



Mach
III



TM

C-Level

Replenishment System

Pat. Pend.

User's Guide

WARNING!

USE THIS PRODUCT AT YOUR OWN RISK.
BY USING THE PRODUCT YOU AGREE NOT
TO HOLD C-HORSE SYSTEMS INC.
RESPONSIBLE FOR ANY DAMAGES
OR INJURY.

DO NOT under any circumstances allow the controller unit to be submerged or get wet.

If unit gets wet, unplug and discontinue use immediately.

DO NOT refill replenisher tank with the splash-guard in the up position.

DO NOT allow the replenisher tank to overflow while refilling.

DO NOT use controller without the C-Level splash guard.

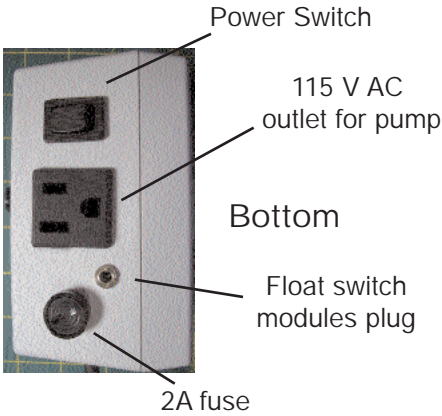
DO NOT Disassemble controller. There are no user-serviceable parts inside.

Components



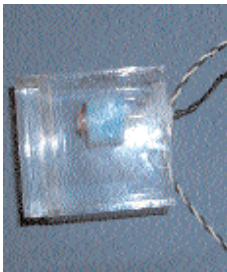
Controller

Continuously checks the float switches and reacts accordingly. Visual feedback includes power, pump active and replenisher tank empty. Manual controls include pump-on duration and manual pump trigger.



Sump float switch module

Installed in the aquarium sump. Float switch senses the water level. This switch is looked at sever thousand times per second by the controller's computer.



Replenisher tank float switch module

Installed in the C-Level replenisher tank (or your own replenisher tank), float switch senses water supply level.

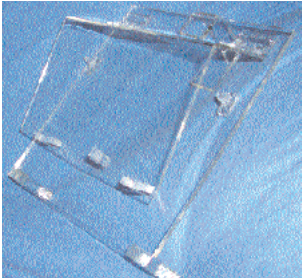
Replenisher Pump
Installed in the replenisher tank and controlled by the electronic controller, this pump activates when water needs to be pumped into the sump.



Components Cont.

Plumbing

Included as part of the replenisher tank. Modular, screw-together plumbing assembly.



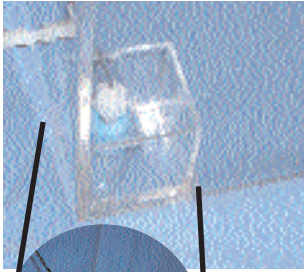
Splash guard/Mounting bracket

Used when supplying your own replenisher container. NOT needed when using one of the C-Level replenisher tanks. This hand-crafted acrylic assembly keeps your C-Level controller high and dry.

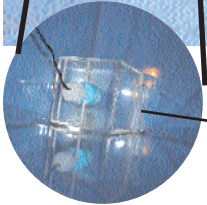
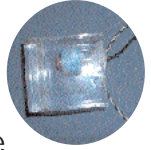
Installation

1

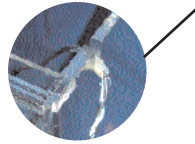
Install replenisher float switch assembly in replenisher tank



Place the replenisher float switch assembly inside the replenisher tank. Position the assembly inside the corner with the float guides. Make sure the small hole in the assembly points towards the middle of the tank and that it is not blocked. Route float assembly wire through the slit in the tank as shown.



Flow Hole



2

Install replenisher pump
Connect the output of the replenisher pump to the plastic plumbing assembly and position as shown.

Route pump power cable through the slit in the tank same as the wire on step 2

Cut a length of 1/2 inch hose long enough to reach from the end of the plastic plumbing assembly to well inside the sump. This will be your replenishment hose. Attach one

end to the top end of the plastic plumbing assembly.



3

Plug float switch modules and pump
Plug in the pump power chord into the AC receptacle on the bottom of the controller. Plug the float-switch modules into the plug as shown.

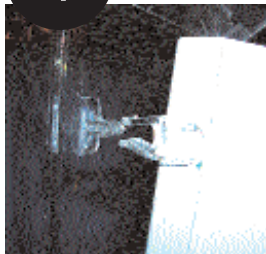


Installation Cont.

4

Install controller

Snap controller into place using the 3 snaps as shown.

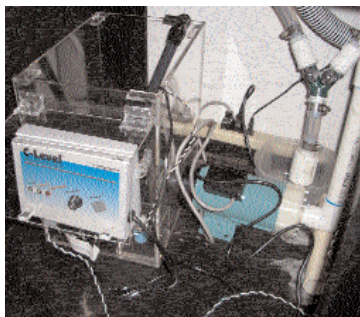


5

Position unit

Place the unit where in a location where it can be easily refilled. The face of the controller should be visible and it should be

close enough to the sump (wet-dry, refugium, etc.) to allow the sump float switch assembly to reach.



