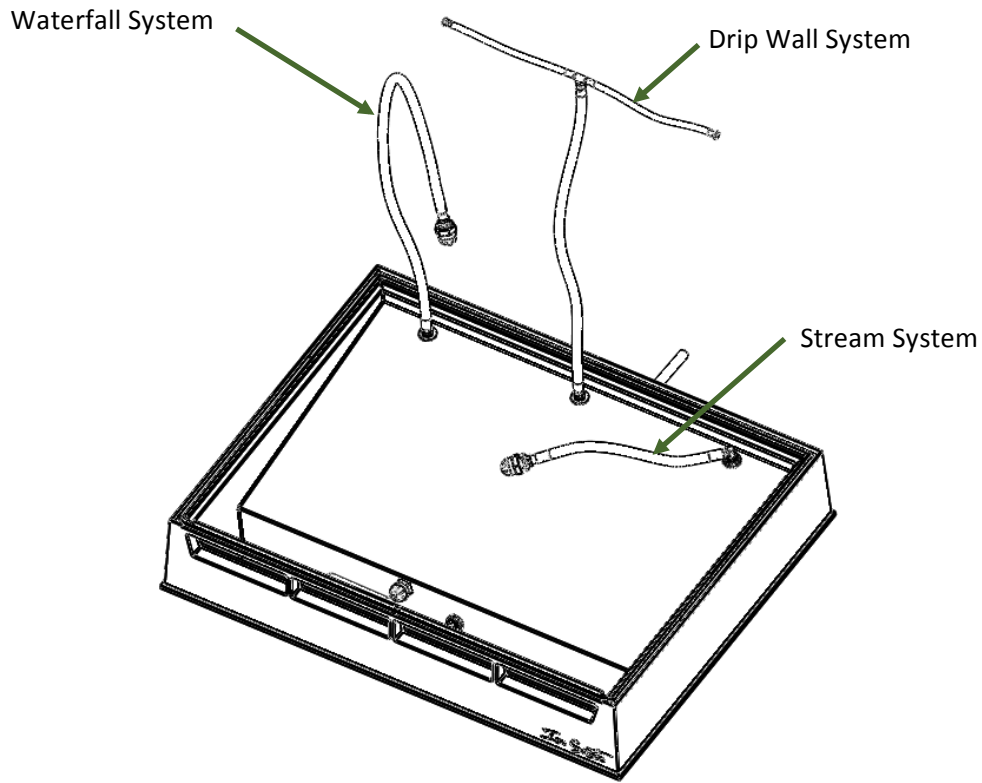


# Factory Installation

## Rio Water Flow System



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## System Design

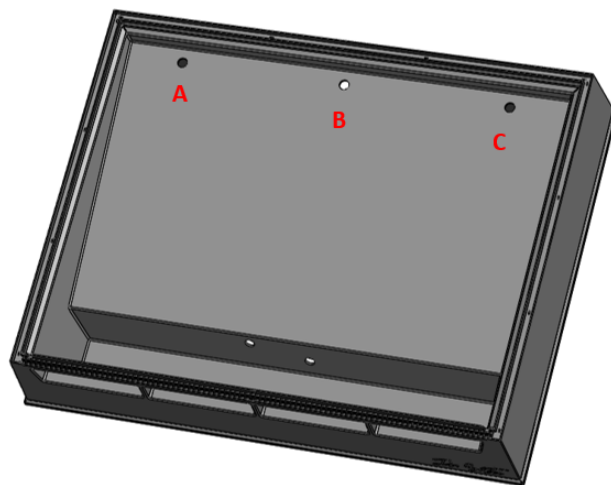
The Rio water flow system is our approach to incorporating water features in our vivariums. Purchasers have the option for either factory or do-it-yourself (DIY) installation. This manual is for the Factory Installation version. Both approaches include the ability to create either a stream, waterfall or drip wall. With the factory installation, you can decide which configuration you prefer (stream, waterfall, or drip wall), which determines where the base penetration will be made for the water feed line.

