



Beginners Guide Setting Up a Reef Aquarium

This manual offers a beginners guide instruction on how to setup and cycle a reef marine aquarium. The most important factors of a successful reef aquarium are: circulation of water, lighting, and stability of water chemistry.

The process of setting up a successful reef aquarium is depended on three phases over a period of 4 weeks. These phases are: 1) Planning, 2) Setup, and 3) Cycling

By following each step in this instruction manual, you are guaranteed to successfully setup and cycle a reef aquarium to where you can begin stocking with corals and fish. This method provides you with an easy step by step guide on equipment information, and provide enough time for a young reef to cycle. In return you will be rewarded with a healthy, thriving reef for years to come.

IMPORTANT SAFETY INSTRUCTIONS



This symbol is intended to alert the user to the presence of uninsulated “dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING – To guard against injury, basic safety precautions should be observed, including the following:

1. READ AND FOLLOW ALL SAFETY INSTRUCTIONS

All the important notices on the appliance before using any electrical equipment. Failure to do so may result in loss of fish life and/or damage to appliance.

2. DANGER – To avoid possible electric shock, special care should be taken since water is employed in the use of aquarium equipment. For each of the following situations, do not attempt repairs yourself; return the appliance to an authorized service facility for service or discard the appliance.

- A. If the appliance shows any sign of abnormal water leakage, immediately unplug it from the power source.

- B. A “drip loop” (see Figure 1) should be arranged by the user for the cord connecting appliance to a receptacle. The “drip loop” is that part of the cord below the level of the receptacle or the connector if an extension cord is used, to prevent water traveling along the cord and coming in contact with the receptacle. If the plug or receptacle does get wet, DON’T unplug the cord. Disconnect the fuse or circuit breaker that supplies power to the appliance. Then unplug and examine for presence of water in receptacle.

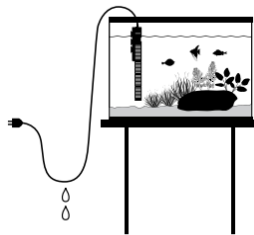


Figure 1 Safety Drip Loop

3. Electrical aquarium equipment is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance, or the reef system itself.

4. **CAUTION:** Always unplug or disconnect all appliances in the aquarium from electricity supply before carrying out maintenance. Never yank a cord to pull plug from outlet. Grasp the plug and pull to disconnect. Always unplug an appliance from an outlet when not in use.

5. If an extension cord is necessary, a cord with the proper rating should be used. A cord rated for less amperes or watts than the appliance rating may overheat. Care should be taken to arrange the cord so that it will not be tripped over or pulled. The connection should be carried out by a qualified electrical installer.

SAVE THESE INSTRUCTIONS

Phase 1 Planning

An important factor in setting up a new reef aquarium is taking the time to carefully plan the entire project. There's no doubt that the hobby of coral collecting is on the expensive end of the spectrum. Therefore it is important that you take the time to consider all of the equipment needed.

Basic Reef Aquarium System

This diagram illustrates all the equipment of a reef aquarium system and how they are typically positioned.

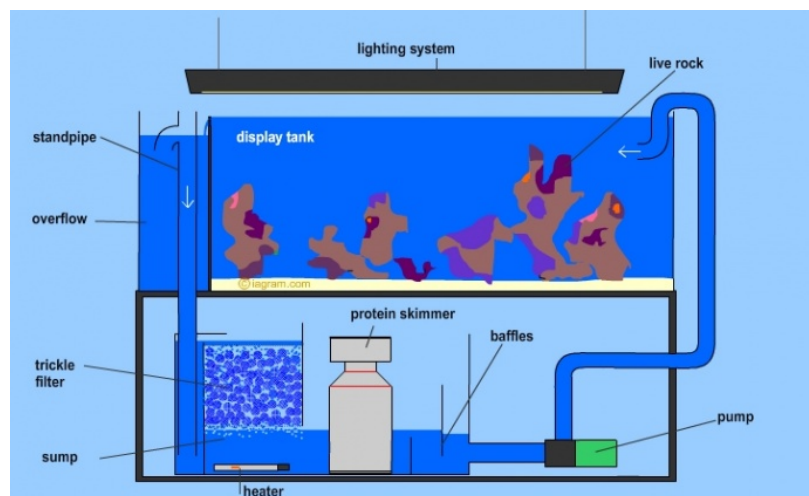


Figure 2 Overview of a Reef System

Location

The first step in planning a new reef aquarium build is choosing a location that is safe. Choose an open area that is in a low traffic area, away from doors, and out of direct sunlight.

Equipment required:

Aquarium

An exciting step in planning a new reef aquarium build is deciding on the shape and size of aquarium that fits your needs. Things to consider:

A. Would you like an acrylic or glass aquarium?

Acrylic aquariums are normally rim less. Glass aquariums usually have a lack rim for support.

