JBL

Setting up an aquarium

Useful tips for beginners

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Ahead through research

Contents

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5th revised edition 2014
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1. Introduction

The latest findings show that watching an aquarium is relaxing, reduces stress and has a calming influence. It provides an opportunity to observe natural events closely, leading to greater understanding of natural processes and how they are related.

At the same time, an aquarium can simply be beautiful and fascinating. It can be a decorative feature in your home.. The list of benefits is endless. However, you will only be able to enjoy them if you provide your plants and fish with the proper care that meets their needs which, of course, entails a certain amount of work. Otherwise, the advantages may quickly turn into serious disadvantages, such as when the aquarium suddenly turns into cloudy algae soup, bringing the hobby that you began with so much enthusiasm to an abrupt end.

This booklet describes how you can enjoy all the pleasures of an aquarium mentioned above and sustain them by providing the right upkeep for your small underwater world. You might soon notice that you've been infected with the aquatics bug – just as it has infected the JBL Team – which will most likely stay with you permanently.

Of course, a small booklet like this cannot provide comprehensive information. Our aim is to point you in the right direction.

The tips in this booklet are intended to show you how to achieve an aquarium in which healthy plants and fish can thrive.

Since an aquarium is a micro system of living creatures which react to each other, you will not find easy instructions which simply need to be followed for everything to run like clockwork. Sooner or later, you will come across problems which are not dealt with specifically in the literature available.

We therefore recommend sharing ideas and experiences with other enthusiasts. Your specialist aquarium supplier is certainly one person you can turn to for advice. In time, you might like to join a local aquarists' club or find a forum on the Internet. In heated discussions, often stretching on well into the night, you will hear how many different solutions there may be for the same problem and how each aquarium reacts differently. And that's precisely what makes this hobby so interesting and informative!

The following brief overview explains the main steps to be taken when setting up an aquarium. The subsequent chapters then explain the individual related topics in closer detail.

2. Setting up an aquarium

Overview

1 Cleaning the new aquarium

After placing your new aquarium in the selected location, wash it using lukewarm tap water.
Cleaning is easy with the JBL Aquarium Sponge **(JBL Spongi)**. **Do not use detergents or cleaning agents!** With **JBL Clean A** JBL has developed a special nontoxic aquarium cleaner for these purposes.

2 Adding the substrate

We recommend the **JBL ProfloraStart set** to ensure your new aquarium a successful start with healthy, lush aquatic plants. This set contains the basics needed for successful aquatic plant care. It consists of: **JBL AquaBasis plus**, a nutrient substrate specially developed for aquariums, **JBL Ferropol** liquid basic fertilizer to provide a regular supply of the main nutrients, and the daily fertilizer **JBL Ferropol 24** to provide essential trace elements every day.

You will need the **JBL AquaBasis plus** nu-trient substrate first. The other two components will be described in more detail later. Cover the floor of the aquarium with a layer of this nutrient substrate that is approx. 2 cm deep.
We recommend a 4 to 6 cm deep layer of **JBL Manado or JBL Sansibar** which is particularly beneficial for novice aquariums. (More in the chapter, Substrate & Decorations).

3 Installing a heater and filter

Follow the manufacturer's instructions. Install the appliances at the rear of the tank so that they can be hidden later by decorations and plants.
More on filters and heaters in the chapter on technical equipment.

4 Decorative elements

Decorative elements such as roots and stones may now be added. Only use one sort of rock and avoid the temptation to create a rock desert! Rocks and roots should be placed on the substrate or gently bedded in the gravel.

5 Adding water

Now fill the aquarium with tepid tap water (25 °C) until almost full.
You can prevent the gravel layer and the nutrient substrate from being whirled up by pouring the water onto a shallow saucer or glass dish placed on the floor of the aquarium.
Afterwards, you can adjust the position of the decorative elements as needed. **JBL Biotopol** or **JBL Tropol** can be added next to condition the water.

6 Starting up the technical equipment

Switch on the heater and the filter and install the lighting according to the manufacturer's instructions. It is advisable to connect the lighting to a time switch.

7 Seeding the filter

To get the biological processes started, add a bacterial starter (**JBL Denitrol**) about one hour after you have added the water conditioner (**JBL Biotopol**) to the aquarium. The bacterial starter adds billions of useful purifying bacteria to your aquarium. These bacteria break down pollutants such as ammonia, nitrite and nitrate and thus prevent any potential problems.

8 Introducing aquatic plants

When the equipment is working properly, you can add some aquatic plants.

9 Introducing fish

48 hours after putting in the purification bacteria with **JBL Denitrol** you can add the first fish. Then add a daily dosage of **JBL Denitrol** for the next nine days, while gradually increasing the fish stock.

*Three useful helpers to start you off on your new "aquatic hobby": After cleaning the filter **JBL FilterStart** should be added to the cleaned or new filter material to activate a new bacteria population. **JBL FilterStart** immediately adds billions of beneficial cleansing bacteria to the filter, thereby shortening the waiting time before fish can be introduced. **JBL Biotopol** and **JBL Tropol** convert tap water into the ideal environment for your fish.*

3. The aquarium

Location

Thanks to more sophisticated modern lighting equipment, the window sill is no longer the standard location for an aquarium. Daylight, with its seasonal fluctuations, is difficult to regulate and inevitably leads to the problem of undesirable algae growth.

Select a location which is furthest from a window, where the aquarium will get as little direct daylight as possible, but can still be easily viewed from your favourite armchair. Special aquarium lighting available from your specialist aquarium supplier provides suitable light conditions and will keep algae growth to a minimum.

At the same time, you can perhaps bring life and light to a previously dark and dull corner of your home. The selected location should also have an electrical power point or easy access to power. You will need 3-4 electrical connections, depending on the equipment used.

Skilful placement of your aquarium can lend your home a special tropical note.

There should also be sufficient space above the aquarium for you to comfortably carry out maintenance jobs (e.g. regular partial changes of aquarium water) without getting into contortions.

A sufficiently sturdy piece of furniture will be required to support the aquarium. A shelf, table or something similar is adequate for a small aquarium. Larger tanks of about 80 to 100 l upwards should be supported on a special tank stand available in a wide selection from specialist aquarium suppliers.

It goes without saying that the aquarium and its support must stand absolutely level (use a spirit level).

A sheet of expanded polystyrene (Polysoft), available from aquarium suppliers, should be placed between the support and the tank. This will prevent any unevenness and insulate the tank, preventing any loss of heat from the bottom of the tank.

When installing an "open aquarium" under a sloping ceiling, make sure that there is sufficient distance between the surface of the water and any lighting. Open aquariums are highly decorative and have a positive effect on the climate of a room!

Size

As a general rule, the conditions in a large aquarium remain more stable, as minor, unintentional lapses in upkeep do not result in an immediate catastrophe. For example, a dead fish which has gone unnoticed in a large aquarium will be decomposed by bacteria without any significant ill effects on other occupants of the aquarium or on the quality of the water. In a small aquarium, the bacterial decomposition of waste might lead to a dangerous lack of oxygen, since the bacteria require more oxygen for this task than is readily available in the aquarium.

