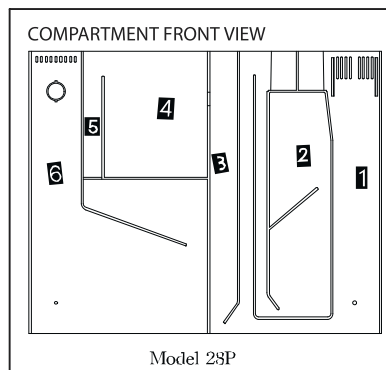
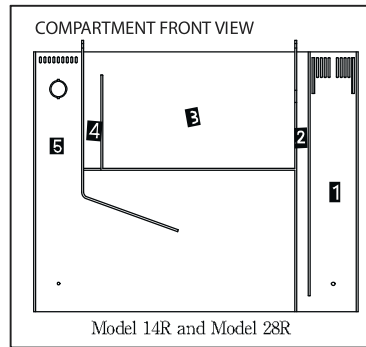
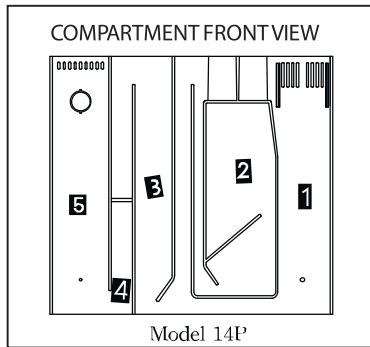
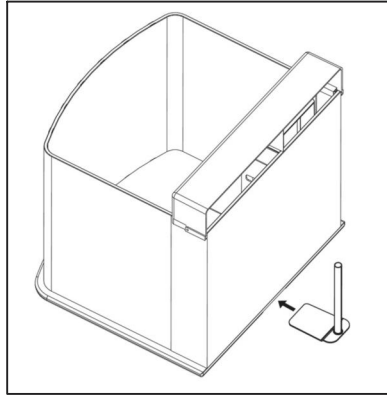




**OWNER'S MANUAL**  
ECO MINI™ Aquarium



### Diagram of Tank Filtration Compartments





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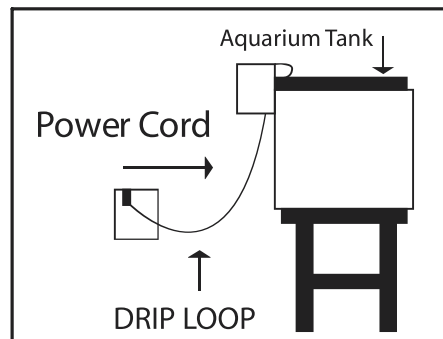
## Safety Instructions

**IMPORTANT SAFEGUARDS** – To avoid injury, basic safety precautions should be observed. PLEASE READ AND FOLLOW ALL SAFETY INSTRUCTIONS BEFORE PROCEEDING.

**DANGER** – To avoid possible electric shock, special care should be taken in the use of aquarium equipment. For each of the following situations, DO NOT attempt any repairs yourself; return the appliance to an authorized service facility.

1. READ AND OBSERVE ALL THE IMPORTANT NOTICES ON ALL ELECTRICAL APPLIANCES.
2. Do not use an electrical appliance for other than intended use. The use of attachments not recommended or not sold by the appliance manufacturer may cause an unsafe condition.
3. Do not operate any appliance if it has a damaged cord or plug, if it is malfunctioning, if it is dropped or damaged in any manner.
4. Make sure an appliance mounted on a tank is securely installed before operating it. Do not install or store the appliance where it will be exposed to the weather or to temperatures below freezing.

5. To avoid the possibility of the appliance plug or receptacle getting wet, position the aquarium stand and tank to one side of a wall mounted receptacle to prevent water from dripping onto the receptacle or plug. A "drip loop", should be arranged by the user for each cord connecting an aquarium appliance to the receptacle. The "drip loop" is that part of the cord below the level of the receptacle. If the plug or receptacle does get wet, DO NOT unplug the cord.



Disconnect the fuse or circuit breaker that supplies power to the appliance. Then unplug and examine for presence of water in the receptacle.

6. Carefully examine the appliance after installation. It should not be plugged in if there is water on parts not intended to be wet.



7. If the appliance shows any signs of abnormal water leakage, immediately unplug from power source.
8. If the appliance falls into the water, DO NOT reach in for it. First, unplug it from the power source, then retrieve it.
9. The light fixture has a polarized plug (one blade is wider than the other). As a safety feature, this plug will fit in a polarized outlet only one way. If the plug does not fit fully in the outlet, reverse the plug. If it still does not fit, contact a qualified electrician. Never use with an extension cord unless the plug can be fully inserted. DO NOT attempt to defeat this safety feature. – USA units only
10. If an extension cord is necessary, a cord with a proper rating should be used. A cord rated for fewer 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.
11. Always unplug from outlet when not in use, before putting on or taking off parts, and before cleaning. Never yank the cord to pull the plug out from the outlet. Grasp the plug and pull to disconnect.
12. To avoid injury, do not make contact with moving parts or hot parts such as heaters, reflectors, light bulbs, light fixtures, etc.
13. Close supervision is necessary when any electrical appliances are used by or near children.

