

OPERATING MANUAL

BIO-WHEEL® "MINI" SERIES Live Seafood Display Systems

ML-23WMTH



IMPORTANT SAFEGUARDS

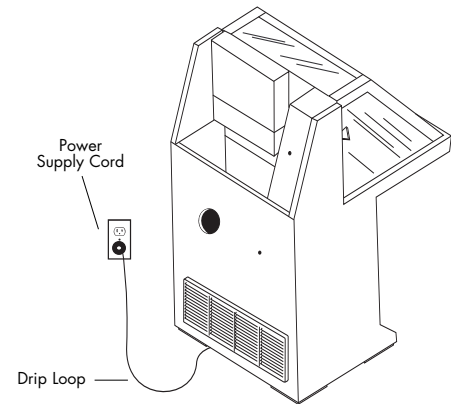
WARNING – To guard against injury, basic safety precautions should be observed, including the following:

READ AND FOLLOW ALL SAFETY INSTRUCTIONS

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 repairs yourself; contact an authorized service facility for service.

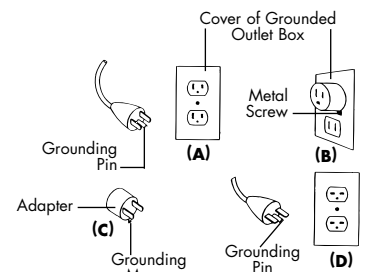
1. A. If an appliance falls into the water, DON'T reach for it! First unplug it and then retrieve it. If electrical components of the unit get wet, unplug this equipment immediately.
- B. If the equipment shows any sign of abnormal water leakage, immediately turn off power at main disconnect.
- C. Carefully examine the equipment after installation. It should not be plugged in if there is water on parts not intended to be wet.
- D. Do not operate any equipment if it has a damaged cord or plug, or if it is malfunctioning or if it is damaged in any manner.

E. To avoid the possibility of the plug or receptacle getting wet, position tank to one side of a wall mounted receptacle to prevent water from dripping onto the receptacle or plug. A "drip loop", shown in the Illustration at right should be arranged by the user for each cord connecting equipment 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 the receptacle.



2. Close supervision is necessary when any equipment is used by or near children.
3. To avoid injury, do not contact moving parts or hot parts such as heaters, reflectors, lamp bulbs, etc.
4. Always unplug this equipment from an outlet when not in use, before putting on or taking off parts, and before cleaning. Never yank cord to pull plug from outlet. Grasp the plug and pull to disconnect.
5. Do not use this equipment for other than intended use. The use of attachments not recommended or sold by the appliance manufacturer may cause an unsafe condition.
6. Do not install or store the equipment where it will be exposed to the weather or to temperatures below freezing.
7. Make sure any appliance mounted on a tank is securely installed before operating it.
8. Read and observe all the important notices on the equipment.
9. If an extension cord is necessary, a cord with a proper rating should be used. A cord rated for less ampere or watts than the equipment rating may overheat. Care should be taken to arrange the cord so that it will not be tripped over or pulled.

10. This equipment should be grounded to minimize the possibility of electric shock. This unit is equipped with an electric cord that has an equipment grounding conductor and a grounding type plug. The plug must be plugged into an outlet that is installed and grounded in accordance with all appropriate codes and ordinances.
11. This equipment is for use on a nominal 120 volts circuit, and has a grounding plug that looks like the plug illustrated in (A). A temporary adapter which looks like the adapter illustrated in (B) and (C) may be used to connect this plug to a two pin receptacle as shown in (B) if a grounded outlet is not available. The temporary adapter should be used only until a grounded outlet can be installed by a qualified electrician. The green colored rigid ear (lug and the like) extending from the adapter must be fastened to a permanent ground such as a grounded outlet box.



SAVE THESE INSTRUCTIONS

THE BIO-WHEEL® "MINI" SERIES

ML-23WMTH



This manual will provide you with the information you need to successfully operate and maintain your BIO-Wheel System. Please read it carefully and keep it for future reference.

Designed to deliver optimal water quality, enhanced product holding performance and superior operational ease, The Marineland BIO-Wheel Mini Systems are low maintenance, technologically advanced live seafood display systems featuring superior mechanical, chemical and BIO-Wheel wet/dry biological filtration. And their compact plumbing design allows for convenient self-contained installation.

