
Let's Start with
A
SPECIAL FEATURE

Let's Start with

A

SPECIAL FEATURE

Why don't you start Nature Aquarium, this weekend? Nowadays, a wide variety of equipment for growing aquatic plants is easily available and made it easier for hobbyists to grow the aquatic plants with a proper set of aquarium system. In planted aquarium, tropical fishes in an aquarium look more lively and natural when they swim among dense aquatic plants. Here,we discuss the basic knowledge that the Nature Aquarium beginners should know before getting started, introducing rich information about how to enjoy aquatic plants using ADA products!

Aquascape Photographs by Takashi Amano

Text by Masatoshi Abe / Tsuyoshi Oiwa

Photosynthesis Activity of Aquatic Plants Depends on Light Intensity

Aquatic plants are broadly divided into two types: sun plants that perform active photosynthesis and shade plants that are not very active in photosynthesis. Sun plants such as stemmed plants and Riccia undergo robust photosynthesis and grow faster under intense light. On the other hand, shade plants such as ferns and Cryptocoryne can grow healthily even in low light environments and some of them do not grow well if exposed to high intensity light. For Nature Aquarium with both sun and shade plants, the light intensity is adjusted to the level required for sun plants; while shade plants are planted in low-light locations to reduce the amount of light they receive.

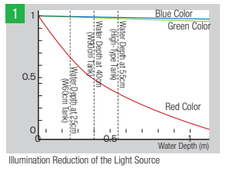
Photosynthesis Activity of Aquatic Plants Depends on Light Intensity

LIGHTING

Colors of Light for Healthy Growth of Aquatic Plants

Color temperature of artificial light varies by the balance of three primary colors of light (red, green and blue). Some lights have low color temperature (i.e., red-tinged light) and some have high color temperature (i.e., blue-tinged light). Red and blue lights are used in photosynthesis of plants. Red light is attenuated rapidly in water while blue light has better penetration in water. Considering this fact, it is assumed that aquatic plants that live underwater mainly use blue light for photosynthesis and therefore NA Lamp having more blue spectrum is used for Nature Aquarium.

1

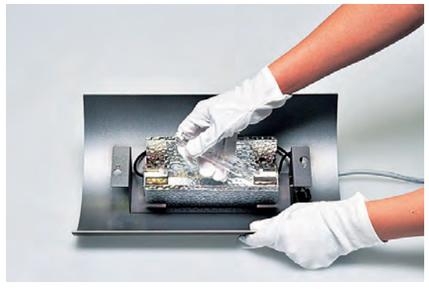


Illumination Reduction of the Light Source

2

1 Red light is attenuated rapidly as it travels deeper while blue light is hardly attenuated.
2 In underwater environments, you can see that blue light actually penetrates in water.

Color of Light Changes on Aging Lamps



Fluorescent NA Lamp as well as metal halide NAMH and NAG Lamps are high in blue spectrum to promote photosynthesis of aquatic plants. When the lamp gets older, the light emitted becomes dimmer and the color of light turns slightly reddish. To maintain the original performance, it is advisable to replace the lamp about once a year.

Appropriate Lighting Period

The light should basically be turned on for 8 to 10 hours a day for Nature Aquarium and it is important to control the regular light period daily. NA Control Timer allows you to control CO2 injection and aeration according to the ON/OFF of the light. In the event of algae bloom, reduce the light period to about 6 hours to inhibit algae growth. Note that it is a prerequisite for Caridina japonica or Otocinclus sp. to be added to the aquarium tank.

1

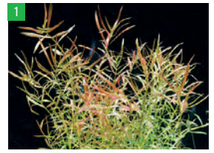
2

1 NA Control Timer allows you to control the regular light period. 2 Aeration is performed when the light is turned off to prevent lack of oxygen.

Aquascape Looks Different under Different Lighting

Aquascape looks different under metal halide lamp and fluorescent lamp. Aquatic plants and layout materials cast deep shadows under metal halide lamp that emits straight light. In contrast, much less shadows are seen under fluorescent light that emits light in all directions and softly lights up the entire aquarium. Besides the excellent effect of promoting photosynthesis, NAMH with high color rendering property precisely reproduces the original colors of aquatic plants and on the other hand, NAG emphasizes the green color of the plants.

1



2

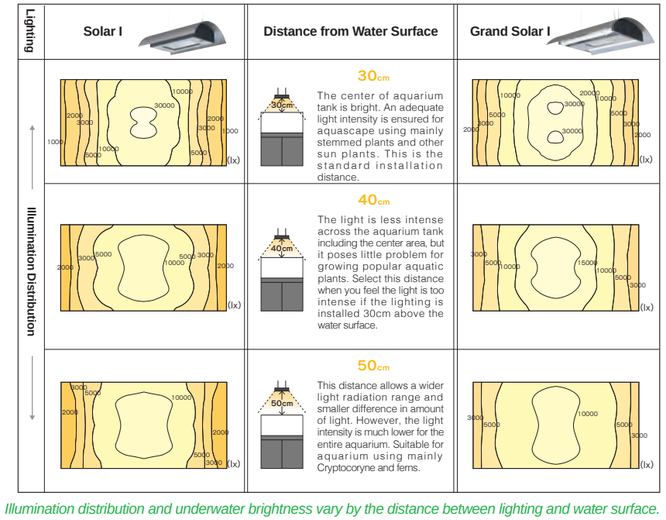
1 Red color of aquatic plants stands out under the light of NAMH lamp having high color rendering property. 2 The light produced by NAG emphasizes soothing green colors of aquatic plants.

Adequate light is crucial for Nature Aquarium in order to grow healthy aquatic plants and beautifully light them up. For the light radiated by an artificial lighting, adequate brightness, color temperature and lighting period as well as color rendering properties are the keys to optimal growth of aquatic plants and aesthetic of aquascape.
This section explains the light suited to Nature Aquarium.

Illumination Distribution Varies by Distance between Lighting and Water Surface

Illumination distribution of pendant type “Solar I” and “Grand Solar I” varies by the distance between the lighting and water surface. When this distance is short, the area directly under the lighting is very bright but there will be a difference in brightness between the center and other parts of the aquarium tank. On the other hand, if such distance is long, the aquarium is a little dimmer but the aforementioned difference in brightness is much smaller. The height of the lighting should be adjusted according to the type of the layout and species of aquatic plants. The impact of heat when the light is turned on is smaller if the lighting is installed further away from the water surface.