**Save these instructions. EcoSystem Aquarium® will not be held responsible or liable for damage to persons, appliances, animals and/or aquariums that result from negligent care and failure to follow safety precautions and instructions on the part of the consumer.**



## Introduction

Before you begin your journey into the wonderful world of reefkeeping, we recommend that you acquire the following books: *The New Marine Aquarium* by Michael Paletta, *A PocketExpert™ Guide to Reef Aquarium Fishes* by Scott Michael, and *A PocketExpert™ Guide to Marine Invertebrates* by Dr. Ronald Shimek, all from Microcosm Books. These three references will provide invaluable information on which fish and/or corals can or cannot be kept in the small confines of aquariums, such as the ECO MINIs, and will help you avoid unnecessary frustration, time and money, and increase your chances of success in the marine aquarium hobby. Then, follow the step-by-step instruction guide and your experience will truly be a rewarding one.

## Step 1: Find a suitable location for your ECO MINI aquarium

A stable temperature with little to no fluctuations is crucial to the survival of the tropical reef inhabitants in your ECO MINI aquarium. Keep the temperature between 76 to 80 degrees Fahrenheit (23.5 to 26 degrees Celsius) at all times. In such a small volume of water, temperature may fluctuate rapidly with the ambient temperature in the room. Many reef inhabitants will be unable to withstand sudden changes in temperature, which may cause them to stress and may even be fatal to some. To avoid drastic changes in temperature DO NOT set up your ECO MINI aquarium in a location that experiences direct sunlight, which may lead to a rapid rise in temperature, and take care to ensure that the temperature in the room is kept cool at all times. A reliable heater should be used to prevent water temperature from dropping below 76 degrees Fahrenheit. The ECO MINI aquarium comes equipped with a fan that should be turned on when the main display light is turned. The fan will help dissipate any heat from the surface of the water, and may help stabilize water temperature, depending on the ambient temperature in the room. We strongly recommend that you consider investing in a nano chiller to prevent water temperature from rising to lethal levels, should the air conditioner be turned off in the office and/or home over the weekend.

## Step 2: Stand/support for the ECO MINI aquarium

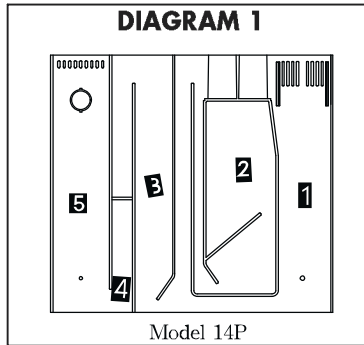
The base of the ECO MINI aquarium must rest on a perfectly flat and level surface. If there are any high or low spots, the surface is not appropriate and must be corrected before setting up the aquarium. Styrofoam, foam or sponge rubber pads will make up for small imperfections like a grain of sand or gravel, but when large imperfections are present, these materials will simply amplify the pressure on the high spots, while filling in the low spots. The framework of the surface must also be appropriate for the size of the ECO MINI aquarium. The stand must be designed to support more weight than the total weight of the ECO MINI when completely set up (i.e., total weight of completely set up ECO MINI 14 gallon = 116 pounds, ECO MINI 28-gallon = 233 pounds), to ensure that the tank remains stable and will not collapse due to inadequate support. We strongly recommend the EcoSystem aquarium stands designed specifically for the ECO MINI aquariums.



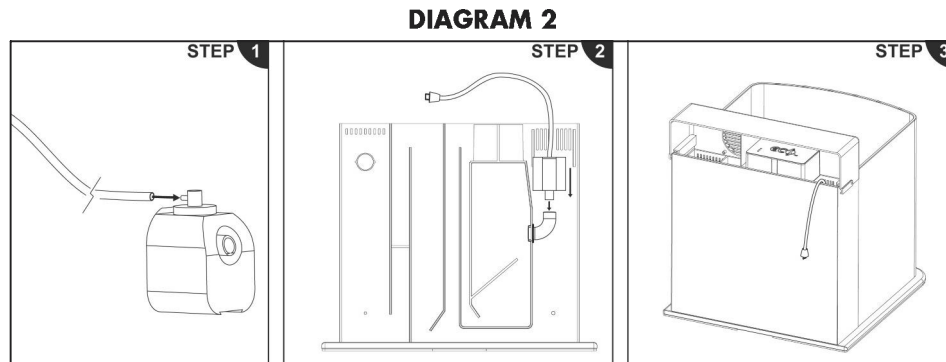
### Step 3: Setting up the ECO MINI aquarium

Once a location for the ECO MINI aquarium has been chosen and the stand is in place, it is time to set up the ECO MINI aquarium. Carefully lift the ECO MINI straight up out of the original box and place it onto the stand without sliding it. **Note:** It is important that you not remove the ECO MINI aquarium from its original box until you are ready to set it up, as the bottom glass panel may come into contact with whatever surface it is placed on and, if the surface is not completely clean, the bottom glass may pick up foreign particles that may increase the risk of damage and void the warranty.

### Step 4A: ECO MINI 14P — Berlin Method



a. Locate compartments 1 through 5 in Diagram 1.