Your ML-23WMTH system comes complete with everything you need to become fully operational:

- Consumables:
- Prefilter Pad (#CS1859)
 - Carbon/Dolomite Filter Pack (#56012)
 - Instant Ocean® Lobster Salt (#CS0309)
- Accessories:
- Hydrometer (#CA1501)
 - Thermometer (#CA1502)
 - Lobster Rake (#CA1503)

NOTE: To prepare for the possibility of extra water changes, we recommend the purchase of additional Instant Ocean Lobster Salt (enough for two water changes).

Inside the System...

In this closed system, prefiltered water exits the enclosed Sump beneath the BIO-Wheel Filtration Module and from there flows to the Water Pump. From here water is pumped either through the Protein Skimmer, through the UltraViolet (UV) Disinfection Unit, or to the display tank via the filter bed and Bi-Level Skimmer.

Water is then drawn from the system through surface and bottom skimmers and is routed directly to the BIO-Wheel Filtration Module.

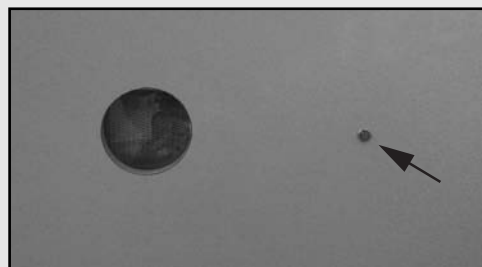
As water flows through the BIO-Wheel Filtration Module, mechanical and chemical filtration is provided by a polyfiber Prefilter Pad and Carbon/Dolomite Filter Pack. The pack adsorbs dissolved organic compounds which cause odor and discoloration.

Passing through the Filter Media Trays, filtered water spills onto the BIO-Wheel Wet/Dry Biological Filter mounted below. Because system flow causes it to rotate, the BIO-Wheel is constantly exposed to both water and air, thus developing a thriving culture of aerobic nitrifying bacteria. This bioculture efficiently oxidizes all ammonia and nitrite on contact.

From the BIO-Wheel, prefiltered water re-enters the enclosed Sump for recirculation.

Special Features

- **Reverse Flow Filtration** prevents compacting of the filter bed, ensuring cleaner water and eliminating the need for periodic filter bed maintenance.
- The **UV Disinfection Unit** helps control the spread of free-swimming bacteria, algae spores and disease throughout the system. Water enters the UV Housing, surrounding the lamp where it is exposed to UV light. This exposure destroys the DNA of the organisms, preventing them from reproducing. After exposure, water is returned to the system.
- The **Protein Skimmer** employs heavy aeration to remove dissolved organic matter from the tank in the form of foam. The foam is flushed from the system and deposited into a floor drain or waste container.
- The **Sump Level Indicator Light** is located outside the display tank, beside the BIO-Wheel View Port. It will glow red if water in the Sump drops below desired level.



THE SYSTEM

ML-23WMTH SPECIFICATIONS

Dimensions:

34" L x 27" W x 53" H*

Shipping Weight:

280 lbs.*

Capacity:

40 gallons*

Recommended Load:

Lobster: Approximately 30 - 40 lbs.

Electrical:

ETL listed for cord connected installation

Voltage:

115 VAC, 60 HZ

Current:

15 AMP

Filtration:**Mechanical Filter:**

One Polyfiber Pad, 7 1/2" x 14"

Chemical Filter:

One Carbon/Dolomite Filter Pack containing 1 lb. Black Diamond Premium Activated Carbon & Dolomite

Wet/Dry Biological Filter:

One CBW-1 Module

UV Treatment:

AQUA Ultraviolet Sterilizer - 25 watts

Installation***Connections:*****Electrical Supply:**

Cord-connected 115 VAC., 60 Hz, 15 AMP

Sump Drain:

Hose Adapter

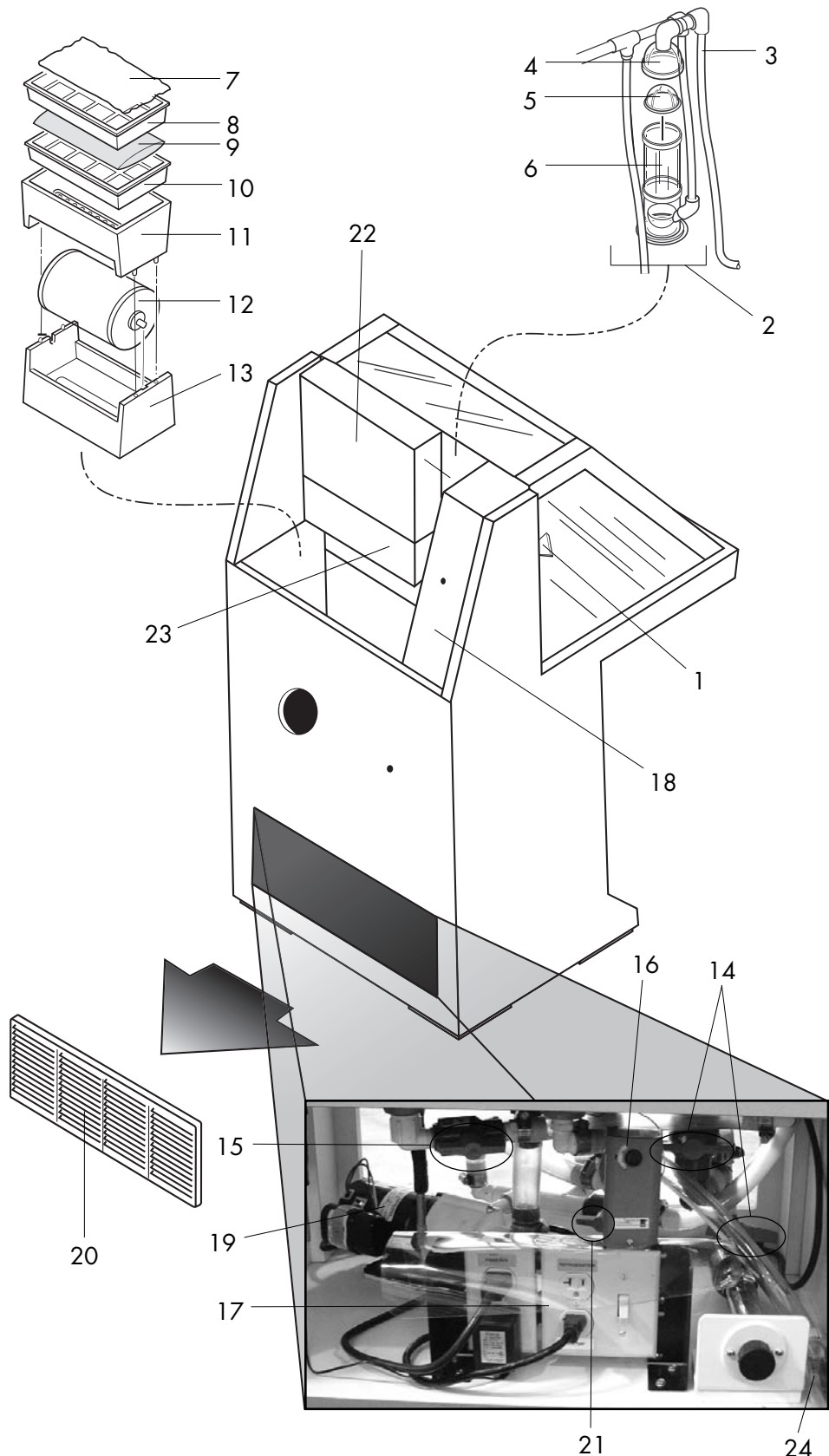
Protein Skimmer Discharge:

3/4" Flexible Tubing. Dedicated Drain (recommended) or Container

* Exact height and capacity may vary when matching case company profile.

ML-23WMTH EXPLODED VIEW

- 1 - Surface "In" Water Nozzle (#73484)
- 2 - Protein Skimmer (#CP1850)
- 3 - Foam Drain Tube (#50151)
- 4 - Froth Cup (#CP1876)
- 5 - Foam Separator (#CP1985)
- 6 - Contact Chamber
- 7 - Prefilter Pad (#CP1859)
- 8 - Upper Filter Media Tray (#CP1880)
- 9 - Carbon/Dolomite Filter Pack (#56012)
- 10 - Lower Filter Media Tray (#CP1880)
- 11 - Upper Filter Media Tray (#CP1823)
- 12 - BIO-Wheel (#CP1870M)
- 13 - Lower BIO-Wheel Housing (#CP1822)
- 14 - System Drain Valves (#50124)
- 15 - System Water Return Valve (#73769)
- 16 - Thermostat (#CP1558)
- 17 - Junction Box (#54884)
- 18 - UV Disinfection Unit (#55483)
- 19 - Water Pump (#54997)
- 20 - Rear Vented Panel (#CP2007)
- 21 - UV Intake Return Valve (#73769)
- 22 - Water Cascade Enclosure (#56009)
- 23 - Water Dist. Housing (#56010)
- 24 - Foam Drain



TANK PREPARATION

1. Locate unit near a 110–120 volt grounded outlet with a 20 amp dedicated circuit.

WARNING: Do not attempt to operate unit on extension cord or non-grounded circuit.
Do not handle or connect plug with wet hands.