A large aquarium will also more easily "absorb" an omitted partial change of water than a smaller aquarium. In terms of a learning effect, though, starting with a small aquarium is considered to be best, as mistakes are "punished" immediately and so you will quickly become skilled in the art of aquarium keeping. We would like to suggest a compromise and recommend starting with an aquarium that is at least 60 cm, preferably

80 cm, long. An aquarium of this size containing 50 or 80-100 l of water is not too demanding, both from the financial point of view and the level of maintenance needed. At the same time, it provides a reasonably stable environment for the occupants.

Aquarium suppliers often sell aquariums of this size as complete sets with all the necessary accessories at a very reasonable price.

An aquarium built into a wall as a room divider is especially eye-catching. It turns the aquatic world into a unique experience.

Construction and shape

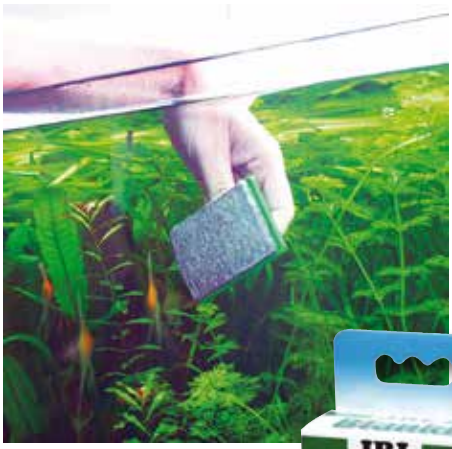
Practically all of the tanks sold nowadays are all-glass tanks with silicone rubber adhesive.
Make sure you buy a brand name tank with a guarantee on the adhesive bonding. This way, you can be sure it will meet all the necessary criteria for safety and stability.
The economical methods now used for bonding sheets of glass open up new opportunities for different shapes. Aquariums no longer have to be built in the traditional rectangular shape, and the new styles can be easily integrated into modern decorating schemes. One point which should not be forgotten when planning any ambitious "wonders" of interior design is the needs of the living creatures themselves.

Do seek the advice of your specialist retailer!

Useful tools

There are a few implements which will make the upkeep of your small underwater world much easier. These are:
A clean bucket used solely for work on the aquarium and never for household cleaning! A suction hose about 15-20 mm diameter and 1.5-2 m long can be used to empty the tank water into a bucket during a change of water. A silt guard on one end of the suction hose has proven very useful.

JBL sells a complete kit comprising a suction hose with a silt guard by the name of **AquaEx**. This kit features a special valve mechanism which discharges water into the bucket without the unpleasant task of sucking it up by mouth. The kit also includes two practical hose clips which can be used to attach the hose easily to the edge of the aquarium or to the bucket, preventing the hose from accidentally slipping off. **JBL AquaEx** is available in two sizes: **AquaEx 20-45** for tanks from 20 to 45 cm high and **AquaEx 45-70** for tanks from 45 to 70 cm high.



You will need an algae cleaner to remove unsightly deposits of algae from the front panel of the tank. JBL offers two types: the **JBL Blanki** or **Blanki Set** and **JBL Algae Magnet** in three different sizes.

We recommend a floating algae magnet such as the **JBL Floaty** for daily routine cleaning. This has two important advantages: it can be used from outside the aquarium without getting your hands wet, as the cleaning part in the water is connected to the outside element magnetically. Should the cleaning part separate from the outside element during over-energetic cleaning, the cleaning part will float to the

surface and can be easily removed from the aquarium without having to "fish around" in the water.

JBL Blanki does an excellent job of removing stubborn algae deposits without scratching the aquarium glass.

In addition, lime stains and dirt on the outer panes of the aquarium can be removed using **JBL Clean A**, a biological cleaner which, if it should accidentally come into contact with the tank water, is not harmful to fish.

All these items should be stored in the vicinity of the aquarium away from other household cleaning equipment.

***JBL Catch Nets** are useful when removing fish from your tank. They are available in a range of sizes to suit every need.*

4. Substrate and decorations

We would like to make a few points before we start with some suggestions on ground cover and decorations and go into the individual topics mentioned in the brief introduction to aquarium keeping at the beginning of this booklet: your aquarium should develop into a small water biotope which looks and functions as naturally as possible. It is advisable, therefore, to avoid artificial-looking decorations such as plastic divers, shipwrecks or plastic plants!
The needs of the fish should have priority over decorative or artistic flights of fancy.

However, there is still plenty of scope for beauty and aesthetics, as you will see as you read this booklet. Namely, if you actually tried to reproduce the natural environment of the fish as closely as possible, the result would be a more or less monotonous sight.

It is more important that the habitat meets the fishes' needs i.e. fish which like to hide in plants should not be kept in an aquarium without plants, or ones which live in caves should not be kept in bare aquariums.

Now back to the substrate: when you have placed your aquarium in the chosen place, briefly wash it with lukewarm tap water **(without detergents)**. You can then start to add the substrate. This has to fulfil several functions: it provides nutrients and is an anchoring place for the aquatic plants, whilst for the fish it provides the habitual ground.

We recommend the following layering of substrate: First, place a 2 cm deep layer of **JBL AquaBasis plus** on the floor of the aquarium.

Rock is one of the most natural decorative elements which can be used to create fantastic backdrops and structures. Let your creativity run wild!

Java fern attaches to the rough surfaces of rocks and root wood with its roots (rhizome) and forms an aquatic world that is very true to nature.

Very attractive decorations can be created using Javanese moss on tree roots. The Javanese moss is at first held in position with thin thread.

This nutrient substrate has been specially developed for aquatic plants and contains all the basic nutrients required to start a new aquarium, whilst also acting as a nutrient store. It can take up excess nutrients which are present in the water and make these available as needed.

JBL AquaBasis plus is part of the **JBL ProFloraStart** kit described in Chapter 2, which we particularly recommended for setting up a new aquarium. Next, cover this layer completely with a 4-6 cm layer of **JBL Manado**, which we highly recommend based on our own positive experiences. **JBL Manado** consists of naturally burned clay with many benefits for a biotope aquarium. The naturally rough surface of the grains favours the root growth of the plants, leading to lush plant growth. The beneficial cleansing bacteria are virtually "crazy about" **JBL Manado** and preferably colonise on the grains, thereby producing a healthy aquarium climate together with the aquarium filter, right from the start. Those who prefer another ground covering colour can alternatively use **JBL Sansibar** as a substrate in the desired colour.

Natural decorative material, such as a few stones and one or two roots obtained from

The substrate layer should be at least 6 to 8 cm high for lush plant growth.

aquatic stores can now be used to create hiding places for the fish or to disguise technical equipment such as the heater and filter as much as possible. The operation of the equipment should not be impeded in any way and the filter should remain easily accessible for cleaning when necessary.

Do not use materials which may leak harmful substances into the water. Decorative material bought from a reputable aquarists' supplier can be safely used. This particularly applies to root wood. The only wood which is suitable for an aquarium is wood which has been impregnated with humic acids over decades while buried in a peat bog, so-called bog-wood. Do not use wood from the forest!