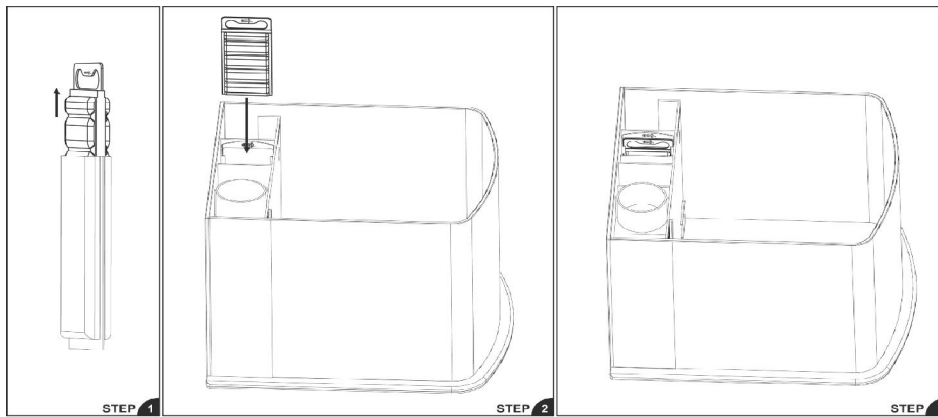
b. Attach the first included ECO DURA 600 pump (with air line attached) to the protein skimmer body (P) in compartment 1, as per Diagram 2.

c. A good-quality heater (optional, not included) of appropriate size should be placed in compartment 3, as the water level in this area will remain constant. If you are installing a nan-chiller (optional, not included), please place in compartment 1.



- d. Please leave compartment 2 alone.
- e. Compartment 3 comes with bioballs:
  - i. If the ECO MINI aquarium is used as a quarantine system for fish, bioballs are good to use here.
  - ii. If, however, the ECO MINI aquarium is used as a reef aquarium or as a quarantine system for corals, you may want to remove the bioballs.

**DIAGRAM 3**

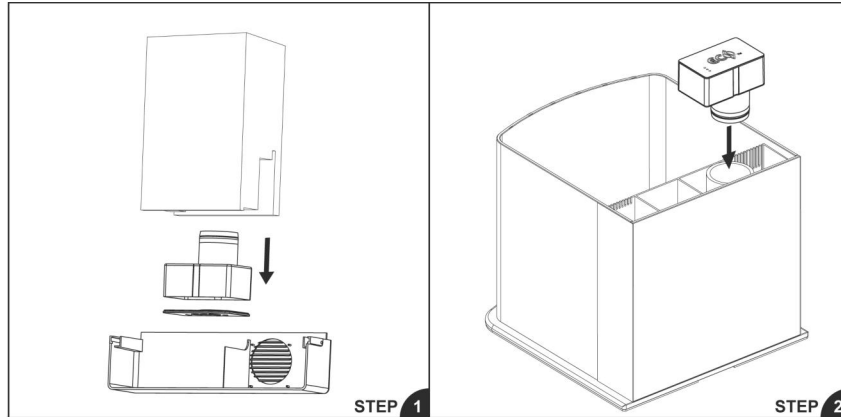


- f. Insert the ECO PHOS cartridge into compartment 4 according to Diagram 3. This cartridge will aid in removing phosphate from the system water, thus preventing undesirable blooms of nuisance algae, such as cyanobacteria and green hair algae. The ECO PHOS cartridge must be changed every 4 to 6 weeks or when signs of cyanobacteria or green algae begin to appear on the rockwork, whichever comes first.
- g. Connect the second included ECO DURA 600 (main pump) as follows: 1) connect the pump directly to the outlet in compartment 5 or 2) if you are including an ECO UV 7-watt fixture, connect the ECO UV to the outlet in compartment 5 (while the UV component is optional, it is recommended to prevent outbreaks of parasites/bacteria and/or green algae blooms in system).
- h. Place protein skimmer collection cup into the slot according to Diagram 4. Please note that this collection cup can be moved up or down as needed.