2. Make sure Vented Panels are not obstructed. These panels allow cooling air to reach the compressor. They also provide access to filters, thermostat, on/off switch, drains and other components.
3. Unpack all accessories and supplies from tank.

4. Remove Vented Panels. Make sure system components are plugged into Junction Box (as shown).



5. Connect Foam Drain Tube (see exploded view, pgs. 5) to Drain Outlet or Skimmer Cup. Because the Foam Drain Tube is designed to drain off excess liquids and foam from the display tank, you will need to locate the tube over a container or floor drain.

6. Set Thermostat at 50°F.



FILTRATION PREPARATION

IMPORTANT: Your system contains five types of filters:

1. *Mechanical* - Filter pads to screen out solid waste particles.
2. *Chemical* - Premium Activated Carbon to adsorb dissolved contaminants, discoloration, odors, toxic gases.
3. *Biological* - BIO-Wheel and Carbon/Dolomite Filter Pack to remove toxic ammonia and nitrites and help maintain pH balance.
4. *Protein Skimmer* to drive dissolved organic matter from water as foam.
5. *UV Disinfection Unit* to eliminate waterborne bacteria, viruses and algae spores.

*NOTE: Ammonia (produced from animal waste and respiration) is **the** biggest killer of aquatic animals. For this reason, biological filtration is critical.*

A biological filter is a **living** filter...aerobic beneficial bacteria that consume animal waste products and convert toxic ammonia to non-toxic nitrate. When properly maintained, it keeps your product alive and healthy, your water clear. When a biological filter is overtaxed or abused, water clarity and product longevity will be affected.

Use of precultured BIO-Wheels means no need for a lengthy (6-8 week) break in period. Your bacteria culture is in place, ready to go to work. Product can be immediately loaded and displayed.

We recommend that you make an effort to keep your lobster population relatively constant. Beneficial bacteria breathe oxygen, but *consume* ammonia. No animals, no ammonia. No ammonia, no bacteria.

NEVER use soap or cleansers in or around tank.

NEVER leave tank turned off for long periods of time.

NEVER let a BIO-Wheel or gravel bed dry out.

PRIOR TO SYSTEM STARTUP, follow the few easy steps outlined below to get your system ready for operation. Refer to the Exploded View (pgs. 5, 7) for additional clarification.

Filtration Module

1. Remove Water Distribution Housing and Filtration Module Cover.



2. Remove Prefilter Pad, Upper Filter Media Tray and packaged Carbon/Dolomite Filter Pack. Set aside.



3. Unwrap Carbon/Dolomite Filter Pack. Rinse it thoroughly in cold clean water until water runs clear.



4. Place Carbon/Dolomite Filter Pack inside Lower Filter Media Tray.
NOTE: Before installing, gently shake Filter Pack to evenly distribute carbon.



5. Reinstall Upper Filter Media Tray and place blue polyfiber Prefilter Pad inside. Replace BIO-Wheel Assembly Cover.



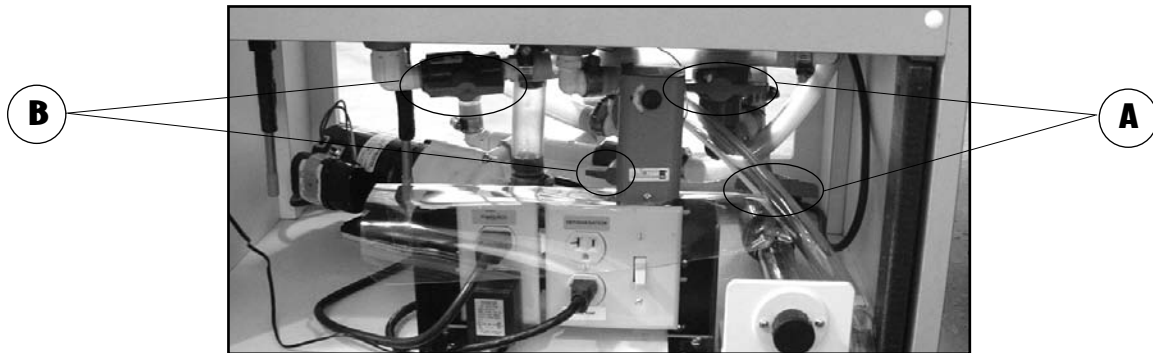
SYSTEM STARTUP

FOR SALTWATER SYSTEMS ONLY: Add approximately 16 pounds of Instant Ocean® Lobster Salt to tank. Save the remainder to adjust salinity at a later time.