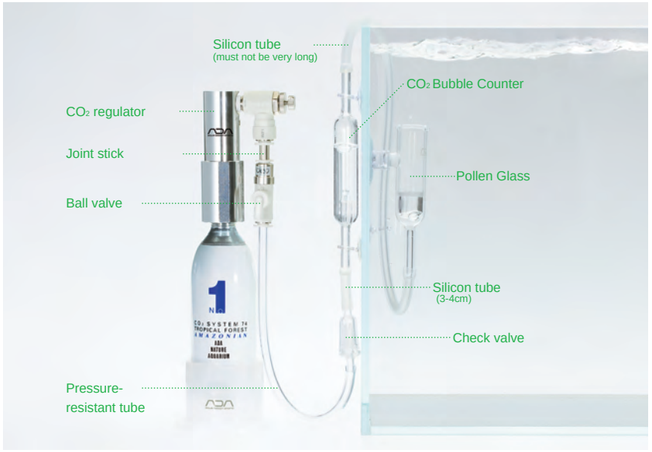
The size of all the illumination distribution chart is W90×D45 (cm).
*All the results are based on the measurement made by ADA.



Illumination distribution and underwater brightness vary by the distance between lighting and water surface.

Reasons Why Two Different Types of Tubes are Used

ADA's CO_2 System uses two different types of tubes: pressure-resistant and silicon tubes. Soft silicon tube is used for connection to glassware, but this type of tube is not suitable for long-term use due to its swelling effect which can result in escape of CO_2. Pressure-resistant tube free from risk of air escape is used for long piping. This hard tube is connected firmly just by inserting it into CO_2 regulator and branching part. It can also be connected to the check valve. Check valve is used to connect pressure-resistant and silicon tubes.



Above is a connection diagram of CO_2 System. The point is to minimize the length of silicon tube.

CO_2

Key Points for Fine Adjustment of CO_2 Supply Rate

CO_2 Bubble Counter and CO_2 Beetle Counter are used for measurement of CO_2 supply rate. Be sure to use either one of them together with Pollen Glass series items. Fine adjustment of CO_2 supply rate is performed by turning the fine adjustment screw on CO_2 regulator or speed controller while counting the bubbles coming out from CO_2 Bubble Counter. The CO_2 regulation is made easy by slowly loosening the fully-tightened fine adjustment screw. If the screw is loosened too much (i.e., the CO_2 supply rate becomes too high), tighten the screw and then loosen it again.

1 CO_2 supply rate is measured by the number of bubbles released from CO_2 Bubble Counter.
2 The point in fine adjustment of CO_2 supply rate is to loosen the fully-tightened fine adjustment screw.

How to Determine Excess or Deficiency in CO_2 Supply Rate?

If the lighting is bright enough, aquatic plants undergo active photosynthesis at a higher rate of CO_2 supply and sun plants produce bubbles rich in oxygen. In the event of an excessive amount of CO_2 supplied, Caridina japonica responds to such a change first. Usually this shrimp moves its legs actively to eat algae. If its leg movement slows down, it is a sign of lack of oxygen. You can identify the status of CO_2 supply rate on the Drop Checker installed to your aquarium tank. If the pH reagent of Drop Checker changes its color from green to yellow, CO_2 supply rate can be determined to be too high.

1 Leg movement of Caridina japonica slows down if CO_2 supply rate is too high.
2 Drop Checker with green-color pH reagent shows that CO_2 supply rate is appropriate.

How to Clean the Products in the Pollen Glass Series

Fully glass-made Pollen Glass series products return to their original clean state by cleaning with Superge, a glassware cleaning agent. Try your best to keep Pollen Glass clean to avoid dirty diffusion filter which can result in lower CO_2 diffusion efficiency. In the event where the diffusion filter is stained brown even after cleaned with Superge, rinse the filter well with water and then soak it in vinegar in a glass or other container. Acid of vinegar dissolves the dirt on diffusion filter. Rinse off the cleaning agent well with water.

1 Use of Clean Bottle allows you to soak clean the diffusion filter easily.
2 Keeping the diffusion filter clean improves the CO_2 diffusion efficiency.

Reasons to Use Ball Valve and Solenoid Valve, etc.

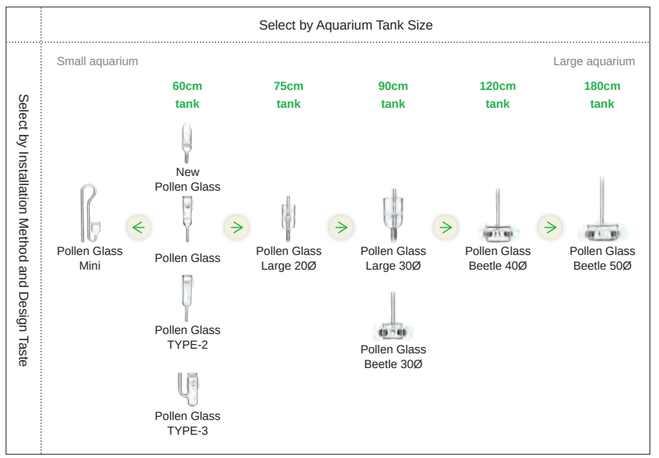
CO_2 supply needs to be stopped when the lighting is turned off during the night to prevent fishes and shrimps from suffering lack of oxygen. For this purpose, devices such as ball valve, hand valve and solenoid valve (EL valve) are used. Ball valve and hand valve allow you to start/stop the CO_2 supply manually while solenoid valve is connected to the timer for automatic control of CO_2 supply (NA Control Timer is equipped with a built-in solenoid valve). Use of ball valve or solenoid valve is needed since the fine adjustment screw on CO_2 regulator and speed controller does not stop CO2 supply completely.

1 Turn on and off the ball valve and hand valve manually every morning and evening.
2 Solenoid valve enables automatic ON/OFF by connecting it to a commercially available timer.

Aquatic plants are active in photosynthesis when exposed to bright light. Nevertheless, the photosynthesis activity is stopped in a short while due to lack of CO_2. In addition to bright light, CO_2 supply to aquarium is essential for aquatic plants to continuously undergo photosynthesis. In this regard, however, CO_2 supply must not be performed randomly. Effective supply of CO_2 is crucial.

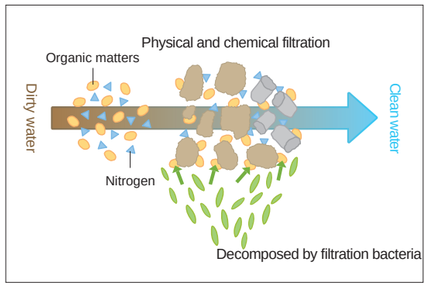
Selection of Pollen Glass Series

Pollen Glass series, which produces and diffuses fine CO_2 bubbles, offers a wide variety of products having different shapes and sizes. You can select one according to the size of aquarium tank and your design taste. The original model of Pollen Glass is suitable for 60cm aquarium tank. TYPE-2 and TYPE-3 having the same size also deliver the same CO_2 diffusion efficiency. For aquarium tanks larger than 60cm, Pollen Glass Large or Pollen Glass Beetle having larger size should be selected to supply a greater amount of CO_2.



You can select your Pollen Glass series item according to the size of aquarium tank and your design taste.

Biological Filtration - Most Important Part of Filter's Functions



The functions of filtration performed for removal of contaminants in water is largely divided into physical, chemical and biological filtrations. Aquarium water contaminants such as organic matters and nitrogen are physically and chemically removed by filter media including Bio Rio and NA Carbon, and then finally decomposed by filtration bacteria, protozoa and other microorganisms.