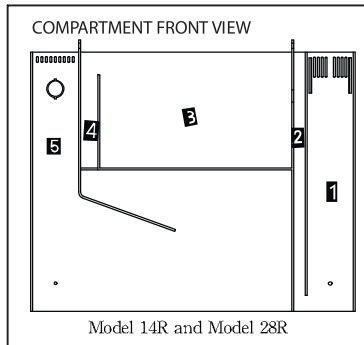


**DIAGRAM 4**



**Step 4B: ECO MINI 14R — EcoSystem Method**

**DIAGRAM 5**

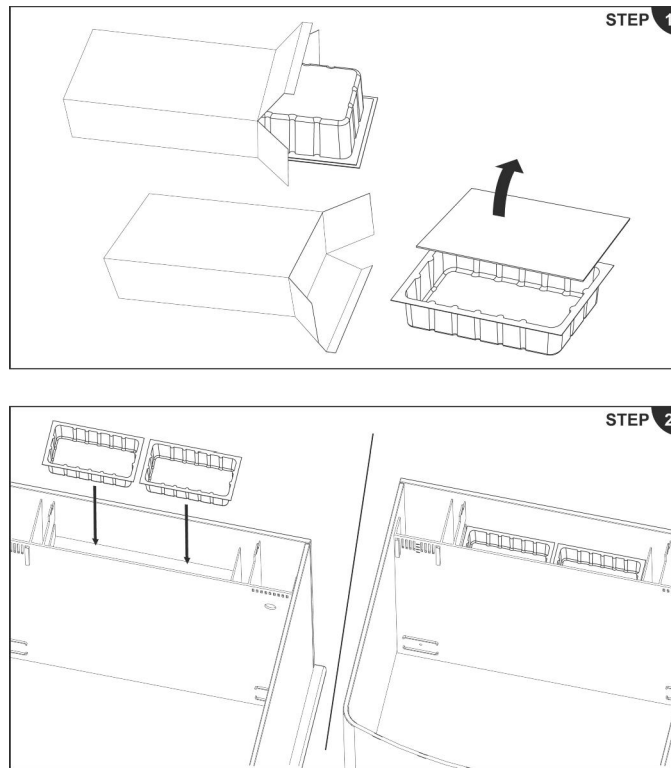


- a. Locate Compartments 1 through 5 in Diagram 5.
- b. In this methodology, bioballs are provided for compartment 1. We strongly recommend that you leave bioballs in this location to provide an area for nitrifying bacteria to colonize. These bacteria convert proteins to ammonia then to nitrite then to nitrate — a process referred to as nitrification.
- c. A good-quality heater and/or nano chiller (not included) of appropriate size should be placed in compartment 1, as the water level in this area will remain constant.
- d. Leave compartment 2 alone.
- e. In this methodology, compartment 3 is used as a refugium in which 2 Miracle Mud® trays are included.



- i. Remove and install 2 Miracle Mud® trays into compartment 3, as per Diagram 6.

**DIAGRAM 6**



- ii. In order to prevent the Miracle Mud from being stirred up, place a plastic bag on top of the Miracle Mud bed. Gently pour pre-mixed saltwater slowly onto the plastic bag. Slowly continue filling this refugium chamber until the water begins flowing into compartment 1. Stop filling with water and remove the plastic bag from Miracle Mud bed.

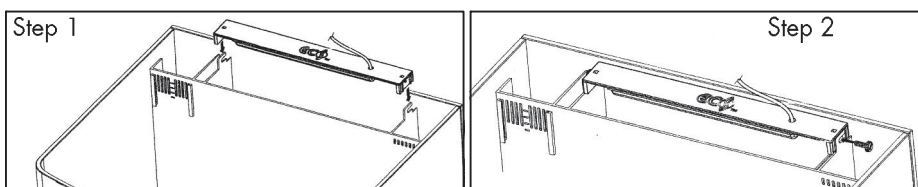
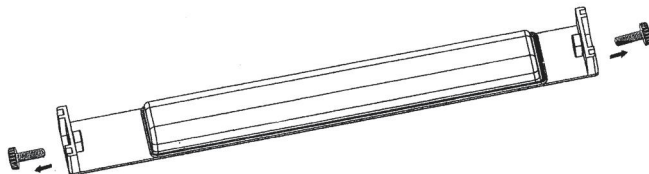
- f. Insert ECO PHOS cartridge into compartment 4 (see Step 4A, part f).

- g. Connect the ECO DURA 600 pump (see step 4A, part g).



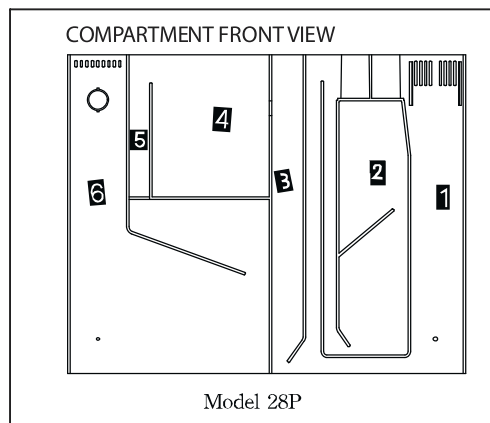
**DIAGRAM 7**

h. Install LED light on top of the refugium (compartment 3), as per Diagram 7.



**Step 4C: ECO MINI 28P — Hybrid system**

**DIAGRAM 8**



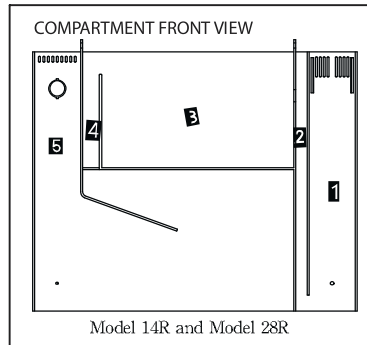
a. Locate compartments 1 through 6 according to Diagram 8.

b. Follow Steps 4A and 4B.



### Step 4D: ECO MINI 28R - EcoSystem Method

DIAGRAM 9

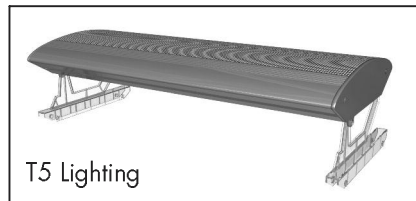


- a. Follow step 4B, but replace ECO DURA 600 with ECO DURA 800

### Step 5: Setting up the lighting

EcoSystem Aquarium offers two main aquarium lighting choices (T5 or Metal Halide, HQI) to fit your reef aquarium needs in your ECO MINI aquarium, both of which are optional.