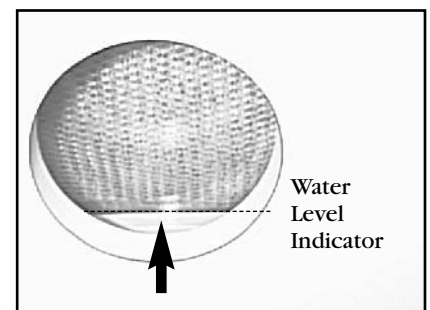
NEVER pour powdered sea salt directly into tank when lobster are present.

NOTE: When filling tank, run water through salt to dissolve it faster.

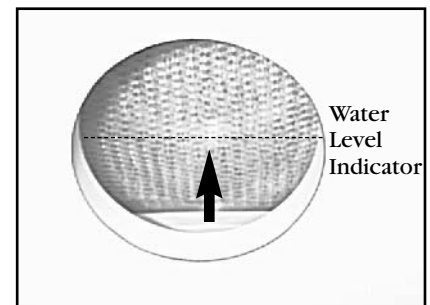
1. Make sure drain valves are closed (perpendicular to flow tube) (A). Make sure return valves are open (parallel to flow tube) (B).



2. Fill display tank until water level reaches spillway. Fill Sump until sump water level reaches bottom edge of BIO-Wheel View Port. **NEVER** allow water level to go below this point.
3. Start system. Plug power cord into 110-120v dedicated outlet and turn switch on. **NEVER attempt to plug in unit unless hands and plug are absolutely dry.**



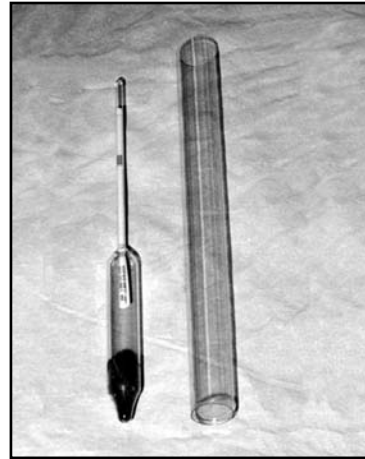
NOTE: After startup, additional water will be needed to bring water level to mid-port level. This is the ideal water level for system operation.



MEASURING SALINITY

After your system has been running for about two hours and water is clear, it is time to measure the tank's salt level.

1. Remove Hydrometer from plastic tube.



2. Rinse plastic tube and fill it with water from tank.

3. Place Hydrometer in tube and tap tube lightly so that Hydrometer floats.

NOTE: You may also float Hydrometer in tank.

4. Read scale on Hydrometer. Reading should be between 1.020 and 1.025. If the reading is below 1.020, add salt; above 1.025, drain some water and replace with fresh water (1.022 is ideal).

When replacing water lost due to evaporation, simply add cold, clean tap water.

If water is removed for a specific purpose, e.g. to dip lobsters or clean tank, new salt and water will be needed.

Always wait for salt to dissolve before taking Hydrometer reading.

Never pour new salt into tank if lobsters are present. Use a clean container to dissolve salt (approximately 1.5 lbs of salt to every 5 gallons of water).

AFTER 24 HOURS...

If you have ordered a precultured BIO-Wheel, it will be delivered in a separate container on a prearranged date. At that time, you should first assemble and install the BIO-Wheel module...and then add product.

1. Shut down system.

2. Remove Filtration Module Cover.



3. Remove Prefilter Pad and Upper Filter Media Tray. Set aside.



4. Remove Carbon/Dolomite Filter Pack. Set aside.

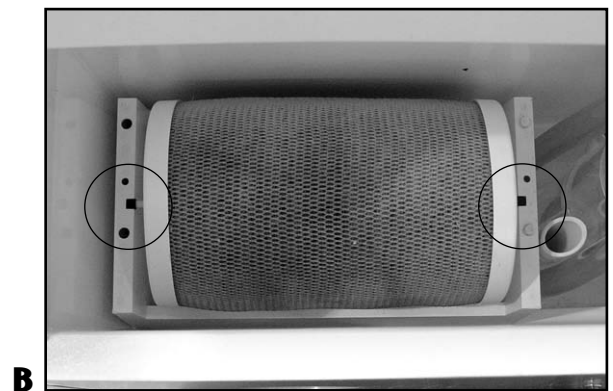


5. Lift out Lower Filter Media Tray and set aside.

6. Remove Upper BIO-Wheel Housing. Set aside.



7. Place precultured BIO-Wheel in Lower Housing(A). Tray guides and BIO-Wheel Axle will ensure correct positioning (B).



8. Place Upper BIO-Wheel Housing over BIO-Wheel and on top of Lower BIO-Wheel Housing.

NOTE: Housings are not interchangeable. Holes in Upper Housing allow water flow to BIO-Wheel.



