

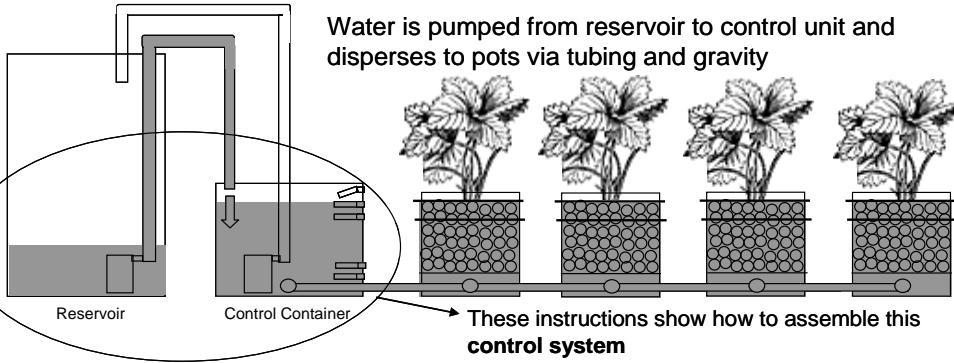
**Never remove the cover of your Ebb & Flow Controller. Removal of the tamper label voids your warranty. If you have problems with your controller please email us at [service@aquahub.com](mailto:service@aquahub.com). We check our emails often. We will be happy to help you.**

Your Ebb & Flow Controller is a modular controller that allows you to select the size and type of control container you want to use and determine the watering levels you want. Each depressed tab on the timer represents one 15 minute flood cycle. The drain cycle is engaged at all times that a flood cycle is not active. **This controller can control pumps up to 10 Amps at 120VAC.**

Consult with your local hydroponics store or the internet to determine certain things about managing your ebb and flow set-up such as planter arrangement, nesting the planters, fittings, ph levels, watering times (and levels), growing media, etc. This kit provides the electronic controller used to manage the level in your control container.

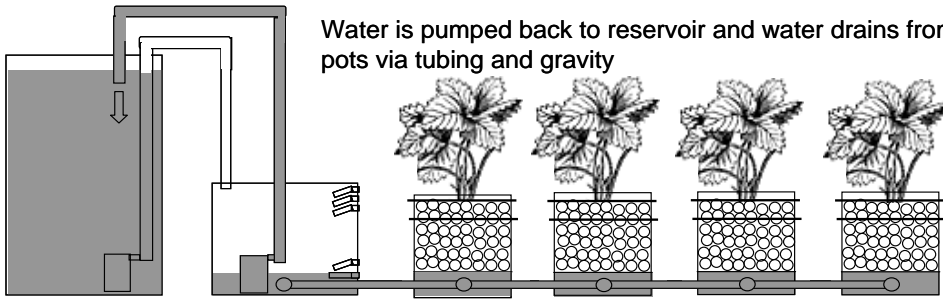
### Fill-Up System Filling Planters

Water is pumped from reservoir to control unit and disperses to pots via tubing and gravity




### Drain-Out System Emptying Planters

Water is pumped back to reservoir and water drains from pots via tubing and gravity




**Contents:**

- 1 Ebb & Flow Controller with Wall Plate



- 5 Color-coded Horizontal Float Switches



**Purchase Separately:**

- 2 pumps (each < 10 amp at 120VAC)
- Tubing, fittings, control container
- Always*** use the GFCI cord provided with this controller.

## 1. Mount the float switches in a plastic control container.

Mount the float switches in a flat-sided container made of a material that can be drilled into. Polypropylene and HDPE work well.