## Factory Installation Options

If you prefer factory install of your Rio water flow system, a base penetration location must be specified (A, B or C) when placing your order. It is also possible to place the penetration in other locations. To request this, copy this image and mark a clear "X" where you would like the penetration to be. **Note:** it is not possible to locate the penetration any closer to the back edge than shown here, as there are interfering molded features.





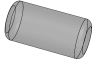








It should be noted that penetrating the bottom of the vivarium results in superior performance of water flow and pump energy. The DIY kit requires the vivarium bulkhead pass-through be accomplished at the top of the vivarium. This forces the pump to push water to the top of the vivarium's height, which requires more energy and reduces the pump's efficiency. Further, once the water column is at the top of the configuration, any downward slope of the tubing causes a siphon. If the siphon is not broken, it becomes difficult to control the outflow rate (hence the modified elbow and anti-siphon feature. When the penetration occurs at the bottom of the vivarium, the water column required is only as high as you determine, and no siphon is created. This results in lower energy requirements from the pump and better flow control.

Below are the possible factory installation pass-through locations, as determined by you upon ordering:







## RIO Water Flow System Components





### Basic Kit Components

Balloon Number	Item	Part Number	Description	Quantity
12		4501-1310	Pump Assy	1
4		F014MC	Bulkhead Fitting	1
2		1001-1260	Strainer	1
7		TR014x0532	Bulkhead Fitting - Elbow	1
9			Filter Sock	1
8			Tube - Trough Inlet x 0.25 x 2.5	1
15			Tube - Pump Inlet x 0.25" x 10.0"	1
16			Tube - Pump Outlet x 0.25" x 24"	1
42			Tube – Drain	1
38		Tee x 0.25	Anti-siphon Tee fitting	1
		M3x16	Pan Cross Head SS Screw	2
		M3	Flat Washer - SS	2
		M3	Nut - SS	2
		DSCN1533	Regulated 9v 5.5/2.5 Power Supply	1
		66-9797-10	Potentiometer	1






## Waterfall System Components

Balloon Number	Item	Part Number	Description	Qty In Situ
17		F014X014C	Bulkhead Fitting - Passthrough	1
2		1001-1260	Strainer	1
23			Tube - Waterfall Outlet x 0.25" x 20"	1
4		F014MC	Bulkhead Fitting	1