How to Promote Rapid Growth of Beneficial Bacteria?

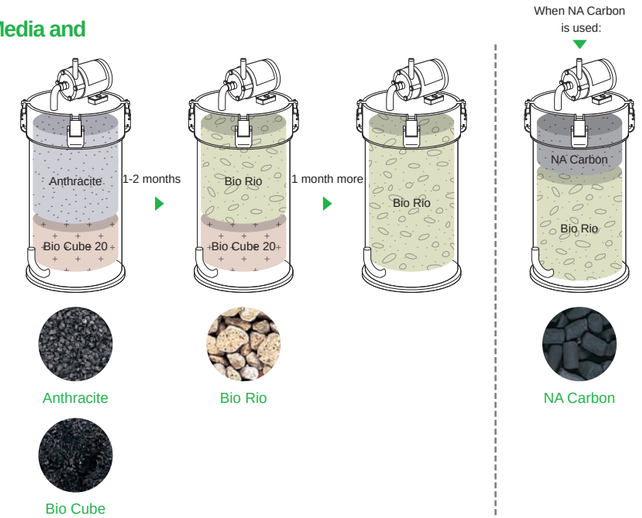
To achieve effective filter functions, it is necessary to promote rapid growth of filter bacteria, protozoa and other microorganisms. The filter media such as Bio Rio and Bio Cube adopt the material and structure conducive to the bacterial growth. To further stimulate the growth of beneficial bacteria, you may transplant a small amount of filter media from another fully-functioning filter and add Green Bacter to the aquarium. The organic acid contained in Green Bacter nurtures the beneficial bacteria in a new aquarium and gives them a boost. Promote the growth of filter bacteria to establish a successful filtration.

1 One way to promote the growth of beneficial bacteria is to transplant some filter media from another filter.
2 Organic acid contained in Green Bacter gives the beneficial bacteria a boost.

FILTRATION

Characteristics of Each Filter Media and Effective Combination

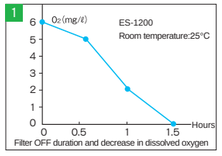
The combination of anthracite and Bio Cube that comes with Super Jet Filter ES-600 effectively removes fine contaminants in aquarium water and promotes rapid establishment of biological filtration. Once the biological filtration starts functioning adequately, anthracites are replaced with Bio Rio to enable a stable and sustainable biological filtration. In the event that biological filtration temporarily slows down due to a reason such as clogging of filter media, NA Carbon should be added to supplement the filter's filtration capacity. Replacement of NA Carbon is made easy by installing it on top of Bio Rio.



Aquarium water gradually gets dirty due to fish feces and other contaminants. Filtration functions of a filter remove these contaminants and clean the water. Once the filtration starts working stably, the clarity of water is improved and algal growth is inhibited. It is crucial to optimize the biological filtration with the help of bacteria and other microorganisms, which is the most important in filter's function.

Preventing Lack of Oxygen in Filter Bacteria

Most of microorganism in the filter are aerobic and thrive on oxygen. Therefore, it is necessary to supply oxygen-rich water to aquarium at all times. When the lighting is turned on and aquatic plants perform photosynthesis, the aquarium water has a rich oxygen concentration. In contrast, during night time when the lighting is turned off, aquatic plants stop photosynthesis and perform aerobic respiration, resulting in lower oxygen level of aquarium water. For this reason, aeration is performed while the lighting is turned off during the night to prevent lack of oxygen. Aeration can be carried out using an air pump or Lily Pipe Outflow.



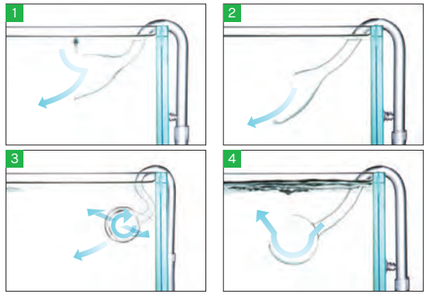
1 The above graph shows that microorganisms consume a considerable amount of oxygen.
2 Aeration is performed using Lily Pipe Outflow to prevent lack of oxygen.

Maintenance of Filter Media to Maintain High Filtration Capacity

Long-maintained aquarium may experience sudden algal growth and deterioration of water quality. In most cases, these problems are caused by deteriorated filtration capacity due to the sludge buildup on the filter media. To maintain high filtration capacity, it is advised to place filter media in a bucket and clean them with aquarium water.

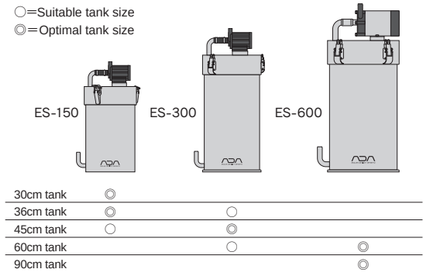
Different Water Flow Created by Different Outflow Pipe

Super Jet Filter series produces different water flows with different outflow pipes attached.



1 Water flow from Lily Pipe: Has an effect of reducing film on water surface. 2 Water from Violet Glass: Prevents air from entering the pipe. 3 Water flow from Lily Pipe Spin: Suitable for small-size aquarium.
4 Water flow from Poppy Glass: Creates large ripples on water.

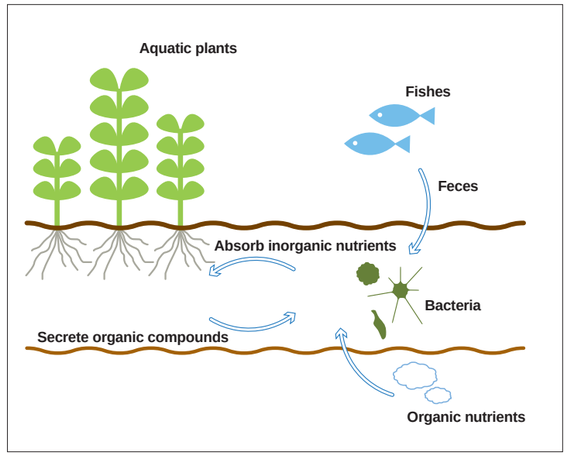
Suitable Filter for Each Tank Size



To cater for various aquarium tank size and applications, the Super Jet Filter series offers a lineup consisting 11 models in different sizes. Apart from ES-1200 and ES-2400 specifically designed for large aquarium tanks, you can refer to the above table for suitable tank sizes for ES-150, ES-300 and ES-600.

Symbiotic Relationship between Plant Roots and Beneficial Bacteria

The most important point for substrate, a place to grow aquatic plants, is to supply appropriate nutrients to the roots of aquatic plants. Aquatic plants can take up only inorganic nutrients through their roots while organic nutrients are not absorbed directly by plants. A large number of bacteria living in the substrate break down the organic nutrients within the substrate into inorganic form and help aquatic plants take up the nutrients from their roots. These bacteria are usually present around the roots of aquatic plants where oxygen and organic compounds are released. As these facts show, there is a symbiotic relationship between plants roots and bacteria. To promote the growth of beneficial bacteria, Power Sand and additives such as Bacter 100 are used for substrate.