Savannah wood and mangrove wood, which are also well suited, have recently become available from aquarium suppliers. All rocks and roots should be washed thoroughly under running water, scrubbing with a brush if necessary.

Save yourself trouble by not boiling these objects, as is often recommended. This is totally unnecessary! You can ensure that your roots do not float when water is added later on by weighing them down with a rock.

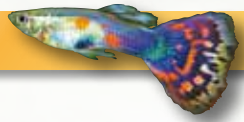
Another tip: the brown discolouration of the tank water which sometimes occurs as a result of root wood which has been introduced can be significantly reduced by doing the following: place the root you have just acquired in a larger-sized vessel of water (e.g. a rain barrel) for one week.

The rear wall of the aquarium

Even the most attractive aquarium decorations lose their charm if viewed against the backdrop of the living room wallpaper. Cover all of the sides of the aquarium which are not to be used for viewing with a backdrop. There are continuous aquarium back sceneries available as prints on foil from aquarium suppliers. You are certain to find a motive which suits your aquarium.

We recommend **JBL FIXOL** back screen glue to professionally glue the back scenery to your aquarium so that it adheres smoothly without air bubbles and can be seen at its best. A polystyrene sheet used in addition to the backdrop will insulate against heat loss, thereby reducing heating costs.

5. Technical equipment



A certain amount of technical equipment is necessary in order to create the best possible conditions for the inhabitants of the small aquarium biotope. This is because it is not capable of regulating and supporting itself as in nature, although operating according to the same principles. We would like to explain what you need to know about technical equipment and what you will require.

Filter

A filter, as the name says, should filter something, namely the water in the tank. The removal of visible floating particles and beautifully clear aquarium water are more of a welcome side effect. The main function of an aquarium filter is not just mechanical filtering, but the disposal and conversion of invisible harmful substances by bacteria.

We would like to briefly explain where these harmful substances come from and how water purification is carried out by bacteria: the excretion from the fish, uneaten food and decaying plant matter are all sources of soluble waste material which can be permanently harmful to the fish. Certain bacteria have become specialised in the decomposition and conversion of harmful substances into less harmful ones. The filter medium of the aquarium filter provides ideal conditions for these bacteria which become established there over a period of about two weeks.

To start with, you need to know that there are external and internal filters. Internal filters are positioned in the aquarium, with the advantage that there are no pipes containing water running outside the aquarium which could spring a leak. On the other hand, the routine cleaning which is needed from time to time entails “splashing around” in the aquarium.

Most aquariums for novices come with internal filters. JBL has taken that into account and developed an internal filter which does not have the major disadvantages normally associated with small internal filters. Therefore, make sure to ask your aquarium supplier for the **JBL CristalProfi *i* greenline** internal filters. There are 4 types available: ***i*60,*i*80, *i*100** and ***i*200**. The number always indicates the tank size in litres which the respective type is designed for.
Now to the advantages of this range of filters: The elegant angular shape fits inconspicuously into any aquarium, although it has a maximum volume of filter medium which is not always the case with other makes of internal filters. The filters have a modular construction so they can “grow” as required should you need a larger filter one day e.g.

if you purchase a larger tank. Internal filters must be taken out of the water for cleaning from time to time. With standard filters, the dirty water runs out of the filter and back into the tank during this process due to their construction. In contrast, the **JBL CristalProfi *i* greenline** internal filters come with a patented valve system which only permits purified tank water to run out of the bottom of the filter and back into the tank when the filter is lifted out of the water. Last but not least, the JBL filters of the "**greenline**" range also feature energy-saving motor technology.

You should stay away from air-driven internal filters as they expel CO_2, which is important for plant growth (see the chapter on plants), from the water.

If you decide in favour of a large volume of filter medium and the virtually invisible placement of the filter despite the advantages of the JBL internal filters described in the previous section, we recommend an external filter of the **JBL CristalProfi *e* greenline** range. This range offers many convenient benefits: They come equipped with filter media which ensure the reliable mechanical and biological purification of the tank water under "normal" conditions. Upon opening the filter, you will find two pre-filter media which can be changed or cleaned within seconds without having to clean out the whole filter, as is the case with other models. The construction of the uppermost filter basket which contains the pre-filter media is patented. All of the hose connections have locknuts which prevent the hose from popping off in periods when the aquarium is unattended. Despite opposing opinions, hoses are part and parcel of the "living inventory" of an aquarium and have a habit of coming off precisely when nobody is around! A cleverly designed hose connection block which is also patented makes it possible to disconnect the filter for cleaning. Don't forget a priming aid, as it makes it easier to fill the filter with water the first time and to restart it later. As you can see, when you buy an external filter of the **JBL CristalProfi *e* greenline** range, you are buying a product that has been lovingly and skilfully perfected to meet the needs of aquarium hobbyists. It goes without saying that the motors of the **greenline** range are designed to save energy.

It is important to know the following about filter media: the main filter media of external filters and internal filters are composed of foam that is specially designed for aquatics.

This material offers cleansing bacteria optimal conditions for colonisation and holds back mechanical dirt at the same time. In addition, there are filter balls made of sintered glass which ensures optimal biological purification. These filter balls are also available separately under the name **JBL MicroMec**.

None of the other filter media such as activated carbon, peat and others belong in the filter of your first aquarium! You will encounter cases where special filter media of this kind (e.g. activated carbon) are needed later on in the course of your aquarium-keeping career. Important information: regardless of whether you select an internal filter or an external filter, don't forget to activate the filter media with **JBL FilterStart**, i.e. to seed it with beneficial cleansing bacteria. This is absolutely essential for the successful launch of your new hobby! All the JBL filters come with instructions for use which explain exactly how to do this.

It will also be necessary from time to time to clean the filter media in your filter. Greatly reduced water flow at the filter outlet is an indication that it needs cleaning.

In this case, remove the filter media from the filter (following the instructions for use) and rinse under lukewarm water (25 °C) Never use hot water or detergents! Do not clean too thoroughly, to avoid harming the beneficial bacteria which have settled in the filter media.

It is difficult to state a general optimal cleaning interval for the filter. It depends a lot on the density of fish and the filter volume. But in general we can say, that a cleaning is generally due after 4 - 8 weeks. If it is obvious that less water is flowing through the filter outlet compared to the amount at the initial start-up of the filter, then this is a sign that the filter is already severely soiled! In such cases we recommend more frequent cleaning.

Well run-in aquariums and filters are characterised by crystal-clear, healthy water in which your fish display their most brilliant colours!

Most aquarium fish flourish in temperatures of 23 to 26 °C. Slight temperature fluctuations of 1-2 degrees are not harmful. Even in the natural environment, temperatures vary widely with the season.

Heating

Since the majority of low-maintenance fish suitable for a beginner's aquarium come from tropical countries, your aquarium will need a heater if you live in a temperate or cold climate zone. A temperature of 23-26 °C will provide the right temperature for your fish (depending on the species).

