

If you're really going to start from scratch:

1. Make sure you have a "bell" 2 diameters bigger than the down tube. This allows enough water to be "sucked" up while not allowing any air to enter the siphon.
 - a. 1" down tube = 2" bell
 - b. $\frac{3}{4}$ " down tube = 1.5" bell
2. Make sure you have some sort of decrease in the diameter of the down tube. This creates a "venturi effect" to suck out the air.
 - a. Mine is under the grow bed. 2" down tube going to a 2" x 1.5" reducer" going into a 90 elbow with a short (2-3" long at least) length of 1.5" pipe. Here's a picture of the original before I added the 90° elbow.



3. Make sure cap on bell is sealed. Any air leakage here will cause failure. After gluing, I turned it upside down and filled it with water. Let it set for a few (5?) minutes. If no leakage, you're good to go.
4. Make sure your openings in the bottom of the bell are BIG!!! I cut mine 1" high and only left 3 tabs to support the bell. I'm suggesting (no proof!) that you leave no more than 25% of the diameter for the tabs. Here's mine:



5. Make sure all assemblies are in place:
 - a. Bell siphon
 - b. Down tube
 - c. Reducer in down tube or under bed.
 - d. Gravel guard
6. Be aware that by placing gravel in the grow bed, the weight may alter the bottom and shift the down tube from vertical. (This caused me considerable grief!)

7. Startup (this is where a tee in the grow bed supply line will be extremely helpful.):



1. Adjust flow to grow bed (GB) to allow “some” of the flow to come out back directly into the fish tank (FT). Please note that the adjustment valve is not linear. Half open does not give half of the flow, more likely 75%. A quarter open is a good place to start. Be aware that the flow into the bed needs to be high enough to create the vacuum and slow enough not to overrun the drain rate.
 - a. If siphon starts, let cycle for a couple of hours to allow any loose rocks/debris, water leaks, shifting base, etc. to show up. After a couple of days, you should be good to go!
 - b. If siphon does not start:
 - i. Did the siphon start and not quit?
 1. Turn down the flow and watch.
 - a. If it stops, go to 7.1.b.
 - b. If it doesn't, turn down flow and repeat.
 - ii. Does the water just run out the siphon with no initial gush?
 1. Turn up the water flow and watch.
 - a. If it starts, go to 7.1.b.
 - b. If it doesn't, turn up the water flow and repeat.
 - iii. Make adjustments to water flow in small increments. I try to use $\frac{1}{2}$ of the previous change. (i.e. I opened the valve $\frac{1}{2}$ before and it's too much. I would turn down to $\frac{1}{4}$ and see what happens.)

Hopefully, this has gotten you started on your way. I've been running mine nonstop for over a month now. The only issue has been when the rain fills the fish tank so that the drain outlet is below the water level. I then have to let out some of the water. Future modifications will include an over flow pipe so the upper water level is automatically taken care of.