- a. T5 (optional, not included—refer to diagram in T5 packaging for setup instructions)



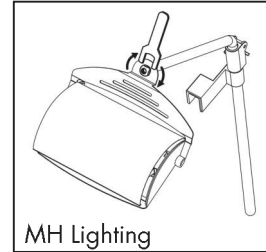
T5 lighting is appropriate for corals and other invertebrates that do not require intense lighting. Please refer to *A PocketGuide™ to Marine Invertebrates* by Dr. Ronald Shimek for tips on selecting invertebrate inhabitants for your ECO MINI aquarium. T5 lighting is also known to emit less heat than other reef aquarium lighting, such as power compacts and metal halide lighting. This lighting choice will not cause temperatures to rise dramatically when the main light is turned on. However, it will also limit the choice of corals and other invertebrates you will be able to keep in your reef aquarium. When using T5 lighting, avoid invertebrates, such as *Tridacna* sp. clams, *Xenia* sp. corals and small-polyped stony corals, as these animals require more intense lighting.

- b. Metal halide (MH) lighting (optional, not included—refer to diagram in MH packaging for setup instructions)

EcoSystem Aquarium offers two choices of MH lighting. A 70-watt HQI MH is available for both the small ECO MINI aquarium (14 gallons) and the large ECO MINI (28 gallons).



A 150-watt HQI MH is available only for the large ECO MINI aquarium. MH lighting is an intense light source. Again, please refer to *A PocketGuide™ to Marine Invertebrates* by Dr. Ronald Shimek for tips on selecting the appropriate corals and other invertebrates for your ECO MINI aquarium. The MH light will produce a lot of heat, so the fan must be turned on when the MH light is on, to dissipate heat from the surface of the water. A nano chiller is also recommended when using this light setup up to avoid sudden fluctuations in temperature.



MH Lighting

### Step 6: Fill the ECO MINI aquarium with saltwater.

Once steps 1 through 5 are completed, you are ready to fill the ECO MINI aquarium with saltwater. Good-quality saltwater means life or death for fish, corals and other invertebrates, and the continued good health of the animals you keep will depend on the quality of the saltwater. Thus, it is important to make every effort to provide the best quality saltwater for them, either natural seawater or a good-quality sea salt mix. The best way to save money in the long run is to use the best quality salt available to you. Once the aquarium is filled with saltwater,

- a. turn on the main aquarium pump;
- b. adjust the aquarium water level by raising the level control slate on compartment 1 either up or down;
- c. wait at least 30 minutes (thus avoiding breakage of the heater due to temperature shock) before plugging the heater into the electrical circuit — temperature should be set at 76 degrees Fahrenheit (24.5 degrees Celsius);
- d. connect the main light and fan adaptor to the timer (photoperiod should be around 12 hours), but do not turn them on at this point.
- e. For the ECO MINI aquarium with a protein skimmer, the skimmer pump can be turned on and the collection cup adjusted so that it will collect organic proteins, but not much water. The silencer attached to the air line attached to the pump can be adjusted to reduce noise and increase/decrease air intake to the protein skimmer. If the protein skimmer is operated along with the refugium, as in the large ECO MINI 28P aquarium (28 gallons), we strongly recommended that the protein skimmer pump be put on a timer that will turn the skimmer pump on for about 3 hours per day. This will allow more microfauna to remain and thrive in the ECO MINI aquarium, as these single-cell phytoplankton will not be removed by the continuous action of the protein skimmer.
- f. Next step? Well, here's where it gets difficult for the average hobbyist —



YOU HAVE TO WAIT! At this point, let the ECO MINI aquarium run for at least two days with just saltwater in it before you take the next steps. This will allow you to fine-tune the various components in the setup and allow the minerals/trace elements in the salt mix to dissolve completely. This step must be taken seriously to avoid unnecessary loss of animals introduced into the aquarium prematurely.

- g. Water will continue to evaporate from the system, depending on the temperature. If and when the water gets low, you will notice that there are a lot of micro bubbles in the water because the pump will start sucking in air. At this point, slowly pour fresh drinking water into the aquarium, making sure to avoid direct contact of the water with any animals in the aquarium. This process, known as "topping off" the aquarium water, should be done every 2 to 3 days so the salt content (specific gravity = salinity) will not decrease/increase too rapidly.

Remarks: The sources of saltwater can be either natural seawater or synthetic sea salt mixes that are readily available at your local aquarium store. Natural seawater is considered to be the best choice, provided you have access to a good source — you live near a tropical reef, for example. However, it also has its limitations (i.e., it may contain high levels of nutrients [seasonal] and/or pathogens or parasites). Be cautious when you use natural seawater.

The second choice is synthetic sea salt that is readily available. There are many brands of synthetic salt mixes available on the market. However, when it comes to keeping corals and other invertebrates healthy, you must be careful in choosing a reputable brand of salt for your aquarium, as all synthetic salt mixes are not equal.