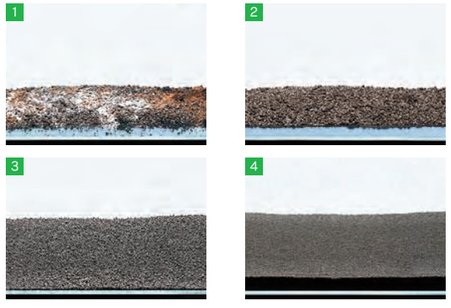


Substrate system that serves as the foundation of Nature Aquarium

SUBSTRATE

Basic Setting Up of Substrate

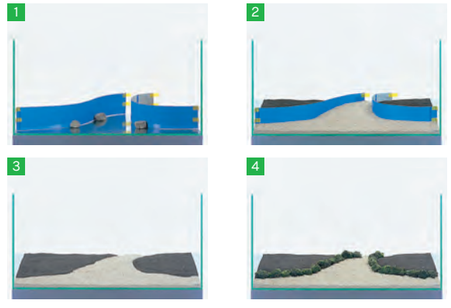
The substrate using Aqua Soil-Amazonia and Power Sand has advantages of promoting rapid growth of aquatic plants and reducing the risk of unsuccessful aquarium.



1 Sprinkle a thin layer of additives such as Bacter 100. 2 Spread Power Sand and flatten uniformly. 3 Spread Aqua Soil-Amazonia Normal type to make a slope. 4 Spread a thin layer of Aqua Soil-Amazonia Powder type on the substrate surface.

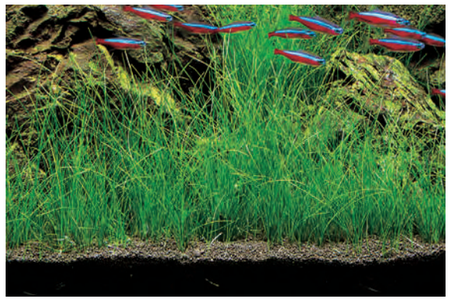
Setting Up of Substrate using Cosmetic Sand

The substrate using cosmetic sand and Aqua Soil-Amazonia features a bright foreground and healthily grown aquatic plants in mid to background.



1 Stand a strip of cardboard sheet in the aquarium as a partition. 2 Spread cosmetic sand in the foreground and Aqua Soil-Amazonia in the background. 3 Align the levels of the substrate materials on both the sides of the partition and then remove the partition. 4 Place some stones serving as a soil divider along the border line.

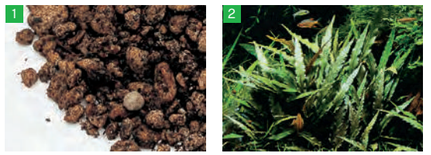
Reasons to Use Aqua Soil-Amazonia Powder Type



If the substrate is built only with Aqua Soil-Amazonia Normal type with a large grain size, the roots of foreground plants spreading across the substrate can easily come out of soil and the growth of the plants may be affected. Spreading finer Powder type on the substrate surface fills the gaps between the soil grains and helps aquatic plants to spread out their roots. The Powder type is also used for Iwagumi layouts because of its feature where it can easily be poured between the stones.

Notes on Use of Power Sand Special for Substrate

Containing more organic nutrients compared to the normal type of Power Sand, Power Sand Special is good for aquatic plants that spread the roots vigorously such as Cryptocoryne. As a point to note, it is ideal to use a well-established filter with fully functioning biological filtration. Nutrients leached from Power Sand Special may not be treated adequately with a filter using brand new filter media. Although Bacter 100 and Clear Super are blended in Power Sand Special, it is advised to use additional substrate additives to promote rapid growth of beneficial bacteria.

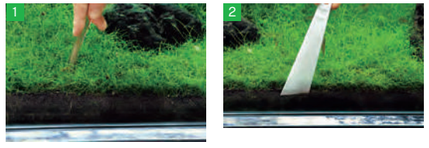


1 Power Sand Special contains an additional amount of organic nutrients.
2 Suitable for plants that absorb nutrients actively through their roots such as Cryptocoryne

In Nature Aquarium, substrate is very important as a place to plant and grow aquatic plants.
Therefore, there are various know-how on setting up and maintaining the substrate.
One of the largest factors that make it possible to achieve “Long-term maintenance of aquascape”, which is the underlying concept of Nature Aquarium, is ADA’s unique know-how on substrate.
Let’s have a look at the valuable know-how!

Maintenance of Substrate

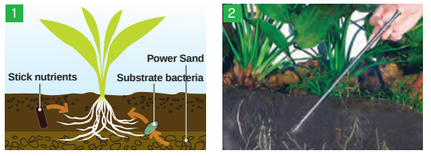
In the course of long-term maintenance, sludge derived from feces of fishes and shrimps is accumulated on the aquarium substrate. An excessive amount of sludge buildup may cause poor permeability of the substrate and increased growth of blue green algae and other types of algae. To avoid these problems, the sludge should be suctioned out with a hose during water change. Particularly at the substrate area covered with dense foreground plants, you can find that a considerable amount of sludge is suctioned out when a hose tip is brought close to the substrate. Blue green algae grown between the glass surface and substrate should be scraped off with a thin spatula and removed before the algae come out of the soil and spread in the aquarium.



1 Suction off the sludge buildup between the foreground plants with a hose. 2 With a thin spatula, scrape off algae grown between substrate and glass surface.

Nutrient Supplementation for Substrate

Substrate built with Aqua Soil-Amazonia and Power Sand is rich in organic and inorganic nutrients which are sufficient for a year’s supply. However, these nutrients gradually become deficient as the aquarium is kept for a long time. To supplement the deficient nutrients, Multi Bottom and Iron Bottom, sticks of nutrients, are inserted into the substrate using Bottom Release. Multi Bottom is suitable for general aquatic plants while Iron Bottom is ideal for Echinodorus and Cryptocoryne species.



1 Insert a stick of nutrients in a location slightly away from aquatic plants’ roots.
2 Bottom Release allows you to push a stick of nutrients deep inside the substrate.

Basic Combination of Liquid Fertilizers

Nature Aquarium promotes aquatic plants to absorb nitrogen and phosphorus, which tends to become excessive and can lead to increased growth of algae, by supplementation with potassium and trace elements that easily become deficient in aquarium. This concept is according to Liebig's Law of the Minimum. Brighty K is used as a liquid fertilizer to supply potassium while for supplementation of trace elements, Green Brighty STEP 1 to 3 are used for each stage of the aquarium. The basic combination of liquid fertilizers is Brighty K and either one of Green Brighty STEP1, 2 or 3.

The basic combination is Brighty K and either one of Green Brighty STEP 1, 2 or3.