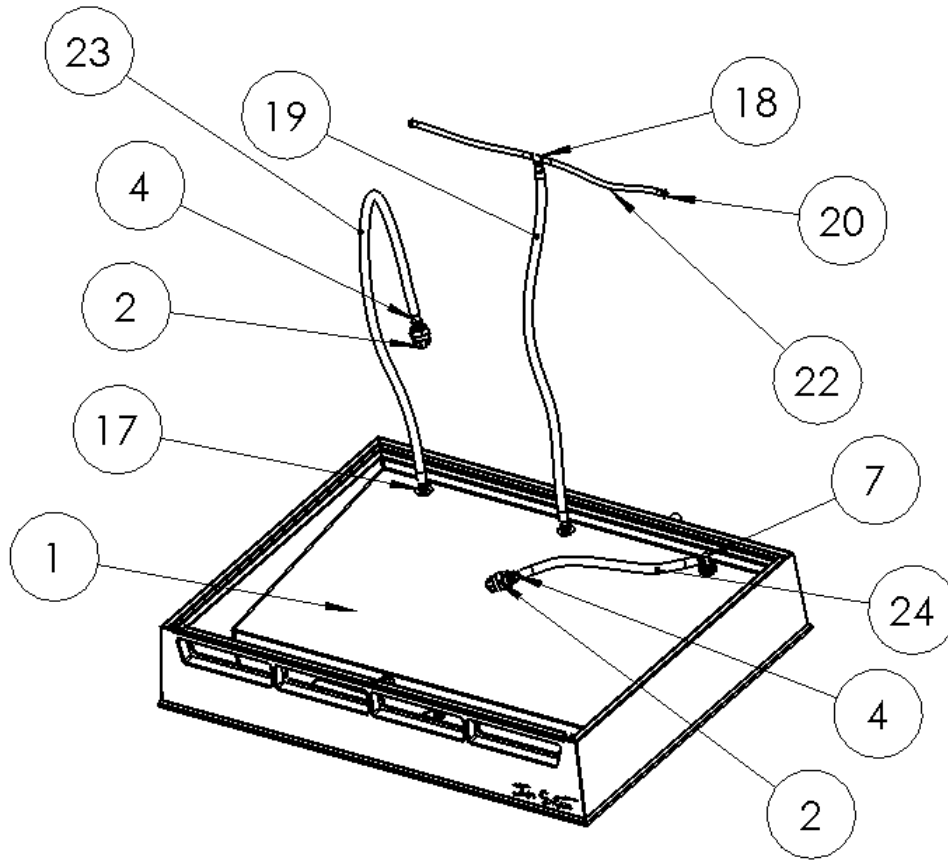
## Stream System Components

Balloon Number	Item	Part Number	Description	Qty In Situ
7		TR014x0532	Bulkhead Fitting - Elbow	1
2		1001-1260	Strainer	1
24			Tube - Stream Outlet x 0.25" x 10"	1
4		F014MC	Bulkhead Fitting	1

## Drip Wall System Components

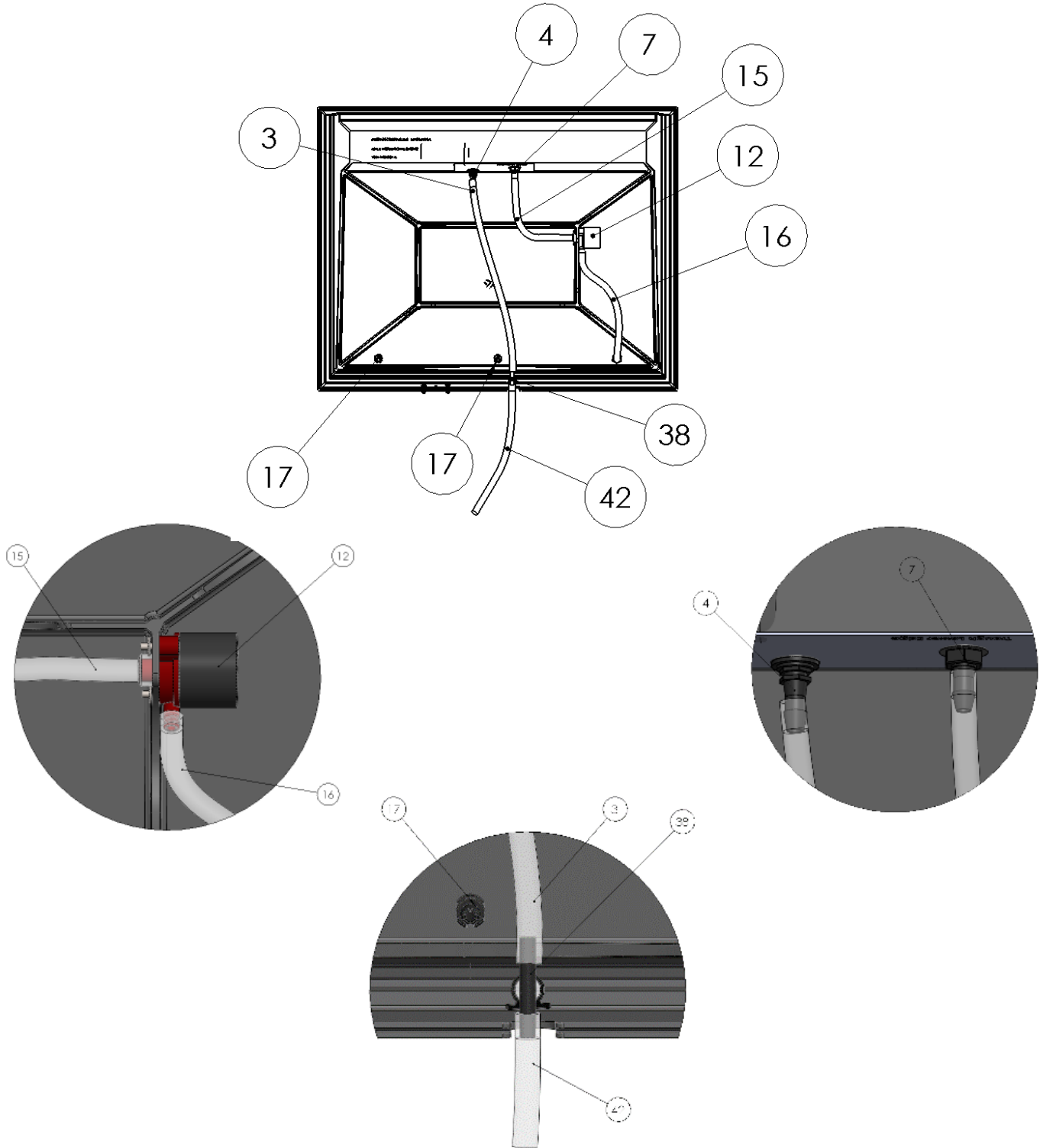
Balloon Number	Item	Part Number	Description	Qty In Situ
17		F014X014C	Bulkhead Fitting - Passthrough	1
18		TR014X0532	Tee - 0.25 to 5/32 ID Airline	1
20		BP 0532	Air Hose Plugs	1
19			Tube - Riser to Tee 0.25 x 20"	1
22			Tube - Dripwall Air Tubing - 5/32" x 20"	1