9. Install Lower Filter Media Tray and replace Carbon/Dolomite Filter Pack inside.

10. Install Upper Filter Media Tray and replace blue polyfiber Prefilter Pad inside. Replace Filtration Module Cover.

11. Restart system.

ADDING ANIMALS

Lobsters

Set salinity (1.020-1.025). Adjust water temperature (50°F). Before introducing new lobsters into the system, dip each lobster and rinse it thoroughly in a bucket of saltwater. Dipping removes accumulated shipping debris and prevents lobsters from fouling tank.

NOTE: Do not leave lobsters unattended in purging container for any length of time without oxygenating water. They may suffocate.



NEVER use fresh water for lobster dips...it will kill the lobsters.

For best results, rinse water should be taken from the established display tank, discarded after use and replenished according to guidelines on pg. 11.

MAINTENANCE

To ensure optimum operational efficiency, routine maintenance must be performed. The procedures listed below are neither difficult nor time consuming. Failure to follow these simple maintenance steps will adversely affect system performance and could lead to premature failure of some components. We recommend setting up a maintenance log to track procedure completion.

Daily

Check tank for fatalities and weak or damaged stock. Remove immediately.

Check Water Pump and BIO-Wheel Operation.

Observe flow of water to the BIO-Wheel Assembly. Make sure that water flow to the BIO-Wheel is not blocked or restricted in any way. The BIO-Wheel should rotate freely and remain wet at all times. Speed of rotation is not important. If a BIO-Wheel is turning - regardless of the rate - it is working.

NOTE: A properly cultured BIO-Wheel is brown or discolored. There is no reason to clean a BIO-Wheel or replace it - unless it is damaged. If removed from the system, make sure that it is kept moist and exposed to air until you reinstall it. If a BIO-Wheel is allowed to dry out or is inadvertently exposed to a contaminant, the bioculture may be destroyed. A precultured replacement can be purchased directly from Marineland Customer Service (see back cover).

If water level is low and/or flow interruption is evident, make sure all Intake Valves are open and check Pump Intake (in Sump) for obstructions. If no obstructions are found, consult Troubleshooting Guidelines section in this manual.

Never Run Pump Dry!

This will cause it to fail and results in costly replacement.

Every Two Weeks (or as needed)

Clean or Replace BIO-Wheel Prefilter Pads. Replace Carbon/Dolomite Filter Pack.

Clogged filters do not collect waste. Uncollected waste is returned to the aquarium and will reduce system efficiency. In addition, keeping the Prefilter Pad and Carbon Filter Pack clean and unrestricted is critical to the successful operation of the BIO-Wheel. It must receive clean, prefiltered water to keep bacteria healthy and thriving.

To replace Prefilter Pads and Carbon/Dolomite Filter Pack, follow the instructions in the preceding “After 24 Hours...” section. Rinse or discard used pads. Replace Carbon/Dolomite Filter Packs and rinse out Filter Trays before replacing.

NOTE: Remember to thoroughly rinse Carbon/Dolomite Filter Pack until water runs clear.

Wipe Down All Exterior Surfaces

A vinegar/water solution (3 tablespoons vinegar to a pint of water) may be used with a clean rag or paper towel. **Never** use chemicals, soaps, detergents or harsh abrasives on any part of the system. **Do not** use cleaners inside or near the system at any time.

Warning: Never spray insecticides within 20 feet of your system. The resulting contamination could kill your product and destroy your biological filter. If you must use insecticides, be careful to turn off the system and cover the open sump until the odor has cleared from the area completely. Then don't forget to turn the system back on.

Inspect Display Tank and Sump for Algae Growth.

Algae spores enter the system naturally via tank inhabitants. Light allows them to grow. Although your system's UV Disinfection Unit works to eliminate algae spores, the more light you have, the greater the potential for algae growth. To remove algae, simply wipe inside tank surface with a cloth, algae scraper or acrylic cleaning pad. **NEVER** use soap or metal scouring pads. Maintain a separate cloth *only* for the tank. It should be kept clean and isolated from other departments so that it does not get contaminated by multiple task use.