Timing of Liquid Fertilizer Applications

Aquatic plants vigorously absorb nutrients during active photosynthesis. Ideally, liquid fertilizers should be applied slowly at all times in line with the rate of nutrients absorption by aquatic plants, but this is impractical. Usually, a day's supply of liquid fertilizers is added to the aquarium when the lighting is turned on every morning. This is a particularly effective timing as Brighty K has an effect of promoting plants' photosynthesis. ADA liquid fertilizers have a dispenser pump. With this pump, daily application of fertilizers is made easy at the dosage predetermined according to the tank size and lushness of aquatic plants.

Regular application of liquid fertilizers contributes to healthy growth of aquatic plants

NUTRIENTS

Aquatic plants actively take up nutrients through the surface of their leaves spread in water.
It is therefore effective to add liquid fertilizers and additives to aquarium for healthy growth of aquatic plants.
Liquid fertilizers and additives primarily supply potassium and trace elements which can easily become deficient if the aquarium is dependent solely on nutrients leached from the substrate and fish feces.
Liquid fertilizer also helps improve the leaf color of aquatic plants.

Notes on Application of Brighty K

Apply Brighty K to an aquarium first and let it spread by water flow.

Brighty K specifically formulated for potassium supplementation is basically used in combination with other liquid fertilizer. However, it must not be mixed or applied together with any other liquid fertilizer to avoid cloudy aquarium water as a result of chemical reaction. You should apply Brighty K to your aquarium and let it spread over by water flow first, and then apply other liquid fertilizers.

Features of Green Brighty Special LIGHTS

Green Brighty Special LIGHTS has beneficial effects on aquarium with sun-loving aquatic plants, such as stem plants and Riccia, which grow fast and actively absorb nutrients. Aquarium with a lot of sun-loving plants sometimes have a problem of lack of nitrogen or phosphorus which are hardly in short supply in ordinary aquariums, resulting in faded leaf colors of aquatic plants. Green Brighty Special LIGHTS, a perfect liquid fertilizer containing nitrogen, phosphorus, potassium and trace elements, helps improve the leaf colors of sun plants and promotes their growth.

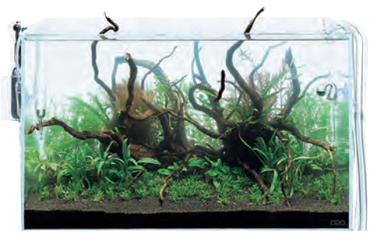
1 Green Brighty Special LIGHTS is specifically formulated for sun-loving aquatic plants. 2 Application of Green Brighty Special LIGHTS helps enhance the leaf colors of stem plants and other sun-loving plants.

Effective Use of Green Gain and ECA

Green Gain and ECA are additives to encourage healthy growth of aquatic plants. Green Gain contains botanical hormones to accelerate the production of new leaves. It is therefore very effective to apply this additive immediately after pruning, helping to stimulate rapid production of new leaves for optimal results. ECA contains iron in a form that is easily absorbable by aquatic plants and helps improve the intensity of color of red stem plants. Use of this additive is effective particularly when red stem plants are pale even with daily application of liquid fertilizers.

1 Green Gain is good for newly pruned stemmed plants. 2 Red stemmed plants look more vivid after ECA is added to aquarium.

Timing to Start Application of Liquid Fertilizers

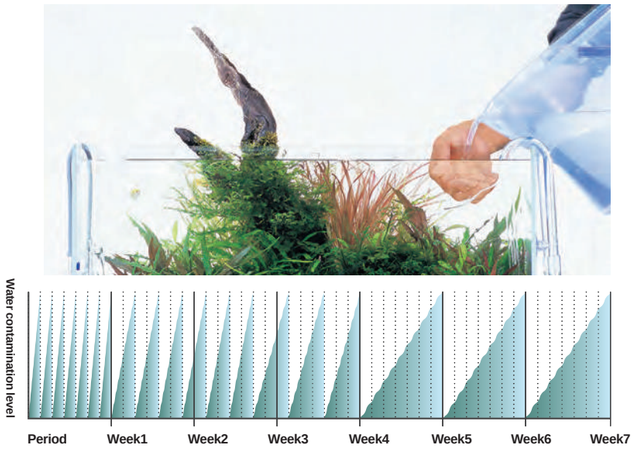


Application of fertilizers should start approximately one week after the aquatic plants are planted.

Liquid fertilizers are directly added to aquarium water and absorbed by aquatic plants through the leaf surface. Therefore, the effect of fertilizer is not fully achieved if they are added to aquarium when aquatic plants do not grow submersed leaves yet. Since aquatic plants absorb very little nutrients immediately after planted, application of liquid fertilizers should be commenced approximately one week after planting when aquatic plants start growing new leaves.

Frequency of Water Change

Substrate of Nature Aquarium is rich in nitrogen and organic nutrients. These compounds are eventually decomposed by substrate bacteria into a form absorbable by aquatic plants. However, during the initial stage of aquarium when beneficial bacteria are not adequately present, an excessive amount of nitrogen and organic compounds leach into the aquarium water and may cause the problems including cloudy and colored water. To remove these compounds, approximately one-third of the aquarium water should be changed daily in the first week and every two to three days from the second week onwards. Subsequently, after one month has passed, approximately one-third of the aquarium water should be changed basically once a week. In the event of algae bloom, an emergency water change may be performed.



Frequency of water change is reduced as the water quality stabilizes.

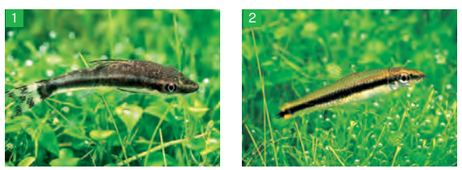
DAILY AQUARIUM MAINTENANCE

Removal of Residual Chlorine in Tap Water

Tap water contains residual chlorine that is harmful for living beings. Apart from using a water purifier such as NA Water, residual chlorine may be easily eliminated by applying additives such as Aqua Conditioner Chlor-Off. The water to be used as aquarium water should be adjusted to 25°C and mixed with Chlor-Off to remove residual chlorine before being poured into the aquarium.

Biological Removal of Algae

Algae that grow within aquarium are the worst enemy of beautiful appearance of aquascape. Since there is a limit on manual removal of algae, it is also a good idea to utilize animals that feed on algae. Caridina japonica is a representative algae eater. However, this shrimp does not eat some algae species and at the same time, an excessive amount of this shrimp added in the aquarium may cause damaged aquatic plants eaten by the shrimps. It is therefore advisable to add 5 to 10 shrimps at a time while observing the condition of the aquarium. Besides, other algae-eating animals such as Otocinclus sp. and Crossocheilus siamensis should also be added to the aquarium on top of Caridina japonica.



1 Otocinclus sp. eats algae on the surface of glass and aquatic plants. 2 Crossocheilus siamensis is effective for getting rid of beard algae.