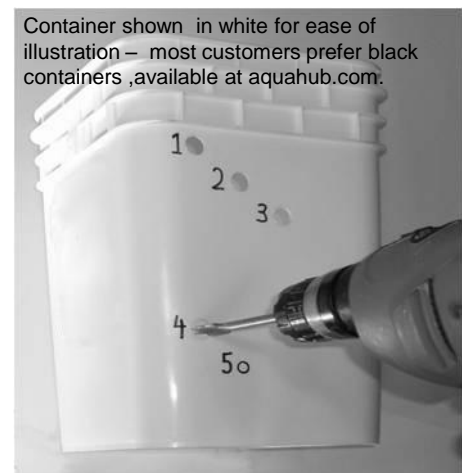
**NOTE: The container shown in these instructions is for illustration purposes only. Switch placement and proportions may vary in your system depending on the size and shape of your control container and the watering level you select.**

Lay out the control container and planters on a **flat surface** and determine how high you want the water to rise in the planters, sizing the reservoir and control container appropriately. The water level is up to you. These instructions show you where to place the float switches to maintain the level you choose. The high water point will be the same height off a **level floor** in the control container as it is in the planters, since the water will seek its level via gravity as it flows between the containers. Mark the side of the control container where you want each switch, placing them at least 1" apart horizontally and using the guide below.

- 1) **Red Cable: Backup Fill Shutoff Switch** – shuts off the fill system if switch 2 ever fails.
- 2) **Black Cable: Fill Shutoff Switch** – place at your desired high water level for your system.
- 3) **Blue Cable: Fill Turn-On Switch** – place about 1" below the Fill Shutoff Switch.
- 4) **Yellow Cable: Drain Turn-On Switch** – place about 1" above the Drain Turn-Off Switch.
- 5) **White Cable: Drain Turn-Off Switch** – place as low as possible **but don't let the float touch bottom** and make sure that your pump will not run dry if it is not designed to do so. If the float is placed as low as possible without touching the container bottom, the pump will stop when the water depth is pumped down to about 1". Adjust accordingly.

Drill switch holes using a 5/8" Spade drill bit, using low pressure. Don't use a knife to cut the holes. De-burr holes with coarse sandpaper.

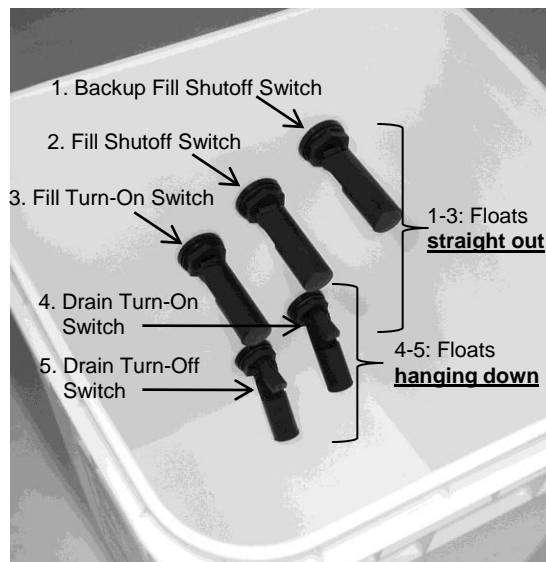
**Question: Why does the controller use two float switches for the fill and drain points?**  
**Answer:** The switches are very sensitive. Using one to maintain a level would cause rapid cycling as nutrient flowed in and out of the control container. Your Ebb & Flow Controller isolates the function of each float switch to allow for separation of the on and off levels.



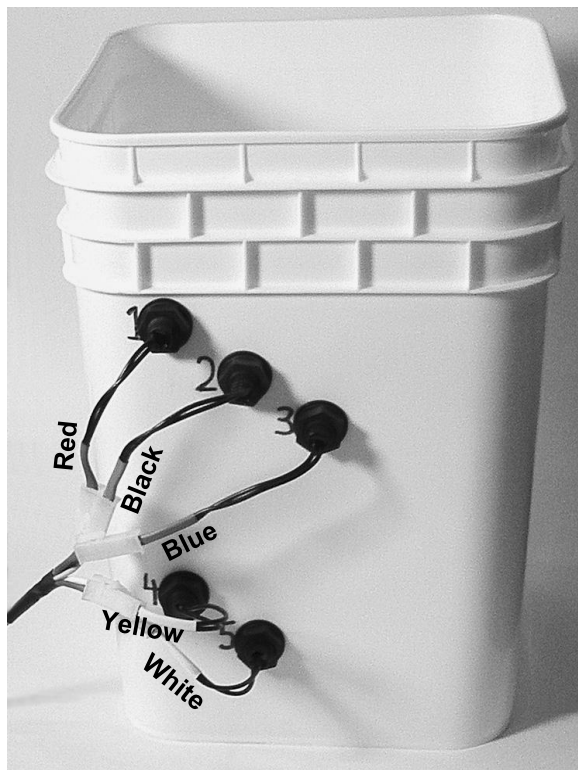
Remove the nut and washers from each of 5 switches and insert into the holes using the color guide on page 1. Be gentle and do not bend the wires where they meet the connectors. The wide end of the rubber washer goes against the inside of the container, the plastic washers and nuts on the outside.