It is important that you mix the synthetic sea salt with reverse osmosis/deionized water (or at least drinking water) to prevent nutrients, such as silicate (brown diatom algae) and phosphate (which stimulates cyanobacteria and green hair algae), from being introduced into the system water. It is also very important that you mix the salt at least 48 hours prior to adding it to your aquarium, using a small pump powerhead to provide continuous circulation. This will allow all minerals and trace elements blended in the salt mix to dissolve completely. Not following this procedure can lead to serious damage to the health of the animals in the aquarium due to the caustic nature of freshly prepared saltwater.

### **Step 7: Aquascaping**

Once the 2 to 3 frustrating days of waiting time is over, you can introduce premier quality and fully CURED live rock into your ECO MINI aquarium. For more details on how to cure the rock, please refer to *The New Marine Aquarium* by Michael Paletta cited at the beginning of this manual. Cured live rock is rock that has been processed to remove all remnants of dead algae or animal tissue that grew on the rock before it was taken from



the wild to ship to market. Avoid using fresh live rock that has just come out of the shipping box, as well as old base rock that may be contaminated with chemicals or rich in nutrients. The best way to save money in the long run is to use premier quality cured live rock...anything of lesser quality may end up costing you more in terms of loss of animals or paying for additional media to remove excess nutrients. You may want to remove excess water from the tank to avoid spillage, as the rock may displace an equal amount of water.

### **Step 8: Sand or no sand**

Once you have completed the live rock aquascaping in your ECO MINI aquarium, you can introduce coral reef sand or live sand into the aquarium. NEVER place live rock directly on the sand bed, as this may cause the sand to compact and lead to problems. Additionally, the sand bed need not be deep, as most of the filtration process is done in the back of the ECO MINI aquarium. It is sufficient to have just under half an inch of sand to create a pleasing look in the aquarium. It is very important to keep the sand bed clean of detritus by siphoning out fish feces, leftover foods and dead animal tissue at the same time you perform a regular routine water change each week.

### **Step 9**

Turn on the main light along with the fan. Keep an eye on temperature throughout the day, as the main light is turned on and off. How much does the temperature fluctuate when the light is on? Off? You may want to keep a log to determine if there are any temperature problems, so you can correct them before going on to step 10. A heater should be used to prevent the temperature from dropping below 74 degrees Fahrenheit (i.e., set the temperature on the heater at 76 degrees Fahrenheit). To help prevent the temperature from rising higher than 80 degrees Fahrenheit, the fan that is included with the ECO MINI aquarium should kept on the entire time the main light is on. Additionally, it is important to maintain an ambient room temperature of around 76 to 78 degrees Fahrenheit, or you should consider purchasing a nano chiller, as a rise in temperature above 84 degrees Fahrenheit may lead to serious loss of corals and other invertebrates.

### **Step 10: Cycling the ECO MINI aquarium**

Once steps 7 through 9 have been completed, you may want to wait for a few (2-3) days and let the environment in the ECO MINI aquarium become more stable before continuing.

- a. You are now ready to begin the cycling process in your ECO MINI aquarium. You may also want to introduce some hardy fish into the aquarium at this point (avoid delicate fish or your "dream" fish for now). We strongly recommend that you add some green chromis (*Chromis viridis*) — a maximum of 3 fish for the ECO MINI 14 gallon, and up to 4 for the ECO MINI 28 gallon. These fish are not only peaceful in the aquarium, but



they are also schooling fish. They range in color from light green to blue and are quite an attractive sight in a reef aquarium. Finding out where the fish were collected is very important, as improper collecting practices (the use of cyanide) used in some areas may cause the fish to die in a short period of time in captivity (your tank) despite the fact that these fish are very hardy. Support suppliers who offer only hand or net-caught fishes, and/or aquacultured fish and corals even though they may be more expensive. After all, these animals will likely survive and thrive in your aquarium, and do you really want to purchase items/animals that won't live or work?

- b. Make sure to quarantine your fish before placing them into the ECO MINI aquarium, or any aquarium, for that matter (see the Paletta book referenced at the beginning of this manual for more details on quarantining). You must gradually introduce all animals (fish, invertebrates, corals, plants) so as not to cause them any undue stress — a process known in the hobby as “acclimation.” To begin the process, place the open transport bag/container holding the new arrival in a secure bucket and then slowly add water from the ECO MINI aquarium into the transport bag/container every 2 minutes for at least 30 minutes — about 1/10th the total volume of water in the transport bag/container holding the new arrivals. This will gradually mix water from the aquarium with the water in the transport container holding the fish, allowing the temperature and chemical composition of the water in the transport container to more closely match that of the main aquarium. Additionally, it will help prevent shocking the animals and avoid any undue stresses that may lead to disease outbreak or death of the animals. Once the acclimation process is completed, remove/transfer just the animals into the aquarium, discarding any remaining water from the transport container.