Aquarium supply stores sell various types of aquarium heaters. We recommend a so-called rod-shaped thermostat controlled heater. **JBL ProTemp *s***, available from any specialist aquarium store, is an extremely compact thermostat controlled heater which takes up very little room in an aquarium.

This heater is fully submersible and features a scale on which the temperature can be precisely regulated to within +/-0.5 °C.

However, we recommend monitoring the temperature with the **JBL Aquarium Thermometer** as a safety precaution. As a rule of thumb, you should allow 0.5 watts per litre of water in a normally heated living room.

Submersible ground heating cables are also available. These can be laid in the substrate of the aquarium, providing plants with "warm feet" for enhanced growth. However, these heating systems are relatively expensive, and we do not consider them necessary for a novice aquarium.

Lighting

Not only does the right lighting present the inhabitants of the aquarium in their best light, it also serves as the source of vital energy needed by the plants to thrive and develop their full splendour. As an important auxiliary effect, the plants supply their small underwater world with vital oxygen. Well-stocked aquarium suppliers offer a wide variety of styles and configurations of aquarium lighting, either as individual lamps or complete aquarium hoods.
We recommend lighting or a hood with one or more fitted fluorescent tubes to save costs. Since the introduction of LED lights, fluorescent tubes are no longer considered to be among the lamps which save the most energy.

If, however, you compare the costs of purchase, they are still the most economi-cal solution for a first aquarium. According to the latest findings, aquarium plants require the full natural spectrum of light for optimum growth. Taking this into account, **JBL SOLAR** full-spectrum tubes provide the ideal source of light for your underwater world. Full-spectrum tubes aid the healthy growth of the plants in the aquarium, to the disadvantage of algae, and at the same time bring out the full brilliance of the fishes' natural colouring. We recommend the **JBL SOLAR Tropic** light shade for hoods with only one fluorescent tube, as this is ideally suited to the needs of plants. If two or more fluorescent tubes can be used, we recommend a combination of **SOLAR Tropic** and **SOLAR Natur**. In this case, the SOLAR Natur tube should be installed as the front tube in order to create a very good depth effect in the aquarium.

However great the temptation might be, we strongly advise against the use of tubes which emit a more or less pink light, and which will bathe your underwater world in an unnatural candy-coloured glow. Although candy-coloured lights may come under the heading of "a matter of taste", it has been proven that this shade of light tends to promote undesirable algae growth. This is exactly what you want to avoid, especially at the beginning. If, however, you do not want to do without candy-coloured light, one tube in this colour can be used in a lighting system with two or more tubes.

With regard to the length of time the lighting should be switched on, most aquatic plants flourish best under conditions similar to those of a tropical day, which is divided into almost exactly 12 hours of daylight and 12 hours of darkness. Due to the angle of the sun's rays in the early morning and evening, the underwater day only lasts about 10 hours. Aquarium lighting should therefore be switched on for 10 to 12 hours a day at the longest. A time switch will guarantee a regular cycle, saving the fish unnecessary stress. Set the lighting times so that the fish are still active when you have time to observe them in the evenings e.g. on at 11 a.m. and off at 10 p.m.

*Provide the right lighting "climate" for your aquatic plants with the **JBL SOLAR Tropic** and **Natur** fluorescent tubes.*

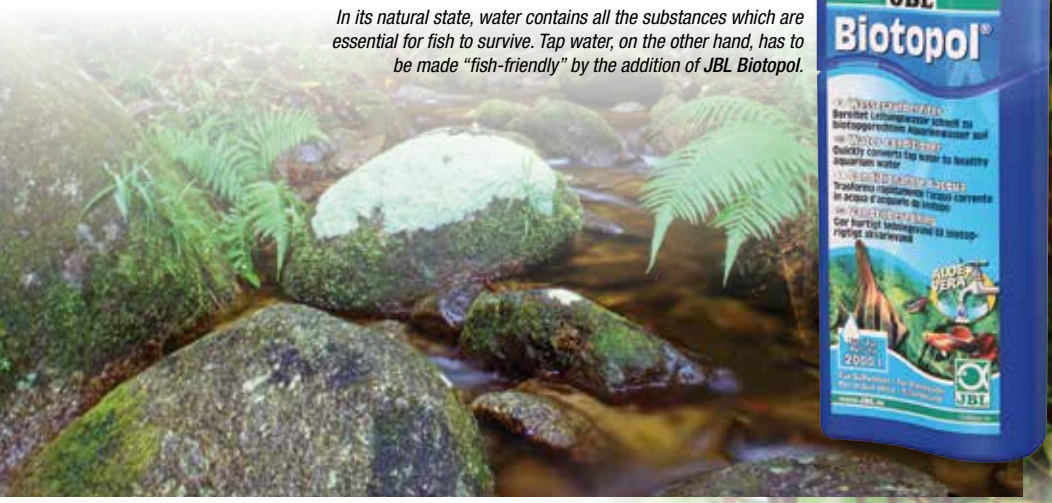
6. The water

The most important factor at the beginning

The water in your aquarium plays a vital role as the natural element for your plants and fish. On the one hand, the water and its properties influence the fish and plants living in it while, on the other hand, the biological processes of these very fish and plants influence the quality of the water. For this reason, we would like to explain some facts about water.

Having filled your aquarium with tap water at the correct temperature, as explained in point 2.5 of the section on getting started, the water must now be prepared so that it is suitable for the fish. Our tap water is treated according to hygiene standards as drinking water for humans, so that it is not the ideal habitat for fish when it comes out of the tap.

This can be remedied instantly by adding **JBL Biotopol** water conditioner to the tap water. **JBL Biotopol** immediately binds any chlorine and heavy metals which may be present in the water (e.g. from copper pipes) and which are toxic to fish. In addition, it adds organic protective colloids needed by the fish to keep their mucous membranes healthy. These protective colloids are to be found in the fishes' native waters. According to hygiene standards for domestic drinking water, colloids are undesirable, so that they have to be added to aquarium water.



*In its natural state, water contains all the substances which are essential for fish to survive. Tap water, on the other hand, has to be made "fish-friendly" by the addition of **JBL Biotopol**.*

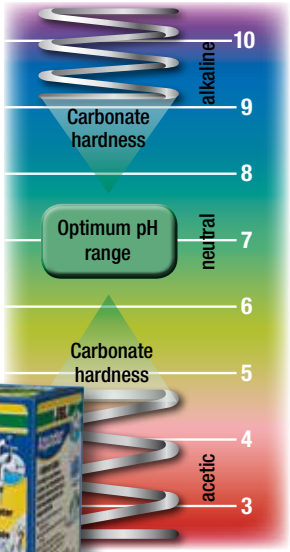
Any other water conditioning measures, such as softening or mixing with rainwater or distilled water, should not be carried out unless specifically recommended in later chapters. Tap water is available with a consistent quality, making it your best guarantee of stable conditions in the aquarium. At a later date, when you have sufficient experience in aquarium keeping, you will perhaps want to keep more "demanding" fish requiring specific water preparation. At the beginning, however, you should select fish which thrive in tap water, which is easily available. Details on the requirements of fish can be found in specialist literature or by consulting your aquarium supplier.