Removal of Algae on Glass and Stone Surface

As time progresses, the appearance of aquarium glass is undermined with the growth of algae, no matter how well the aquarium is maintained. You may resolve this problem by cleaning the dirty glass surface with a scraper Pro Razor and then carrying out water change. Long-maintained aquascape may experience hard beard algae grown on stones. This type of algae can be eliminated with the help of Crossocheilus siamensis. Stubborn algae may be removed efficiently by scraping it off with Pro Picker and then letting Crossocheilus siamensis eat the remainder.

1 Algae on the surface of aquarium glass may easily be scraped off with Pro Razor. 2 Hard beard algae on stones can be removed with Pro Picker.

Effective Use of Phyton Git

Phyton Git containing disinfectant agent is useful in prevention of fern disease and also good for removal of algae. Phyton Git is an algaecide effective against beard algae that grow on stones, driftwood and hard Anubias leaves in the aquarium. Firstly, drain the aquarium water to expose the affected areas to the air. Then, apply Phyton Git which has been diluted with the same amount of water with a brush. Algae will wither away after a short period of time.

1 Beard algae that grow on green Anubias leaves. 2 Expose the affected areas to the air, and then apply Phyton Git which has been diluted with the same amount of water with a brush.

Nature Aquarium is a hobby to grow aquatic plants to create an aquascape and maintain it for a long period of time. To enjoy this hobby, the maintenance focusing on the condition of the aquarium is crucial, including water change, removal of algae and trimming/pruning of aquatic plants.
This section introduces the key points of aquarium maintenance.

Trimming of Stemmed Plants

If overgrown stemmed plants are left untrimmed, they may overhang along the water line and the aquascape may look untidy. Besides, overhung leaves block the light and the bottom side of the stem may get weak. To maintain stemmed plants in healthy condition, it is important to trim the plants once their terminal buds reach the water line. During the first trimming, stemmed plants should be cut at the lowest position possible and subsequently from the second trimming onwards, the cut position should be shifted to upper side. Doing this promotes the broom-like branching out of the stems and stimulates the plants to produce dense leaves, which eventually helps form appealing clumps of stemmed plants.

1 Trim the stemmed plants once their terminal buds reach the water line. 2 With Trimming Scissors, cut stemmed plant very short during the first trimming.

Trimming of Foreground Plants

Foreground plants such as Glossostigma spread by extending their runners. Over time, these plants become thick with grown runners and leaves stacked on top of each other. Thick foreground plants should be pruned by trimming only the top surface and leaving the bottom side untrimmed. A pair of scissors with curved blades such as Pro-Scissors Short (Curve type) is perfect for pruning of foreground plants.

LAYOUT MATERIALS

Making the Best of Natural Materials

When it comes to driftwood and stones which are natural layout materials, it is apparent that no two are ever the same. It is therefore advisable to purchase your desired size and shape of layout materials when you happen to find them. An important point in selecting layout materials is to place top priority on the size that fits your aquarium tank and then on the shape. Another thing to note is to get to know the characteristics of each layout material before actual purchase because different types of materials have different impact on the aquarium water quality. Beautiful planted aquarium begins with selection of layout materials. What do you choose for yourself today?

Getting Tannins Out of Driftwood Is Not Required

Discoloration of aquarium water due to tannins leached from driftwood can be resolved gradually through repeated water change. Tannins are derived from humic acid and will not give negative impact on living beings in aquarium just with its naturally leached amount.

It is impossible to get tannins out of driftwood completely even by boiling the wood.

Fungus and Buoyancy Immediately After Setting

Driftwood may grow white fungus immediately after it is placed in aquarium. This fungus can be removed with a brush or small hose. If driftwood remains buoyant, place a stone on the wood as a weight for about one week.

White fungus is often seen on Branch Wood and Slim Wood.

Total Hardness Tends to Increase with Ryuoh Stone

In planted aquarium where CO2 is supplied, calcium usually leaches from stones and causes frequent rise in total hardness. This is particularly remarkable with Ryuoh Stone and therefore growing aquatic plants may be slightly difficult with this stone.

A large white portion on the stone does not lead to a substantial rise in total hardness.

Have Various Sizes of Stones Ready for Layout

It is important to have various sizes of stones to create an Iwagumi layout consisting of the largest Oyaishi (the main stone), Fukuishi (secondary stones), Soeishi (tertiary stones) and Suteishi (sacrificial stones). The stones in each size group should have similar texture. Choose these stones from as many options as possible.

Having various sizes of stones gives greater latitude for the expressions of planted aquarium.

Slim Wood

Features multi-pronged slim branches. Majority of this wood is small in size.

Horn Wood

Need to combine more than one piece of wood in a good balance. Tannins leach out of this wood.

Branch Wood

Branch Wood is driftwood having an attractive shape and easy to use for layout beginners. Need to control fungus and buoyancy.

Unzan Stone

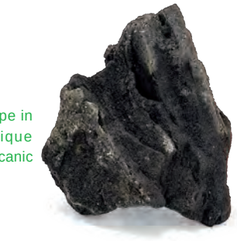
This mountain-like volcanic stone has pockets to place Wabi-kusa inside. It looks appealing just by being placed in an aquarium.

Kei Stone

Featuring its reddish color, Kei Stone stands out in green-color aquatic plants.

Koke Stone

Its rough surface helps epiphytic plants such as Willow moss take root smoothly.



Sansui Stone

Produces an image of landscape in Sansui paintings with its unique layered cross section. It is a volcanic stone just like Koke Stone.

Yamaya Stone

Affordable price is one of the attractive features of this stone. How to use this stone depends on your creative idea.

Ryuoh Stone

Ryuoh Stone has amazingly diverse figure variations with white lines and grooves on its surface.

Manten Stone

Featuring attractive rugged shape, Manten Stone is the most classic popular stone among ADA's stone products.

MAKING OF NATURE AQUARIUM 1

60cm AQUARIUM LAYOUT MAKING PROCESS

Let’s see how a planted aquarium is produced.

We have learned about how to grow aquatic plants topic by topic.
Now, we go through the making process of planted aquarium as the final topic.
Here, we show you how a popular 60cm aquarium layout is produced and introduce you to the products required for each task.

1

Creating a Live Substrate

Microorganisms from Bacter 100 feed on organic compounds contained in Clear Super and actively colonize within the substrate. Power Sand prevents the hardening of the substrate surface.

Power Sand S

Bacter 100

Clear Super

2

Make a Neat Substrate Line

Make a neat and straight substrate line. Avoid the front side from becoming too thick. Adding a slight slope from front to back gives an additional sense of depth to the layout.

Use Sand Flattener to flatten the substrate.

3

Placing Driftwood

Driftwood serves as a framework of the composition. Place driftwood in a stable condition while considering a good right/left and front/back balance. There is no need to arrange driftwood in a complicated manner.

3.5

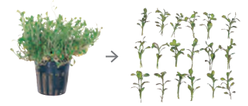
Pre-planting preparation

Carefully untangle Eleocharis acicularis and divide into small bunches.