**Notes:** 1) Water from the transport bag/container should not be allowed to get into the aquarium, as it may contain parasites that could lead to a disease outbreak in the established residents in your aquarium. Or, the water may have been treated with chemicals that will kill all invertebrates and corals in the aquarium (copper is commonly used to treat fish in holding facilities for marine ich or *Oodinium*). 2) All new additions to the aquarium (fish, corals, invertebrates) should be quarantined for at least 3 weeks prior to introduction into their new home (if possible). 3) Never overfeed the fish! Feed them small portions numerous times (3 to 4 times) per day. Portions should be small enough that the fish are able to consume the entire amount at each feeding, thus avoiding the prospect of excess foods collecting on the bottom. We recommend feeding your fish pelleted or commercially prepared frozen seafood mixes (with ECO GARLIC elixir), which will help your fish maintain a healthy immune system.

- c. At this point you may also want to introduce *Caulerpa* algae into the refugium (if you have one). It is best to obtain roughly 10 strands of *Caulerpa* or *Chaetomorpha* algae from a local fish store or aquarist friend. Tie the root strands to (6 to 10) small pieces of live rock using fishing line. Gently drop the rock with the attached macroalgae/plants





on top of the Miracle Mud chamber in the refugium and evenly distribute the pieces to ensure a higher probability of survival. Turn on the LED light and leave it on 24/7.

### Step 11

Once step 10 is completed, wait at least 2 more weeks before adding a few (5 to 10) snails and/or sea urchins, depending on whether you have the ECO MINI 14 or 28, to help keep the algae growing on the live rock in the ECO MINI aquarium in check. This waiting period is important to herbivores, such as snails, so as to ensure that they have enough food to graze on.

### Step 12: PATIENCE is the key to a successful reef aquarium

Now, step 11 is completed and there are a few fish swimming in a tank filled with premier-quality live rock, as well as some snails grazing on algae. You **MUST** be content with this arrangement for at least 4 weeks before you go on to the next steps, which will turn your reef tank into a dream tank. Short cutting this process may lead to an unnecessary loss of animals and money, and may cause additional delays in the completion of your showcase aquarium. Patience and more patience is what is needed here.

During this waiting period (6 to 8 weeks) the following tasks should be performed:

- a. Once a week, remove/siphon out any detritus at the same time you perform a regular partial water change — for the ECO MINI 14, 2 gallons of water should be changed; for the ECO MINI 28, up to 4 gallons. Remember to use only premixed (at least 48 hours prior to use) saltwater (see step 6, part g).
- b. Add fresh drinking water to top off the aquarium to replenish water lost to evaporation and to prevent the pump from running dry when the water level gets too low. **DO NOT** use saltwater to top off your marine aquarium, as this will eventually lead to an increase in the salinity to lethal levels.
- c. Check the salinity/specific gravity of the water. Specific gravity should be maintained at 1.022 to 1.024 (see references for more details).
- d. Monitor temperature. It should be maintained between 76 to 80 degrees Fahrenheit (24.5 to 27 degrees Celsius).
- e. Check pH. It should be kept between 8.0 to 8.4.



### Step 13: End of cycling period

Once the ECO MINI aquarium has been up and running for at least 6 to 8 weeks (steps 6 through 12) and the following parameters are maintained:

**Specific gravity:** 1.022 to 1.024

**pH:** 8.0 to 8.4

**Temperature:** 76 to 80 degrees Fahrenheit

**Phosphate:** 0.01 to 0.05 parts per million (ppm)

**Nitrate:** unmeasurable using a standard test kit,

the aquarium is finally ready to receive new arrivals. Animals should be introduced individually over a 6-week period — remember to quarantine all new arrivals for at least 3 weeks (again, refer to the Paletta reference cited at the beginning of this manual). To minimize the chances of disease outbreak or parasite infestation, **add corals and other invertebrates before adding fish.** Live corals are natural predators of most of these parasites/bacteria, as they are filter feeders. Once corals are feeding and thriving in the aquarium, they will also aid in filtering and thus controlling and naturally eliminating the number of parasites in the aquarium. An ultraviolet (UV) light will help prevent any parasites or disease pathogens from entering the main aquarium. We strongly recommend that you install a UV light to reduce or prevent disease outbreaks in the aquarium.

### MAINTENANCE

#### Daily:

1. Feed the fish small portions of a good-quality pelleted or frozen marine food mix several times per day, along with ECO GARLIC Elixir, paying careful attention not to overfeed (see "Notes" section, step 10).
2. Top off water lost to evaporation every 2-3 days (preferably, small amounts daily) to avoid a drastic rise and/or fall in salinity (see step 6, part g).
3. If the ECO MINI aquarium includes a protein skimmer, the following tasks should be performed as well:
  - a. Use ONLY ECO Reef solution or Fish solution to replenish minerals and trace elements required by the reef inhabitants in your ECO MINI aquarium. These additives, along with a regular partial water change each week, are all you will need to maintain a simple and healthy reef aquarium. These solutions are formulated from 22 different kinds of plants, which will provide phytonutrients, vitamins, and minerals to your reef inhabitants.
  - b. Check the skimmer collection cup every couple of days. You may need to empty it out to avoid overflow or an unpleasant odor.



4. If your ECO MINI aquarium comes with the EcoSystem Miracle Mud® Method then no additional supplements will be needed. Simply perform regular partial water change once a week.