More detailed information is also given in the JBL Booklet, **"What - Why - How?", Aquarium Water**.

Here are a few basic terms of water chemistry you should familiarise yourself with.

Water hardness:

You are sure to have noticed that, in some areas, you need a lot of soap to produce foam when washing your hands, while in other areas you need very little. Where not much soap is needed, the water is soft, and where a lot of soap is needed the water is hard. The hardness of the water is due to the water absorbing differing amounts of so-called hardness constituents, minerals which cause hardness, as it passes through various rock layers in the ground until collecting as groundwater. The degree of hardness depends on the area and composition of the rock layers. If the water flows through chalky soil, more minerals causing hardness are dissolved than if it flows through primary rock (e.g. granite, etc.).



Water hardness can be measured and the levels are expressed in degrees of German hardness. We distinguish between total hardness and carbonate hardness. There are convenient **JBL TestSets** available to measure both of these. At the beginning, you need to know that carbonate hardness, caused by soluble chalk in the water, is far more important, in fact vital, for your aquarium. Carbonate hardness ensures that the pH level, which we will look at next, does not soar, something which the fish and plants do not like at all.

For this reason, you should check that the carbonate hardness of the tank water is at least 5 German degrees, keeping it as constant as possible by regular partial changes of water. This is the only reason for any water conditioning measures, which we recommend in the initial stages: should your tap water be below 5 degrees

German carbonate hardness, you should increase the hardness level to about 5 degrees with **JBL AquaDur** plus for the well-being of your fish. This is best done in a separate container from which you can add water to the tank (during a partial water change). Higher levels of carbonate hardness in the tap water should simply be accepted. If the level exceeds 15 degrees, fish should be selected accordingly. Total hardness should also be accepted as it comes. Do not worry about it for the time being. It only becomes important if you decide later on to breed fish from extremely soft waters.

pH levels

The pH level indicates whether a liquid reacts in an acidic, neutral or basic (alkaline) manner. The pH scale ranges from 0 (very acidic) to 14 (very alkaline). Neutral (neither acidic nor alkaline) is at about 7.

We are constantly confronted with the phenomenon of the pH level in our daily lives. Coca Cola, for example, has a pH level of about 3. All dishes which we consider tasty are more or less acidic. Most fishes and plants are easily and successfully kept at pH levels around neutral. One important piece of information is that, with a one-point change in the pH level, the concentration of the substances which determine the pH level alters **10 fold**, and with a two-point change the alteration is **100 fold**. For this reason, any sudden fluctuations should be avoided.

In your new aquarium, the carbonate hardness regulates the pH level, ensuring that it does not sink below 7 or rise above 8-8.5. In the morning, it will usually be about 7, and about 8 in the evening. You can measure the pH level using the **JBL pH Test Set 3.0-10**.

The pH level is largely determined by the interrelation of carbonate hardness and CO_2. Carbonate hardness raises the pH level to a certain extent, whereas CO_2 lowers it. If the two balance each other out, the level is around the neutral point, 7. Plants extract CO_2 from the water through assimilation, causing the pH level to gradually rise towards 8. If required, the level can be increased further to above 8 by switching off the lighting. Air stones should not be installed on any account, as they force CO_2 out of the water, raising the pH level.

If you wish to keep South American fish which prefer "black water" in your first aquarium, you will need to add **JBL Tropol.**

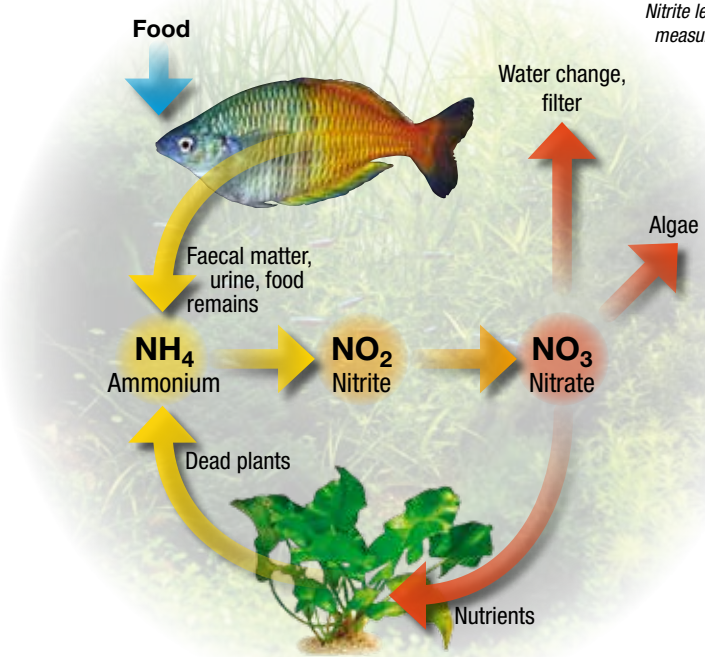
If you wish to spend more money on the well-being of your fish, you can provide an additional source of CO_2 for you aquarium with the **JBL ProFlora CO_2** Set. This allows the pH level to be constantly maintained at 7, the most beneficial level, and the plants are supplied with the essential nutrient, CO_2. This widens the range of plants which can be selected. More on this in the chapter on plants.

Nitrite

Nitrite is a highly toxic intermediate product produced during the conversion and decomposition of the fishes' excrement and other organic matter by the bacteria. As already mentioned in the chapter on filters, certain beneficial bacteria, also referred to as nitrifying bacteria, are responsible for this task. Unfortunately, these bacteria grow and multiply very slowly. Without a "helping hand", it would take about 2-3 weeks for the bacteria to multiply and settle sufficiently in the filter (and in the substrate). A nitrite level which initially rises very slowly to reach a high level before gradually sinking again is characteristic of these 2-3 weeks of development and maturing. Fish should not be released into the new aquarium until the nitrite level has sunk once more and is below 0.2 mg/l (measured with the **JBL Nitrite Test Set**).

Nitrite levels of over 0.2 ml/l are seldom measured in lightly stocked aquariums with good plant growth.

As experience shows that this 2-3 week waiting time



greatly tests the patience of aquarium keepers, JBL has developed bacteria preparations which shorten this waiting time. By seeding the filter media with **JBL FilterStart**, you can introduce billions of these cleansing bacteria into the filter. You should then immediately introduce a few undemanding fish to give these cleansing bacteria some work to do. Feed them sparingly and check the nitrite level daily. It should not rise to much more than 0.5 mg/l. If, however, it does go higher, change 50% of the tank water. The nitrite level should then drop significantly after a few days, and you can introduce the next fish.

Although this procedure contradicts all of the common schools of thought, it is the only right way to successfully "run in" a new aquarium. Namely, if you add too many cleansing bacteria to the aquarium WITHOUT adding any fish and wait until the nitrite level drops, a major part of the cleansing bacteria you have painstakingly introduced will have died of starvation. And then, when you finally add the fish, there won't be any cleansing bacteria, and that spells big trouble! Therefore, the modern and right way to do it is: add a few fish immediately, but make sure they are robust ones which can deal with a higher nitrite level for a short time if necessary.

