.5 cm) of water to operate in. The power cord is 10' (3 m) from the plug to the filter, which allows the power supply box to set far away. The air tubing is 3' (.9m). The shipping envelope is 12" wide x 9" long x 2" thick (30 cm x 23 cm x 10 cm).

The **DROP.6 and DROP.6x** are 3.25" wide x 5.5" tall x 2.75" thick front-to-back (8 cm wide x 14 cm tall x 7 cm thick). It usually needs a 3" opening on the back of all-in-one tanks. The **DROP1.2 and DROP1.2x and DROP1.4 and DROP1.2x** are all 0.5" (6mm) taller because of the plate on the bottom which lets it sit on sand in your aquarium. All these DROP models require at least 5" (13 cm) of water to operate in. The power cord is 10' (3 m) from the plug to the filter, which allows the power supply box to set far away from the aquarium. The air tubing is 3' (.9m). The shipping box is 10" x 7" x 5" (25 cm x 18 cm x 15 cm).

Warranty: This DROP scrubber comes with a 12 month warranty for the original purchaser. Warranty is for replacement or repair only; not a refund. Costs for shipping

back to us are not covered; you will need to ship the entire filter back to us before we can repair or ship a replacement.

Warranty is limited to repair or replacement, and does not cover fish loss, personal injury, property loss, or direct, incidental or consequential damage arising from the use of it. The warranty and remedies set forth above are exclusive and in lieu of all others, whether oral or written, express or implied. We specifically disclaim any and all implied warranties, including but not limited to lost profits, downtime, goodwill, damage to or replacement of other equipment and property, and any costs of recovering animals, plants, tanks or other aquarium related items and/or equipment. We are not responsible for special, incidental, or consequential damages resulting from any breach of warranty, or replacement of equipment or property, or any costs of recovering or reproducing any equipment, animals or plants used or grown with this product.