## Hardware Identification



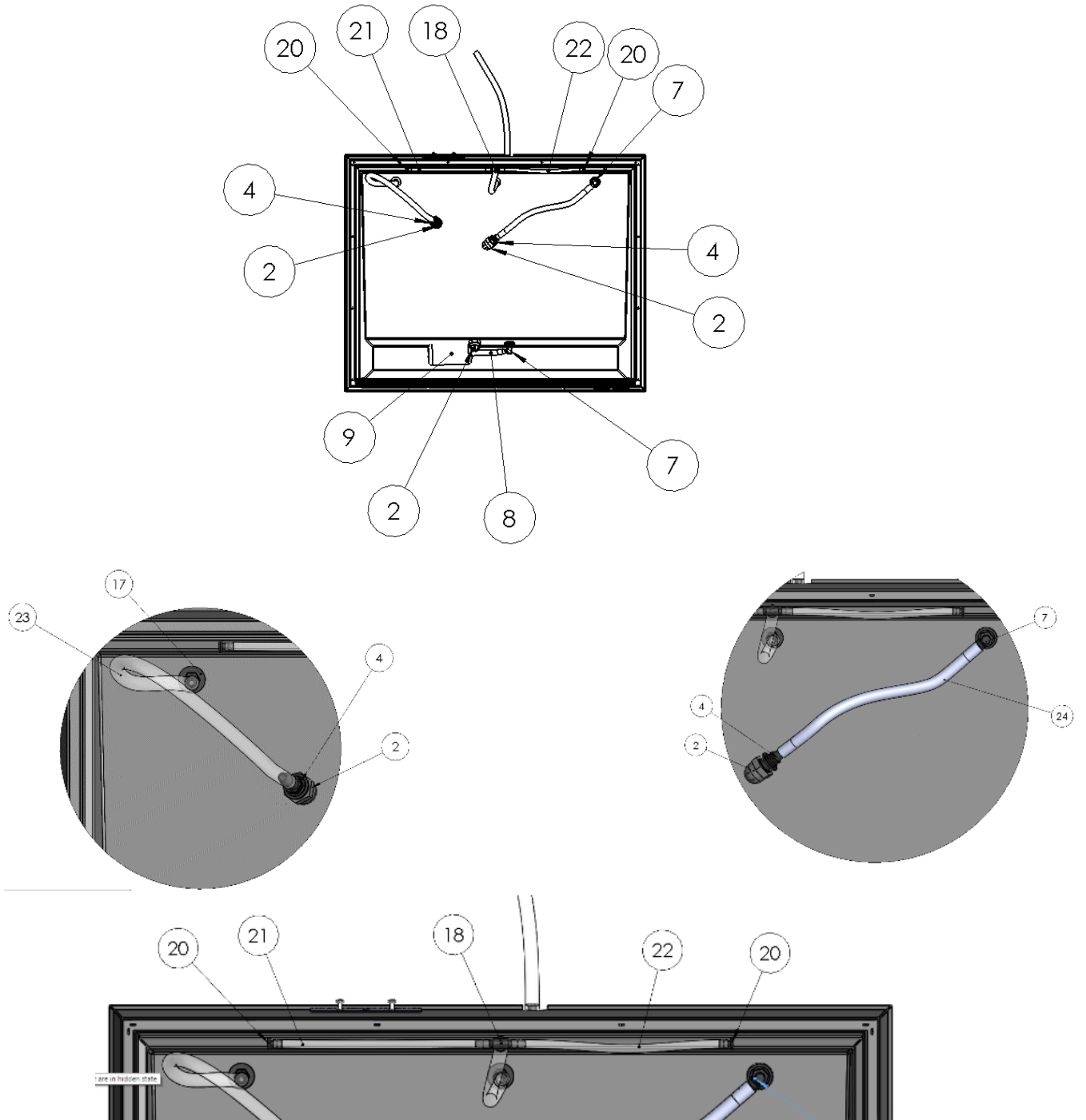
**Figure 1 - View showing In Situ installed hardware (Factory Installation)**