B. How many gallons(liters)?

Smaller saltwater aquariums are more challenging to maintain because the water volume is limited causing the water quality (chemistry) to easily fluctuate which can harm or kill inhabitants. Larger saltwater aquariums are easier to balance. Will your selection fit in the predetermined space?

Stand

Most aquariums today are made to fit onto a particular stand. Always purchase a stand that fits the exact dimensions of your aquarium. This is important for balance with added water weight and to avoid the risk of tipping.

Reef rock

Reef rock aka live rock is one of the most important aspects of keeping a reef aquarium healthy. Reef rock gives the aquarium a natural look and a secure location to attach corals over the years as you build your reef. Reef rock also has built in deposits and minerals which chemically acts as a substitute for a filter which keeps the water quality clean and stable.

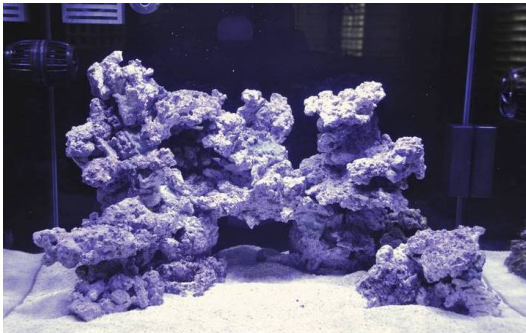


Figure 3 Live reef rock



Figure 4 Dry reef rock

When choosing reef or live rock you have two options:

Cured rock: (rock from another reef system)

Pros: Already cycled, aged algae growth for natural look.

Cons: Hitch hikers and other pest hidden within the rock that can expose itself to your system.

Dry reef rock: (rock that has been shelf dried)

Pros: Hitch hiker and pest free.

Cons: White with no color, takes months to age, can leak phosphates as it ages.

Instant ocean salt

Having access to saltwater is crucial for marine reef aquariums. You can either buy saltwater from most pet stores or choose an instant ocean saltwater mix.

Reverse Osmosis (RO) Water

If you are mixing your own saltwater using an instant ocean salt mix you will need a constant supply of reverse osmosis (RO) water. You can purchase and install a reverse osmosis system in your home, or purchase from your local fish store.

Warning: You should never use any other source of water other than saltwater or reverse osmosis (RO) water in your saltwater aquarium. Fresh bottled and tap water are highly rich in nutrients which will have a negative affect by causing an outburst of nuisance algae growth. In the long run this can destabilize a reef ecosystem causing all inhabitants to die.

Sand

It is recommended that you only use a natural substrate in your reef aquarium. You can either choose from a crushed coral or live sand substrate. Their differences are:

A) Crushed coral:

Pros: The first substrate used in the hobby, Many hobbyist still depend on it
Cons: Need presoaking, Longer time to cycle, No natural organisms

B) Live sand:

Pros: Natural ocean sand, Natural organism that clarify water, No presoaking
Cons: Can be expensive to fill a larger reef aquarium

Heater

Choose a good heater than can sustain the temperature in the aquarium size you choose.

Circulation pumps

Corals and fish depend on the currents of the changing tides to clean and provide them with sources of catchable food. This is why water movement is crucial to their longterm survival. Decide on the types of circulation pumps. We recommend 4X the tank capacity of circulation per hour. For example: 50 Gallon Aquarium = Pump circulation of 200 Gallons per hour

Lighting

Corals can survive strictly on sunlight. This is why they depend on a high quality of light source in the hoe aquarium. Selecting the proper light for your new system is important. The lighting spectrum in marine aquariums are measured by Parabolic Aluminized Reflector (PAR). Today a variety of lighting is offered from several different companies that fits the specific needs of growing corals. All of these lighting have the ability to

mimic a natural day / lunar schedule. Corals require at least 12 hours of lights each day for their best health.

Some prominent companies we consider for lighting are: Aqua Illuminations, Echotech Marine, and Kessil. All of these companies offer a full variety of lighting options with the appropriate recommendation of installing and mounting their light fixtures.

Protein skimmer

Protein skimmers play an important role in the reef aquarium. They provide the growing ecosystem with an additional source of filtration by removing excessive nutrients and waste without running any additional chemicals. Protein skimmers are optional, but are very beneficial in the long run.

Phase 2 Setup

Now that you have planned and purchased all of your equipment the next step is setting up the new aquarium system.