6

Install sump float switch assembly

Choose a place in your sump to position the sump float-switch assembly. The location should be such as to not interfere with other maintenance tasks such as changing filters, emptying protein skimmer collection cups, etc. See the following section for instructions on setting the water level.



PLEASE NOTE:

MAKE SURE REPLENISHER HOSE IS NOT SUBMERGED OR TOUCHING THE WATER IN THE SUMP OTHERWISE IT WILL CREATE A SYPHON. THIS COULD CAUSE EXTRA WATER TO BE DUMPED INTO THE SUMP OR BACK INTO THE C-LEVEL TANK.

Adjusting water level

Step 1. Set water level in sump

Make sure the water level in your sump is where you wish to keep it. If water has to be added, do it now.

Step 2. Prepare C-Level

- a) Turn unit OFF and fill with water.
- b) Connect a hose to the plastic plumbing, place the other end inside the C-Level tank. DO NOT place the hose in the sump yet.
- c) Turn the duration knob all the way to the left (counter clockwise) this will disable the pump duration for easier setting.

Step 3. Adjust sump float switch assembly.

The water level is controlled by the float switch.

- a) Loosen the nylon wing-nut on the sump float switch assembly and push the float switch slider until the float switch is fully submerged.
- b) Turn on the C-Level unit.
- c) Pull the float switch slider up until the pump light illuminates and the pump motor engages.
- d) Push the slider down just enough to make the light turn off and the pump stop.
- e) Tighten the nylon wing-nut.

Step 4. Adjust pump duration

Adjust the duration knob to around mid-way and test by lifting the float switch assembly until pump engages. If a longer duration is desired, turn the knob further to the right. If a shorter duration is desired, turn the knob to the left.

Adjusting water level (Cont.)

Step 5. Position replenishment hose

Take the replenishment hose from the replenisher tank and place in the sump so that water flows into the sump when pump activates instead of back into the replenisher. Make sure that the hose cannot accidentally come out of the sump as this will cause a spill the next time the C-Level unit tries to put water in your sump.

Step 6. Place lid on replenisher tank.

To help prevent evaporation of the top-off water, place the acrylic lid securely on the replenisher tank..

Your C-Level unit is now ready. If you ever need to change the sump water level, simply loosen the nylon wing-nut and slide the float assembly up to raise the water level and down to lower it.

PLASE NOTE:

MAKE SURE REPLENISHER HOSE IS NOT SUBMERGED OR TOUCHING THE WATER IN THE SUMP OTHERWISE IT WILL CREATE A SYPHON. THIS COULD CAUSE EXTRA WATER TO BE DUMPED INTO THE SUMP OR BACK INTO THE C-LEVEL TANK.

Setting The Fail-Safe Option

The C-Level V2 controller features a programmable fail-safe to prevent flooding in the unlikely event of a float-switch malfunction (stuck float). If the computer senses a pump duration longer than a specified time, it shuts down and enters an error mode. When in error mode a monotone beeping will be heard accompanied by all three status lights blinking.

There are 3 possible settings for the fail-safe feature. Setting 1 is 20 seconds, setting 2 is 40 seconds and setting 3 is one minute. If pumping lasts more than the setting, the unit will enter error mode.

Changing the fail-safe trigger time



1) Turn unit off

2) Turn unit on while holding down the "manual" switch. An audible tone different than the normal startup tone will be heard.

3) Press the "manual" switch to change the setting.

1 Light on = 15 seconds

2 Lights on = 20 seconds

3 Lights on = 40 seconds

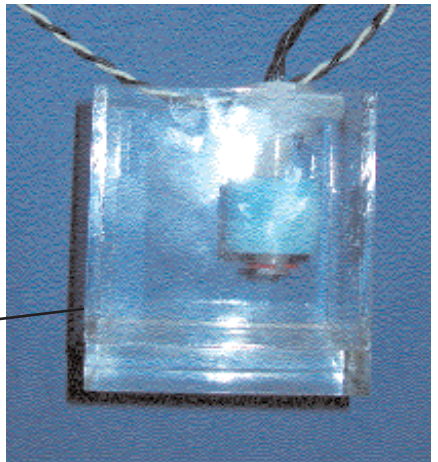
Maintenance



The C-Level unit is designed to be a "set it and forget it" system. The only maintenance required on a regular basis is the addition of water to the replenishment tank as needed. When the replenisher tank is empty, the red light will illuminate and a beeping tune will be heard.

Every 30 days or so, check the drain hole in the replenisher float switch assembly to make sure it's clear. If this hole becomes clogged, the pump would be allowed to run dry, triggering the fail-safe error mode.

Hole



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Patents pending.