Oxygen

Oxygen is the elixir of life for all the living creatures in an aquarium. Fish need it to breathe, the bacteria mentioned previously need it to carry out their vital work, and plants have to at least breathe oxygen at night in order to survive. Accordingly, sufficient levels of oxygen are essential for a healthy aquarium. The following steps should be taken to ensure adequate supplies of oxygen: install the internal filter with the opening for the water to flow out about 2 cm below the surface of the water so that the water flowing out does not produce a splashing current on the surface. The water outlet pipe of external filters must be positioned accordingly. This enables sufficient oxygen to be absorbed by the water without expelling too much CO_2.

Do not use aerators! The assimilation of the aquatic plants during the day enriches the water with biologically produced oxygen.

There is always sufficient oxygen available for the entire biotope in a well-planted aquarium with CO_2 fertilization. Small bubbles of gas are a sign of adequate supplies of oxygen.

7. The plants

Why living plants?

Healthy plants have an entirely positive influence on the aquarium biotope in addition to their attractive and decorative effect.
In photosynthesis, a unique chemical process to which all forms of animal life on earth owe their existence (including we humans), plants use the energy of light to synthesize a major part of their own substance from water and CO_2. Oxygen is produced as a waste product and released by the aquatic plants into the surrounding water.

This effectively and conveniently supplies the other inhabitants of the aquarium with vital oxygen. Of course, this process cannot take place at night (lack of energy from light) and the plants have to breathe normally. Healthy plants produce far more oxygen during the day than they consume at night.

Living plants also provide ideal hiding places for young fish and sites where beneficial bacteria and micro-organisms can settle. These, in turn, serve as initial sources of feed for young fish. In aquariums with healthy plant growth, the fish fall ill less frequently than otherwise.

What plants need to flourish

Plants have some needs which have to be met, in order that the beneficial effects described above can also be enjoyed in your aquarium.

Meeting these needs is easy using JBL products and bearing in mind the following tips.
Light is the source of energy which plants need for photosynthesis. This energy source can be supplied by a lighting system from an aquarium supply store. Tips on the

CO_2 is the decisve "fuel" for your aquatic plants which your plants cannot grow without.

The oxygen supplied is the most important beneficial feature of a healthy biotope aquarium

type of lighting and duration are given in the chapter on lighting. Remember to change fluorescent tubes after a year, replacing them with ones of the same colour light, even if they appear to be intact!

The most important nutrient required by plants is CO_2. A CO_2 fertilization unit such as the **JBL ProFlora CO_2 Set** will provide this nutrient to your aquatic plants in an ideal fashion. Check to make sure that the aquarium is at least 30 cm deep, which is normally the case with aquariums over 60 cm long. If this kit proves too expensive at the beginning, you can also do without by selecting the right kind of plants. In such a case, it is all the more important that the low levels of CO_2 in the water not be reduced further by air stones or a splashing filter outlet.

Other important factors are the supply of mineral nutrients and trace elements from the substrate and water. The substrate should be made up of two layers as explained in the chapter on substrates. The bottom layer, with its reserves of nutrients carefully balanced to meet the needs of aquatic plants (**JBL AquaBasis Plus**), nourishes the plants through the roots.

The special properties of **JBL Manado** as a top layer promote water circulation in the substrate and the root growth of the plants. The additional colonisation with cleansing bacteria makes **JBL Manado** into a huge biological filter which ensures exceptionally stable and healthy water conditions.

The weekly application of **JBL Ferropol** basic fertilizer provides the plants with all of the primary nutrients, which are not very sensitive and can therefore be supplied in advance, as it were, through the water. Essential trace elements, which are often lacking due to their sensitive reaction to oxygen, can be given as a supplementary dose each day in the form of the daily fertilizer, **JBL Ferropol 24**. Thus the plants are supplied with all the essential nutrients which they require for absorption through their leaves. As an additional benefit signs of deficiency, particularly much-feared iron deficiency, are prevented. All of the nutrients in **Ferropol** and **Ferropol 24** are carefully balanced so that the correct levels of fertilizer can be monitored using the **JBL Iron Test Set**. When the reserves of nutrients in the lower layer of substrate have diminished after about three years, supplies can be replenished by strategically placing **JBL 7 Balls** in the substrate.

In evolutionary terms, plants are our oldest relatives, appearing on the planet over 40 million years ago. They have invented many basic biological components of life. We probably sense this when we are unable to resist the fascination of a "green aquarium"...

JBL offers a convenient starter set, **JBL ProFloraStart**, containing the three fertilizers described above, guaranteeing healthy plant growth from the outset: a carefully balanced nutrient substrate, **JBL AquaBasis plus**, **JBL Ferropol** staple fertilizer and **JBL Ferropol 24** daily fertilizer.

Selecting the plants

Before you begin selecting the plants for your new aquarium at your aquarium supplier's, you will first need to decide whether the aquarium should be fitted with a CO_2 fertilization unit or not. If you wish to start without a CO_2 nutrient unit, you should limit your selection of plants to ones which are slow growing. Fast-growing plants with a higher consumption of CO_2 would rapidly drive the pH levels up to 8. When purchasing plants, ask specifically for slow-growing plants which are easy to keep. A good choice would be plants from the large family of Cryptocoryne such as Cryptocoryne wendtii or Cryptocoryne affinis species or smaller species from the family of the Amazon sword plant (Echinodorus amazonicus). Ask your specialist supplier to show you slow-growing varieties which are easy to care for!
If you decide to install a CO_2 fertilization unit from the beginning, you can choose from the full range of decorative varieties of aquatic plants stocked by your aquarium supplier. With adequate supplies of the main nutrient, CO2, fast-growing and slow-growing plants alike will thrive.

We recommend one of the three Bio CO_2 Sets by JBL for newcomers to the use of CO_2 in an aquarium: **JBL ProFlora bio80 eco**, **JBL ProFlora bio80** or **JBL ProFlora bio160**. These kits produce CO_2 biologically through microorganisms from a nutrient medium. This is an inexpensive way to simultaneously supply tanks with a capacity of up to 100 l with CO_2 and learn about the positive effect of CO_2 on plant growth, and almost certainly grow to appreciate it as well. One filling with nutrient medium and microorganisms produces CO_2 consistently for about one month. Your aquarium supplier has reasonably priced refill kits with nutrient medium and microorganisms available in the form of **JBL ProFlora bioRefill**. Another tip: do not let yourself be tempted to produce the nutrient

Recommended aquatic plants for novices


Pygmy chain sword plant


Water wisteril


Cardinal flower


Willow Hygro

*We recommend a BioCO_2 kit such as the **JBL ProFlora bio80** as an economical supply of CO_2 for your aquarium.*

medium yourself by using recipes from the Internet! Yes, sugar is the main ingredient, but that's not all! And the "that's not all" is what's responsible for reliability and consistency! So you can do your aquarium a favour by relying on JBL's extensive experience and using the **JBL ProFlora bioRefill** refill kit.