Clean Protein Skimmer Froth Cup/Foam Separator.

To ensure proper operation, Froth Cup and Foam Separator should be cleaned every week with warm water.

To remove Froth Cup and Foam Separator:

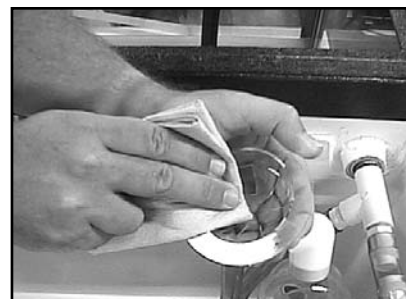
1. Turn off system.
2. Remove Filtration Module Cover.
3. Remove Upper Media Tray. Set aside.
4. Remove Lower Media Tray and Upper BIO-Wheel Housing.
5. Remove Protein Skimmer Drain Hose from Drain Port.



6. Remove (lift) Froth Cup from Contact Chamber.



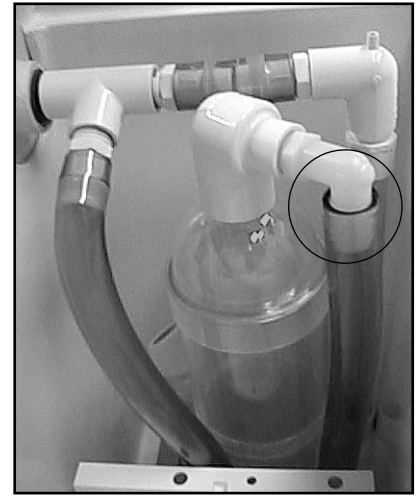
7. Clean Froth Cup and Foam Separator.



8. Return Cup and Separator to position atop Contact Chamber.

NOTE: Make sure that a good seal forms around Cup and Chamber.

9. Reconnect Protein Skimmer Drain Hose.



10. Replace Upper BIO-Wheel Housing, Lower Media Tray (with Carbon/Dolomite Filter Pack), Upper Media Tray and Prefilter Pad.

11. Restart System. Inspect Skimmer for leaks.

12. Replace Filtration Module Cover.

SPECIAL SERVICING-U.V. DISINFECTION UNIT

IMPORTANT: Always unplug your system before disconnecting or installing any parts, or before cleaning.

Every six months...

Replace UV Disinfection Unit

1. Unplug unit.
2. Unscrew UV Panel (3 screws). Remove Panel and set aside.



3. Unscrew Davis Connector and separate from Transformer Cap.



4. Unscrew Transformer Cap.



5. Slide lamp straight up from casing while it is still connected to the Transformer Cap.



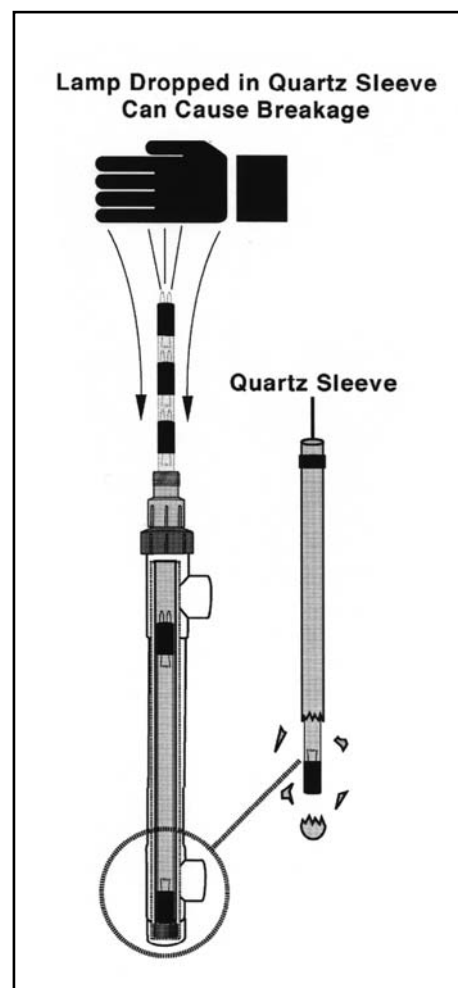
6. Holding on to exposed Lamp, disconnect Transformer Cap Lamp end from Lamp End Connector.