### **Weekly:**

1. Clean the aquarium glass (1 to 2 times).
2. Perform a regular partial water change (roughly 10 percent of the water volume; i.e., for the ECO MINI 14, 2 gallons per week, for the ECO MINI 28, up to 4 gallons). Siphon out any detritus on or in the sand at the same time. Use only PRE-MIXED saltwater.

A regular partial water change weekly will be sufficient to replenish the minerals, trace elements, calcium and magnesium the animals in the aquarium will need to survive and thrive. (Note: Additional supplements, such as ECO Calcium and ECO Trace Elements, will help to maintain optimal levels of calcium, magnesium, alkalinity and minerals/trace elements for more advanced reef aquariums. As the corals continue to grow, it may be necessary to add these to keep these elements in the appropriate ranges.)

3. Check the salinity/specific gravity of the aquarium water. Be sure to keep it at 1.022 to 1.024.
4. Should other parameters, such as pH, nitrate and phosphate, be checked as well? We recommend that you do so, although it is not mandatory. Observing the animals in your ECO MINI aquarium closely is the best indicator of aquarium water quality. DON'T OVERREACT to test kit results, as an aquarium full of healthy and thriving animals is a much better indicator of the overall health of your system! Test results are meant only to alert the aquarist to potential problems. Keep a log of all readings and correct any abnormal findings before they become a problem. Ultimately, however observing the animals is the key to determining good water quality.

### **Monthly:**

1. Check the ECO PHOS cartridge. The cartridge should be changed every 4 to 6 weeks for new aquariums or those with a heavy bioload, and every 6 to 8 weeks for existing or low bioload setups. Or change it when the first signs of hair algae or cyanobacteria begin appearing on the rockwork or décor, or when test results indicate a phosphate concentration of more than 0.05 parts per million (ppm). The ideal phosphate level is 0.01 to 0.02 ppm. (**Note:** Keeping the phosphate concentration in the ideal range will solve about 80 percent of the problems in most reef aquariums.)



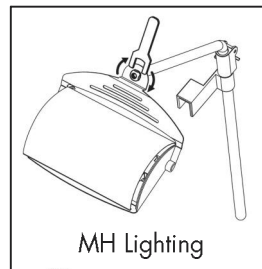
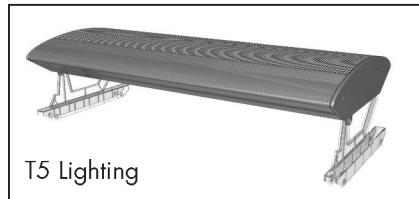
2. If the ECO MINI aquarium comes with the EcoSystem Miracle Mud® Methodology, make sure to prune the *Caulerpa* algae by cutting half way down with scissors. Do not discard any *Caulerpa* into the local water ecosystem. Removing *Caulerpa* helps remove nutrients from the aquarium system water.
3. If you are using T5 lighting, replace or change the T5 bulbs every 6 months to ensure the correct light spectrum and intensity required by the corals in your ECO MINI (normal photoperiod is around 12 hours per day). DO NOT change all bulbs at once — change one light bulb per week until all light bulbs are replaced. This will avoid sudden changes in light intensity that may adversely affect the invertebrates and corals under your care. Sudden changes in light intensity may lead to coral bleaching.
4. If you are using Metal Halide lighting, plan to replace it every 8 months when using an 11 to 12 hour photoperiod per day. It is important not to change the light spectrum or Kelvin temperature of the HQI bulb. Different spectrum bulbs have different intensities. If a light of a different spectrum is installed it will have a different intensity, which may lead to corals bleaching or burning, which can lead to their eventual death. This is similar to the analogy of moving corals up and down in the reef aquarium. Corals that require high light intensity will not live (bleach) when placed deep or in the shade, while corals that require low light intensity will not live (burn, then bleach) when placed in higher light intensity. Take care to adjust the height of the light fixture higher up when it is first replaced and then gradually lowering the height over period of time. This will help to maintain light intensity relatively constant for corals.

### Yearly

If your ECO MINI aquarium comes with the EcoSystem Miracle Mud® Methodology, you MUST change 50 percent (one tray) of the Miracle Mud each year to ensure that all minerals and trace elements are replaced/replenished to optimal levels. Minerals and trace elements are consumed or used up by invertebrates and corals in the aquarium. Do this by turning off the pump and then siphoning out water from the refugium as you would do in a water change. Remove one Miracle Mud tray, and then add new, fresh mud (see Step 4B, d(ii)). After adding the new mud, allow it to settle in the sump before turning the water flow back on. Repeat this process the following year, but this time, remove the other Miracle Mud tray. This way, each Miracle Mud tray will remain in the refugium for two years before it is removed.



## Optional Equipment





## *EcoSystem* Aquarium **(1) Year Limited Warranty**

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Nishi-kum, Osaka 550-0013  
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Fax (0) 6 6543 6978

Please use the original container, or pack the unit(s) in a sturdy carton with sufficient packing to prevent damage. Include the following information:

1. A proof-of-purchase (receipt) indicating model number and date of purchase.
2. Bill - to Address.
3. Ship - to Address.
4. Number and description of units shipped.
5. Name and telephone of person to call, should contact be necessary.
6. Reason for return and description of the problem.

Damage occurring during shipment is deemed the responsibility of the carrier, as claims should be made directly with the carrier.

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