1. The aquarium and stand should already be positioned in the selected area
2. Wipe clean the inside of the aquarium one last time with a piece of paper towel
3. Cut open the bags of sand one at a time and gently pour into the aquarium until you reach the desired depth. For a reef system it is recommended to have 1-2 inches of substrate.
4. Using the reef rock, design the scape of your reef. For larger pieces of rock, use reef glue to hold firmly.
5. Once the sand and rock work is in the aquarium, inspect the reef formation one last time to make any final adjustments before filling with saltwater.
6. Install all circulation pumps and secure the plumbing to the overflow.
7. Install the heater, lighting, skimmer and surge protectors at this time, with the power off.
8. After all of the equipment is installed, you can begin filling the aquarium with saltwater. Pour the water onto the rocks to avoid disrupting the sand. Remember to always test the specific gravity of your water before adding into your aquarium system. For a saltwater aquarium the safety measurement is 1.23 - 1.25 specific gravity
9. Now that the aquarium is filled with water, plug in all equipment and verify that all heaters, lighting and pump systems are working
10. Set the temperature in your reef aquarium. The ideal temperature for a reef system is between 78 - 80 F
11. The final step with isetup is arranging all hanging wires and neatly secure them behind the aquarium stand.

REMINDER: All electrical cords should be hanged to create a drip safety loop as seen in Figure 5

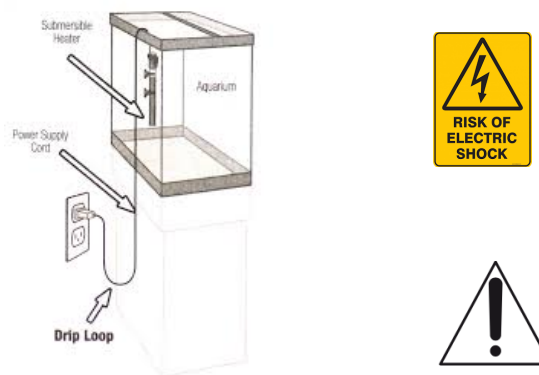


Figure 5 Safety Drip Loop

Phase 3 Cycling

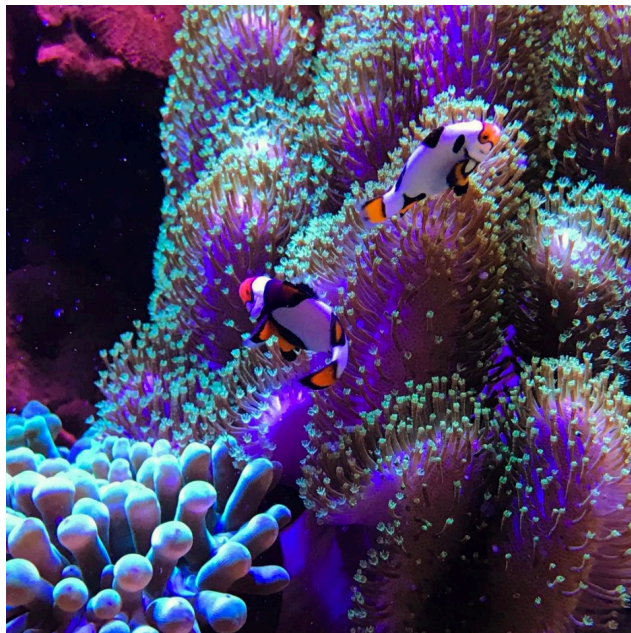
We are currently at the cycling phase of the new reef aquarium. For the next 4 weeks you must closely inspect the system each day to notice any visible changes.

- Every week it is recommended that you complete a 50% water change while the system is cycling
- Any decaying organic matter or debris should be siphon out the system
- Test the quality of your water every 3-4 days
- Ammonia and nitrite levels should always be at 0
- pH levels between 8.1 - 8.4
- Specific gravity 1.23 - 1.25

If ammonia and nitrite levels are high, keep doing a water change to adjust until the desired levels.

If the specific gravity is higher than a measurement than 1.25, add reverse osmosis (RO) water to dilute the salt levels to a safe range (1.23 - 1.25 sg).

If all chemistry of the aquarium is now stable, **CONGRATULATIONS!**
You have now build your own reef aquarium system and can begin adding corals, fish and other invertebrates.



Maintenance

At this stage, you have now setup and have a young growing reef ecosystem. Here are some helpful tips for the longevity of a healthy reef.

- Keep up with water changes at least 10% weekly or 20% biweekly
- Always check your water chemistry
- Frequently check your water circulation and lighting
- Do not overfeed your system
- As the reef ages 1 year (+) you can begin dosing with elements such as calcium and magnesium. These products can be found at any local exotic fish store

Troubleshooting:

- Do not operate any equipment if it has a damaged cord or plug, if it is malfunctioning it is dropped or damaged in any manner.
- The power cord of aquatic appliance cannot be replaced for safety reasons
- If the cord is damaged, the appliance should be discarded
- Never cut / repair an electric cord associated with water