7. Carefully lift Lamp (straight up and out) from casing.



8. Replace UV Lamp. Holding firmly at one end, partially slide replacement lamp into casing. DO NOT RELEASE LAMP.
9. Connect replacement lamp to Lamp End Connector and carefully slide lamp into casing.
10. Attach Transformer Cap and Davis Connector. Replace UV Panel.



NOTE: We strongly recommend that any other servicing of the UV Disinfection Unit for the Marineland ML-23WMTH be performed by a qualified technician or trained associate. If you or your staff are not familiar with aquatic filtration systems design and installation, call MARINELAND CUSTOMER SERVICE for a service referral.

TROUBLESHOOTING GUIDELINES

For a service referral, call Marineland at 1-800-322-1266.

If entire system abruptly shuts down...

- Reset circuit breaker in main electrical panel.
- Check to make sure unit is plugged in.
- Make sure Master Switch is turned on.

If water turns yellow or odors develop...

- Replace Carbon/Dolomite Filter Pack.
- Make sure U.V. Disinfection Unit is operating properly.
- Check Protein Skimmer for clogged Discharge Tube.

If BIO-Wheel fails to rotate...

- Inspect Prefilter Pad and Carbon/Dolomite Filter Pack for clogging. Clean or change as needed.
- See if BIO-Wheel is obstructed. Check for impeded rotation and reinstall.
- Ensure that Sump is not overfilled. Check Return Tube for obstruction.

If water flow to BIO-Wheels stops or flow is sluggish...

- Inspect Pump Intake Strainer in Sump. Clean and/or remove any debris or obstruction.
- Make sure Pump is plugged into proper outlet, motor fan is turning and all valves are open (parallel to direction of flow pipe).
- Check Filter Pads and replace if impacted.
- Call Customer Service if problem persists.

Pump Intake Strainer



If water temperature is too low or too high...

- Check Thermostat setting.

NOTE: Thermostat reading may differ from measured Holding Tank temperature... adjust thermostat as required and monitor Holding Tank temperature with thermometer, allowing 3-4 hours for temperature to stabilize before checking again.

- Make sure that power cord is plugged into proper outlet.
- See that Thermostat is at desired temperature level and is not damaged.
- Inspect Intake Vents. Clean if necessary.
- Call Customer Service if Thermostat is malfunctioning.

If UV Lamp goes out...

- Confirm that UV power cord is plugged into appropriate outlet.
- Replace UV Lamp (according to guidelines in UV Lamp Section). If problem persists after UV Lamp is replaced, call Customer Service for replacement part and/or further assistance.

If one or two lobster are lost shortly after arrival...

- Remove from tank.
- Check water salinity. Adjust if necessary.
- Monitor temperature carefully. Adjust if necessary.

If a large number of lobster are lost and water is clear...

- Change water and replace Carbon/Dolomite Filter Pack immediately.

CUSTOMER SERVICE

**Should you experience problems with your system,
call Marineland at (800) 322-1266.**

To order any of the replacement items listed below, call (800) 322-1266.

WEEKLY USE ITEMS:

- | | |
|--|---------------|
| 1. Prefilter Pads – Blue | CS1859 |
| 2. Carbon/Dolomite Filter Packs | 56012 |

SERVICING ITEMS:

- | | |
|--------------------------------------|---------------|
| 1. UV Lamp | 55206 |
| 2. Hydrometer | CA1501 |
| 3. Tank Thermometer | CA1502 |
| 4. Lobster Rake | CA1503 |
| 5. Instant Ocean Lobster Salt | CS0309 |

LIMITED WARRANTY

Marineland warrants their systems for one year against defects in materials or workmanship. This warranty applies only to the system and does not cover water quality, live product, replacement parts or maintenance supplies.

If your system is found to be defective - and has not been modified, damaged or misused - call Marineland Commercial Aquariums (toll free) at (800) 322-1266 or fax us at (805) 529-3030. All calls received during regular business hours (8am - 5pm, Pacific Time) will be responded to within 24 hours. Please have your manual and the system serial number ready.

In most cases, the problem will be resolved by a simple maintenance procedure, recommendation or repair authorization. Upon authorization, and in instances where outside repair or replacement of parts is necessary, Marineland will absorb all appropriate costs.

Damage or injuries resulting from negligence, misuse or user modification are not covered by this warranty. Incidental or consequential damages are specifically excluded.* This warranty gives you specific legal rights. You may also have other rights which vary from state to state.

* Because some states do not allow the exclusion of incidental or consequential damages, this exclusion may not apply to you.



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All Fluorescent Lamps
and Ultra Violet Lamps
contain mercury.
Dispose of Properly.