4

Planting Foreground Plants

Planting work will be easier if the water is poured to the level at which the substrate is barely covered with water. Doing this prevents aquatic plants from being buoyant and hands from getting wet.



Pinsettes L

Pinsettes L is a must for planting of aquatic plants.

5

Attaching Epiphytic Aquatic Plants

When using epiphytic plants such as Anubias for the layout, fix their rhizome to small stones in advance. Avoid planting epiphytic plants directly on the substrate.

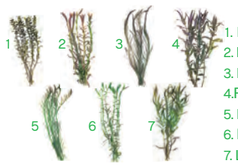
Wood Tight

Wood Tight makes it easier to fix rhizome to a stone.

6

Planting Background Plants

Plant background plants considering their colors and leaf shapes. The height of each stem plant species should be aligned as much as possible during planting.



1. Rotala macrandra (Green Narrow Leaf)
2. Rotala rotundifolia
3. Rotala wallichii
4. Rotala macrandra (Narrow Leaf)
5. Rotala nanjean
6. Rotala rotundifolia (Green)
7. Ludwigia brevipes

7

Attaching Willow Moss

With Moss Cotton, attach a layer of Willow moss that is so thin that the surface of the driftwood is partially seen. Vesicularia sp. can be attached to driftwood using Riccia Line.

Moss Cotton

Moss Cotton gradually biodegrades when the willow moss starts taking root to the driftwood.

8

Completion of Planting and Pouring Water

Once the planting is completed, gently pour the water into the aquarium tank while being careful not to hollow the substrate surface. In the event of cloudy aquarium water, pour fresh water while draining the cloudy water.

Includes all the necessary equipment for CO_2 supply.

CO_2 Advanced System

Chlor-Off

Neutralization of chlorine and adjustment of water temperature are the fundamental processes of water change.

NEXT PAGE

MAKING OF NATURE AQUARIUM 2

60cm AQUARIUM LAYOUT MAKING PROCESS

Maintenance up to Completion

9

Early Prevention of Algae

Brown-colored diatom algae may grow in the first to second week of aquarium. It is advisable to add algae eater to the aquarium in advance.

Caridina japonica

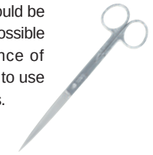
Otocinclus sp.

Crossocheilus siamensis

10

Trimming of Aquatic Plants

During first trimming, the plants should be cut along the lowest trimming line possible to achieve long-term maintenance of aquatic plants. It is recommended to use Trimming Scissors and Pro-Scissors.



Pro-Scissors Short

11

Application of Green Gain

After pruning, add Green Gain to the aquarium for one week to stimulate the formation of terminal buds. It also helps branching out of plant stems to achieve a lush appearance.

Botanical hormone promotes the formation of terminal buds.

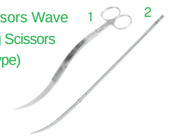
Green Gain

12

Trimming of Foreground Plants

Foreground plants should be trimmed before it becomes too thick. It is recommended to use Trimming Scissors with curved blades for easier trimming.

1. Pro-Scissors Wave
2. Trimming Scissors (Curve type)

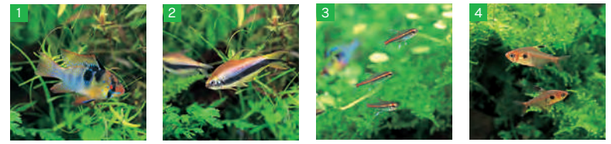


Early trimming helps to achieve long-term maintenance of aquascape.

SUIKEI Food　Fish Food AP-1　AP Glass

Enjoy a 60cm Aquascape

Aquascape with diverse tropical fishes and aquatic plants has a tropical mood. Fishes swimming freely among aquatic plants look natural and lively.



1 Microgeophagus ramirezi 2 Nematobrycon palmeri
3 Hemigrammus erythrozonus 4 Hyphessobrycon sweglesi

©Takashi Amano

DATA

Tank	Cube Garden　W60×D30×H36(cm)
Lighting system	Green Glow/604 (NA Lamp 20W x 4) Lighting for 10 hours a day
Filtration system	Super Jet Filter ES-600 (Bio Rio & NA Carbon)
Substrate	Aqua Soil-Amazonia, Power Sand S, Bacter 100, Clear Super, PENAC W & PENAC P
CO_2	CO_2 Advanced System 3 bubbles per second with CO_2 Bubble Counter
AIR	Aeration with Lily Pipe For 14 hours while lighting is OFF at night
Additives	Brighty K, Green Brighty STEP 2, Green Gain & Phyton Git
Water change	1/3 water change once a week
Water quality	Water temperature 25°C　pH：6.8　TH：20mg/ℓ NH_4：0mg/ℓ NO_2：0mg/ℓ　NO_3：0mg/ℓ　PO_4：0mg/ℓ COD：6mg/ℓ

Aquatic plants

Eleocharis acicularis
Glossostigma elatinoides
Anubias barteri var. *barteri*
Rotala indica
Rotala macrandra
Rotala sp.
Rotala nanjean
Rotala wallichii
Ludwigia brevipes
Rotala rotundifolia
Eleocharis vivipara
Cyperus helferi
Bolbitis heudelotii
Vesicularia sp.

F i s h

Nematobrycon palmeri
Hemigrammus erythrozonus

Microgeophagus ramirezi
Thoracocharax stellatus
Hyphessobrycon sweglesi
Otocinclus sp.
Caridina japonica

W36~W45

NATURE AQUARIUM TANK

Mini System for Easy Installation

Maintenance of small aquarium is kind of difficult due to its smaller amount of water. However, even a small aquarium system is sufficient to enjoy planted aquarium if necessary equipment are provided and adequate efforts are made for the maintenance. When installed on glass-made Cube Cabinet Clear together with AQUASKY, this mini system beautifully decorates your room as if an aquascape is floating in the air. This is the small and high quality aquarium system that only ADA can provide.

1 AQUASKY 361

2 Cube Garden
W36×D22×H26cm

3 Garden Mat for W36×D22cm

6 Ball Valve White

7 Pollen Glass Mini

8 CO_2 System
74-YA/Ver.2 White

9 CO_2 System 74
- Tropical Forest

10 Clear Stand
for CO_2 System 74

11 Lily Pipe Spin
P-1/10Ø

12 Lily Pipe Mini
V-2/13Ø

13 Super Jet Filter ES-150

4 Cube Cabinet Clear
for W36×D22cm

5 Wooden Base
for W36×D22cm

14 NA Thermometer J
/ White Type

Support Items

Pro-Scissors Spring
(Straight type)

Pro Razor Mini

Brighty series
250mℓ
K, STEP1 and LIGHTS

©Takashi Amano

A Small Iwagumi World

You can enjoy an Iwagumi layout that uses Manten Stone even in a small aquarium tank. A key to making the aquascape look larger is to choose aquatic plants having narrow leaves.