In either case, whether with or without CO_2, you should not skimp on plants at the beginning.
Sparsely planted aquariums suffer far more from undesirable growths of algae. You should select your plants to create an overall decorative appearance in the aquarium. Select plants for the background which grow up to the surface of the water. Plants of medium height are suitable for the middle, with miniature species in the foreground. Long-stemmed plants and smaller foreground varieties are more effective planted together in larger groups in an appropriate space in the aquarium. Particularly attractive specimen plants can form a decorative feature.

Planting

There are a few points to note before planting the aquatic plants you have purchased from your aquarium supplier.

Of course, the aquarium should be filled with water at the correct temperature and the hardware (filter, lighting, heating) be operating properly. You should generally start by removing all metal tape, plastic pots, rockwool and anything else attached to the lower end of the plants.

If you have rosette-shaped plants, use sharp scissors to trim about 1/3 of the roots. Remove any rotten or dead leaves. Stem plants are usually sold with few, if any, roots. Remove only dead leaves or stems.

Before planting, you should have some idea of how you wish to arrange the plants. It is helpful to draw a plan first.

Slow-growing plants


Cryptocoryne


Amazon sword plant


Java fern


Anubias

Unfortunately, certain species of terrestrial plants with particularly decorative leaves are frequently "drowned" and forced into the role of aquatic plants. Therefore, if any so-called "aquatic" plant with attractive red or white striped leaves reminds you of the plants on your living room window sill, do not buy it! Such plants may be capable of surviving for a surprisingly long period of time under water; ***however, they are slowly but surely dying and polluting the water!*** *It's all a matter of supply and demand..*

Use the variety of shapes and colours available to form contrasts rather than a monotonous uniformity. Plants with feathery leaves are most effective near broad-leaved plants, light green next to dark green, etc. Always arrange stem plants and smaller-sized rosette plants in groups. Now, roll up your sleeves and off you go!
Carefully bed the ends of the stem plants in the substrate. Push the roots of rosette-shaped

A so-called Dutch planted aquarium requires a great deal of care and skill. You should have some degree of experience before embarking on an aquarium like this one.

varieties deep into the substrate and then carefully pull the plant up again to the root crown. After you have finished planting, the plants first need some rest, and then more rest, to become acclimatised to the conditions in the aquarium before they can start to grow.

Algae

Undesirable algae growth is the main cause of people prematurely abandoning the fascinating hobby of aquarium keeping. We would like to explain what steps you can take right from the beginning to prevent this happening to you. Very generally speaking, algae are plants too and therefore require the same nutrients, care and conditions as other aquatic plants. And another point: a little algae here and there is not cause for concern: they are an integral part of an aquarium. No aquarium is ever completely free of algae! There should not be too many either, though.

The more nutrients are absorbed by healthy aquatic plants, the harder it is for algae to flourish. That is why healthy plant growth is the best insurance against unwanted algae. If plant growth is disturbed, e.g. by constant fiddling about in the aquarium, moving the plants repeatedly, changes in lighting (light colour), etc., algae might well take the upper hand. As a lower life form, algae can adapt more readily to new conditions, vigorously sprouting forth and taking advantage of the nutrients which the plants are unable to utilise because of the disturbances. And what they especially like: the nutrients nitrate and phosphate. For this reason, JBL's aquatic plant food contains **neither nitrates nor phosphates**, as these nutrients are provided by the metabolism of the fish.

An aquarium has a high risk of algae developing during the first few weeks after it has been set up. The plants must first adapt to their new habitat. During this time, they require hardly any nutrients. You should therefore wait for two weeks after planting, when the plants begin to grow, before fertilizing regularly with

JBL Ferropol and **JBL Ferropol 24**. Any growth of algae in this period must be removed immediately.

Algae-eating fish, which should be included when planning the "aquarium inhabitants", play a useful role in the fight against unwanted algae. Small catfish e.g. Otocinclus or live-bearing tooth-carps (Poeciliidae) such as guppies, mollies and platies, should be considered. Young fish of the Siamese Algae Eaters (Crossocheilus siamensis) are also insatiable consumers of algae. Unfortunately, they become somewhat quarrelsome in their old age and lose their appetite for "greens". Small shrimp which tirelessly devour algae are becoming more and more common in specialist shops. Personal favourites of the author are the Caridina and Neocaridina species, with some very interestingly coloured breeds

Measures against strong algae growth

Regular partial changes of water and feeding sparingly prevent increases in the nitrate and phosphate levels of the water. Nitrate and phosphate levels can be reliably monitored with the **JBL Nitrate Test-Set** and the **JBL Phosphate Test-Set**.

Test your tap water too! This is often the source of problems.

JBL has even developed three different, highly efficient special filter media for the target removal of phosphate and nitrate from the tank water. **JBL PhosEx Ultra** binds excess phosphate quickly and reliably without re-releasing it. **JBL NitratEx** is an ion-exchange resin which binds mainly nitrate and replaces it with chloride. It can be regenerated using salt. **JBL BioNitratEx** is a filter medium which encourages colonisation by nitrate-eating bacteria and thereby almost completely removes nitrate biologically, without releasing any chloride, etc. And the last resort is **JBL Algol***, an algaecide which, however, does not deal with the cause of the algae.

**Use algaecides safely: always read the instructions and labelling before use.*

8. The fish

Selection

Although we wish to leave the choice of fish largely up to you and the specialist advice of your aquarium supplier, we do have a few tips.

There are other fish families that make appropriate fish for beginners e.g. tetras, barbs or gouramis. As mentioned, ask for advice. Algae-eating fish, mainly from the catfish family, should be amongst your selection!

When buying the fish, you should insist on species that are easy to look after, suited to the size of your aquarium and compatible with each other. As mentioned previously, experience has shown that live-bearing tooth-carps (Poeciliidae), which help to keep down the levels of unwanted alga, are good fish for novices. These fish also have interesting breeding habits: they are live-bearing as their name suggests. With a little luck, you will soon be able to experience the “happy event” in your aquarium.

How many fish?

Exercise restraint in the total number of fish from the beginning. When the nitrite test gives the go-ahead, start with a few fish. After 1-2 weeks, when you have confirmed that everything is running smoothly, you can add a few more.

This gives the filter bacteria time to adapt to the amount of waste produced by the excrement from the fish. As a general rule of thumb for the density of fish recommended for an aquarium,

Please remember that some fish which are purchased as small young fish can reach a considerable size within a year e.g. the Clown Loach (Chromobotia macracanthus) in the picture on the left.

allow 1 cm fish per litre of water. This only applies to fully grown fish! Since all fish are usually sold as young fish, you should allow enough leeway in your calculations. Ask your supplier about the size of the fully grown fish.
Over-stocking the aquarium increases the risk of unwanted algae growth.