Snug nuts enough for a watertight seal. Don't over-tighten. The rubber washers fold over on themselves as you tighten to create a great seal.

**The top three switches should be rotated so that their floats are sticking out straight and the bottom two switches should have their floats hanging down.** All switch hinges should be level (i.e. parallel with the bottom of the container).



## 2. Connect the Float Switches to the Controller.



**NOTE: DO NOT BEND THE WIRES WHERE THEY MEET THE CONNECTORS**

Carefully match the colors of the male connectors from the controller with the female connectors on each float switch. Push together until they lock into place.

Mount the wall plate in a location where it is close enough for the float switch control cord to reach the control container but also high enough for easy timer adjustments.

Do not mount the controller where it could accidentally be dropped into the reservoir or control container. Use the included wall anchors if you are attaching to drywall.

Mount the controller on the wall plate. The Velcro is very strong but you must be sure the Velcro strips are aligned and that the controller is pressed firmly to the wall plate.

When you plug the GFCI cord into an outlet your system will be on. If it does not function, try hitting the reset button on the GFCI.

## 3. Complete Your Set-up.

- Plug pumps into their respective outlets on the controller. Pumps must draw less than 10 Amps.
- Place the fill-up pump in the reservoir and the drain-out pump in the control container; run tubing for each.
- **KEEP THE DRAIN-OUT PUMP 3" FROM THE FLOAT SWITCHES. THE PUMP'S MAGNET CAN INTERFERE WITH THE FLOAT SWITCHES.**
- Any buzzing sound in the controller is an indication of magnetic field issues – move the drain pump away from the float switches.
- Prevent siphon issues by assuring that the end of each section of pump tubing will never be below where it connects to its pump.
- Connect your pots to the control container (see page 1 - you'll need to research ways to do this).
- Fill the reservoir with water/nutrient and program the timer for the fill cycles as desired. **Each tab pushed in on the timer turns on the fill system for 15 minutes.** When the fill-up system is off, the drain-out system is on. The float switches control the pumps for each system. Test your set-up carefully and watch the first few fill cycles to confirm that it is working to your expectations.

**Maintenance:** Test your system monthly, turning the timer to simulate reaching the time of day for filling and emptying the control container. **Make sure your system is functioning on the main fill-up switch and not the backup switch.** Clean the switches by gently rubbing the stems and pivot points with a soft cloth about once a month. Make sure that they are moving up and down freely. For replacements go to [aquahub.com](http://aquahub.com). Send questions to [service@aquahub.com](mailto:service@aquahub.com) or call us at 1-800-514-3847.

**Switch Failure:** If a switch fails (very rare), inspect your system for assembly errors or poor connections. If your switches are not cleaned from time to time, they may gather deposits and stick.

**Troubleshooting:** If your system does not initially function, try re-setting your GFCI cord. Occasional electrical spikes can cause the GFCI to trip. If your system stops working, press the reset button on your GFCI first to see if that is the problem. Even a tiny drop of water splashing onto the GFCI can cause it to trip. Using pumps that draw more than 10 Amps will blow the controller's fuse. The fuse is located on the bottom of the controller box and is replaceable with a 10A fuse, type 3AG.