W36×D22×H26cm

Enjoy Mosses and Ferns

Mosses and ferns attached to drift-wood provide relaxation to everyone who sees them. When looked into the aquarium, we can feel the breath of Mother Nature in the small space.

W36×D22×H26cm

©Takashi Amano

©Takashi Amano

Image of a Japanese Stream

This is a planted aquarium made up only with Japanese aquatic plants. It does not have a striking charm but reproduces a scene with a stream that gives off a somewhat nostalgic feeling.

W45×D27×H30cm

W60

NATURE AQUARIUM TANK

Standard Basic System

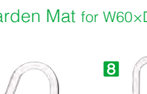
It is a classic aquarium system using a W60×D30×H36cm tank which is the most popular in Japan. A wide variety of accessories is available for this size of tank and the users can build their own system from various patterns according to their needs, which is one of the great advantages of this system. For aquarium beginners, it is recommended to choose a 60cm tank for their first aquarium tank.

1

AQUASKY 602

You can also choose Solar I (metal halide lamp) or Solar II (twin fluorescent lamp).

2 Cube Garden W60×D30×H36cm


3 Garden Mat for W60×D30


7 Lily Pipe P-2 / 13Ø


8 New Lily Pipe V-3 / 13Ø

9 Super Jet Filter ES-600 for 36cm (H)

You can also choose ES-300 according to your budget.

4 CO_2 Advanced System White


5 Clear Stand for CO_2 System 74

NEW
6 Plain Cabinet 60 W60×D30×H70cm

Back

Side

This simple and elegant wooden cabinet is all made in Japan available at an affordable price. Comes in three colors.

10 NA Thermometer J / White Type

Support Items


Pro-Scissors Wave


Drop Checker


Brighty series
500mℓ
K, STEP1 and LIGHTS


©Takashi Amano

Enjoy Colorful Stemmed Plants

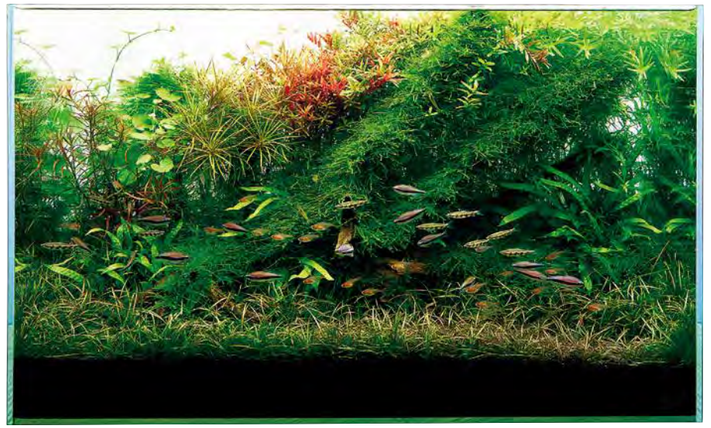
Colorful steemd plants and cosmetic sand add a bright feel to the aquascape. A concave composition is easy to make and recommended for planted aquarium beginners.

W60×D30×H36cm

Image of Aquatic Environment where Characin Lives

Let your favorite Characin species swim among aquatic plants. You can fully enjoy the attractive tropical fishes in coexistence with aquatic plants.

W60×D30×H36cm


©Takashi Amano


©Takashi Amano

An Iwagumi Resembling a Sansui Painting

By placing Sansui Stones in upright positions, you can enjoy an aquascape in Sansui paintings with towering rocks. This type of aquascape can be made even in a 60cm tank.

W60×D30×H36cm

W90

NATURE AQUARIUM TANK

Full-Scale NA System for Enjoyment

A 90cm tank accommodates approximately three times more water than a 60cm tank and offers stable water quality. In such an environment, a much wider variations of aquatic plants and fishes can be kept. Therefore, 90cm aquarium tank is ideal for the hobbyists who wish to enjoy a full-scale planted aquarium. Lightings equipped with metal halide lamp that emits intense light are better for this scale of aquarium.

3 Cube Garden W90×D45×H45cm

4 Garden Mat for W90×D45

Lily Pipe P-4 / 13Ø

New Lily Pipe V-5 / 13Ø

12 Super Jet Filter ES-600 for 45cm (H)

13 NA Thermometer J / White Type

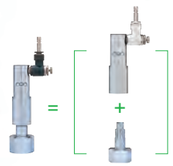
1 Grand Solar I

2 Grand Solar Stand for W90×H45cm

5 Wood Cabinet (Gun Metallic Silver) for W90×D45

6 Tower

7 CO_2 Attache Regulator



Existing YA/ver.2 users can upgrade to a refillable CO_2 tank just by connecting CO_2 Adapter.

8 Pollen Glass Large 30Ø

9 CO_2 Beetle Counter

Support Items

CO_2 Adapter

NA Control Timer

Cabochon Ruby

Expressions of Light and Shade

Layout expressions of light and shade add a profound depth to the aquascape. Cryptocoryne planted at the side of driftwood enhances the natural feel of this layout.
W90×D45×H45cm

©Takashi Amano

Aquascape with Towering Rocks

This is an Iwagumi made up with radially-arranged Ryuoh Stones having a sharp tip. Perspective is effectively expressed by placing large stones in front and small stones at the back.
W90×D45×H45cm

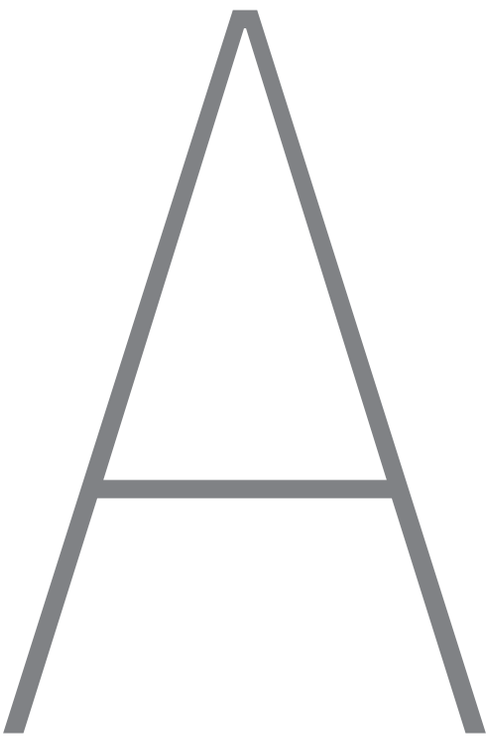
©Takashi Amano

Stemmed Plants and Stone Arrangement

An Iwagumi layout having a colorful image was made by placing Manten Stones following the basic stone arrangement style and planting stemmed plants in the background. Mixed foreground plants adds a delicate touch to the aquascape.
W90×D45×H45cm

©Takashi Amano

Let's Start with



aqua design amano

aqua design amano co.,ltd.
8554-1 Urushiyama, Nishikan-ku, Niigata, 953-0054, JAPAN