Introducing the fish

When the great day has at last arrived and you stand in front of your aquarium with your newly-acquired housemates, it is time to release them into their new home in the correct manner. The following procedure has proven successful (you will also find these instructions on the rear of the JBL Fish Transport Bag which your aquarium supplier might use):

1. *First, switch off the lighting. Place the sealed transport bag on the surface of the water and let it float there for about 15 minutes.*
2. *Open the transport bag and attach it, open, to the side of the aquarium (e.g. with a clothes peg). Carefully fill water, a little at a time, from the aquarium into the open transport bag until the volume of water in the bag has approximately doubled.*
3. *Place a net over a bucket, remove the transport bag from the aquarium and carefully shake the contents into the net.*

Now you can release the fish into the aquarium. Alternatively, you can remove them directly from the transport bag using a net.

The transport water must be disposed of!

The lighting may be switched on again one or two hours later. **Do not feed until the next day!**

Add **JBL Acclimol** to the tank water immediately to quickly alleviate any stress experienced during transport and to avoid damage to the vital mucous membranes of the fish. **JBL Acclimol**, with valuable plant extracts and vitamins, strengthens the immune system of the fish, reducing the risk of disease and helping the fish acclimatise to their new surroundings.

Always add **JBL Acclimol** to the tank water after working in the aquarium or introducing new fish.

Of course, having bought your future charges, you should make sure you take the transport bag and contents home as quickly as possible. Do not shake unnecessarily and keep the bag dark (newspaper, etc.) to avoid frightening the fish. When you wish to catch a fish, be calm and patient. Patience and cunning usually bring quick rewards and save damaging the aquarium decorations.

Feeding the fish

Feeding the fish is one of the most important and pleasurable routine jobs which now connects you with your aquarium.

JBL, with its varied range of feeding materials designed to meet the specific needs of the fish, ensures that your fish are always offered a wide selection of menus.

Under the name **Novobel**, you will find a staple food made up of over 50 raw materials which meets the daily needs of your fish. Variety and colour is offered by the staple food **JBL Novocolor** and the premium food **JBL GALA**.

In addition, there are many special food sorts for the more specialised fish, e.g. tablets for ground feeding fish or **JBL NovoTab** and **JBL NovoFect** for plant eaters.

One special type of food deserves a special mention: **JBL NovoPleco**. This food contains a high level of wood fibre and is absolutely vital for the popular Bristlenose Pleco (Ancistrus) and other plant-eating plecos.

There now follows the most important feeding information:
Most beginners make the mistake of providing too much food, too often. Bear in mind that fish in the wild do not always find something to eat and therefore constantly hunt for food, which can easily tempt novices to give too much food.

Since the fish you have purchased are usually young fish which are still growing, as we mentioned previously, you should scatter as much food on the surface of the water **as is consumed in 2-3 minutes without any leftovers**. Do this three times a day. Later, when the fish are fully grown, 1-2 feeds per day given in the same manner will be sufficient.

Now you can allow the fish to fast for a day occasionally by giving them nothing to eat. Do not use a so-called feeding ring. It concentrates the feed in too small an area with the result that smaller and more timid fish will often not get enough food.

Ensure the consistently good quality of the food by storing opened containers of food in a dark, cool and dry place. As a manufacturer, we guarantee the freshness and vitamin content of the foods until the container is opened by stamping a use-by date on the container and hermetically sealing the containers. The vitamins and other essential ingredients in the food have a limited shelf life once the container has been opened. We therefore recommend that you buy container sizes which will be used up within 2-3 months at the most. The tempting bargains of large boxes or even buckets of feed are detrimental to the health of your fish in the end.

All JBL food products are produced strictly according to need, guaranteeing that the ingredients are absolutely fresh.

Fish diseases

There is one unfortunate aspect of fishkeeping which we need to mention: fish can become ill.

As a rule, diseases are a sign of inadequate care and upkeep. Any successful treatment must therefore be followed up with a review of maintenance procedure and improvements in care.

The most common fish disease is white spot or ichthyophthirius, which can be identified by a large or small number of little white spots on the fins and body of the fish. This disease can be easily and safely remedied with **JBL Punktol**. For this reason, you should always keep a bottle of this medication at home just in case. However, it should never be used as a prophylactic, but only when symptoms of the disease have been identified

More details on fish diseases and help in diagnosis and treatment can be found in the JBL Online Hospital:
http://www.jbl.de/en/online-hospital/identifying-and-curing-fish-diseases

9. Care and upkeep

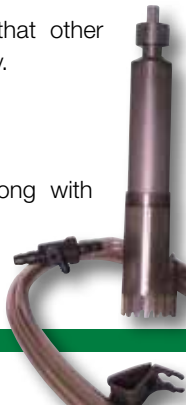
Since most beginners tend to work on the principle of “you can’t have too much of a good thing”, we would like to give a realistic view of the upkeep tasks which are necessary:

Daily

The most important task is, of course, feeding the fish. Remember the tips given in the previous chapter.
At the same time you should use this opportunity to observe all the fish, noticing any injuries, parasitic infections or incompatibility with each other.
Do ask the advice of an experienced or your specialist aquarium supplier, as a novice often tends to interpret every unfamiliar movement as a sign of illness.
Check the temperature and that other equipment is operating properly.

Once a fortnight

A partial change of water along with the addition of fertiliser for the aquatic plants is the most



important fortnightly upkeep task. Take out about 30% of the aquarium water using either a suction hose or **JBL AquaEx**, mentioned earlier, and replace the water with tap water at the correct temperature. When suctioning out the water you can also carefully remove any sediment you may notice. This is easily done by using **JBL AquaEx**. Take care not to swirl up the gravel in the process! Remove dead plant leaves and adjust plant growth if necessary.
If the filter flow has decreased significantly, wash the filter medium as described previously. Add fertilizer and water conditioner according to the amount of fresh water (**JBL Ferropol** and **JBL Biotopol**).

Since carrying full, or even overflowing, buckets of water through the house may cause some protests from your nearest and dearest, here's a tip: a long hose from the aquarium directly to the "smallest room in the house" avoids annoying puddles on your expensive living room carpet.

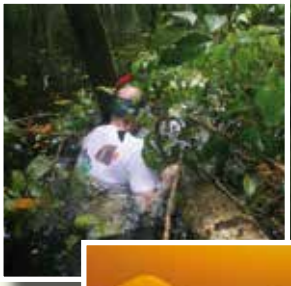
As needed

Remove unsightly algae growth from the inner surface of the front panes of your aquarium. The outside of the glass should also be cleaned now and then to remove any fingerprints and other stains and give a clear view of the fish. Now and then, you should test the aquarium water and add any fertilizer or additives which may be lacking, even if it is not yet time for the regular water change.

The best care you can give your aquarium is to let it grow undisturbed. Don't make the mistake of making too many adjustments, the too-frequent introduction of new fish or movement of decorations, etc.

And now we hope you have many entertaining "fish-filled" hours of fun with your new aquarium.

Impressions from JBL expeditions to study the habitats of fish and plants in the tropics. These expeditions are open to all nature lovers. More information about this can be found on the JBL homepage under: **www.JBL.de**















JBL

You can obtain more information on aquarium keeping on the JBL homepage at **www.jbl.de** or directly from your specialist shop.

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