**Isometric View**



**Figure 2 - In Situ installed hardware (Factory Installation)**

**View Looking Up**



**Figure 3 - Picture showing User installed hardware**

**View Looking Down**

## User Installed Hardware

Per instructions received from the User, In Situ accomplished installation of the bulkhead pass through at the User's defined location. At this point, the User needs to determine what type of system he/she would like to create, as well as finish the assembly process.

The factory installation kit has all of the end fittings and tubing required to finish the assembly process. Figure 3 shows some of the possible configurations and the end fittings required.

For the Waterfall or Stream option, the kit contains an end fitting is a bulkhead pass-through. This fitting is provided in case you choose to mount the fitting onto an applicable substrate. Once the fitting is mounted, apply a small amount of silicone to the inside of edge of the diffuser (strainer) common to the nut to hold it onto the nut (the purpose of the diffuser is to 'break' and soften the stream of water coming from the tube.

If a drip wall configuration is chosen, the User should not that In Situ has has not created the water outflow orifice holes in the tubing – you must choose where you would like those placed, and create the drip orifices oneself. In Situ recommends using a hot pin or fine tipped soldering iron to melt them open. If using a pin, simply heat it with a lighter and insert into the tubing while it is hot. Be careful not to burn yourself.



## Starting the System

1. Attach the pump wire leads to the potentiometer
2. Connect the potentiometer's lead to the DC power supply.
3. Turn the adapter all the way off before plugging it in.
4. Start the pump on its lowest setting and increase the energy gradually until a stream appears from the diffuser.

It is likely that air will be trapped inside the tubing when the system is first started. The air must be evacuated in order for the pump to run effectively. If water is not flowing at all, we recommend attaching a length of tubing to the outflow fitting and sucking on it until water appears. A bulb syringe (which can be purchased at a local drug store) is another possible method of creating suction.

The pump will be noisy if there is air trapped in its impellers. If this is the case, simply turn the pump off and re-prime to ensure all air is evacuated.

**NEVER RUN THE PUMP DRY!** Doing so will damage the pump, and likely require complete pump replacement.

## Ongoing System Recommendations

Once the pump is running as it should, routinely monitor the trough's water level: it must never dip below the pump inlet or the pump will lose its prime and the system will stop. Top off the water level as needed to keep the system in balance. If you are using automated misting to replenish your vivarium's water system, we recommend the following practices:

- Provide automatic misting that produces an excess of water every day to offset evaporation and to maintain proper water level in the vivarium trough. If your misting cycle isn't of a long enough duration, one way of solving this problem is to increase the number of misting heads in your enclosure can help accomplish this.

If your Rio water flow system is run intermittently but still automated, we recommend:

- Activation of the pump preceded by 1 or more minutes of misting
- The pump be activated during the misting cycle
- The misting cycle continue for an additional 1-3 minutes after the pump has turned on.

The above sequence, more or less, should allow for filling of puddles, depressions and pools without affecting the water level in the trough. Once the pump is turned off, any excess/overflow water introduced into the vivarium will be automatically shed via the vivarium's drain.