

# THE ZIPGROW FARM WALL MANUAL

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**ZIP**GROW™



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855-ZIPGROW

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## TOOLS REQUIRED FOR ASSEMBLY

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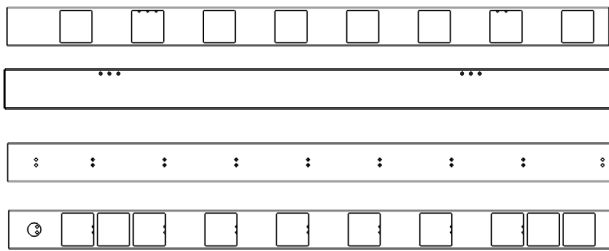
### You will need...

- Drill
- Crescent wrench
- Fasteners specific to your mounting style (e.g. heavy duty screws, drywall anchors, masonry anchors)
- Scissors (to trim zip ties and poly tubing)

# COMPONENTS LIST

## GUTTERS: EIGHT TOWER

### Top Gutter



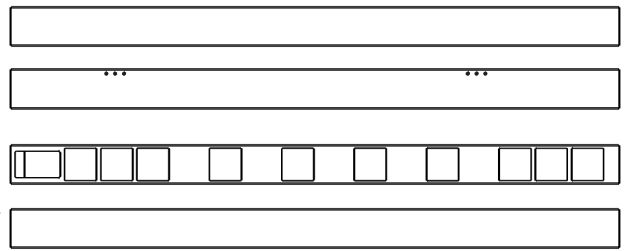
Front View

Back View

Top View

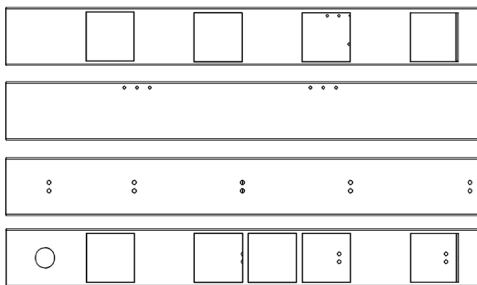
Bottom View

### Bottom Gutter



## GUTTERS: FOUR TOWER

### Top Gutter



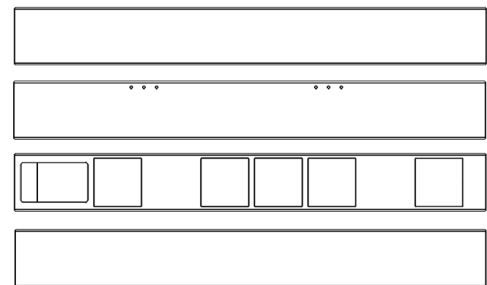
Front View

Back View

Top View

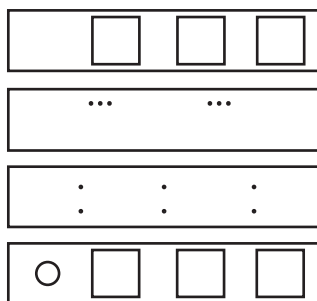
Bottom View

### Bottom Gutter



## GUTTERS: TWO TOWER

### Top Gutter



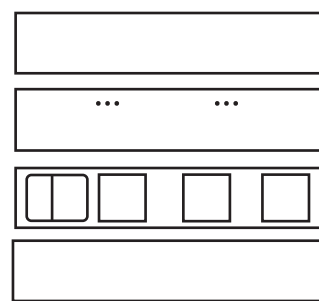
Front View

Back View

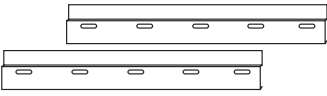
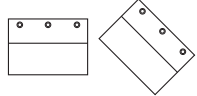
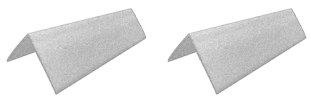


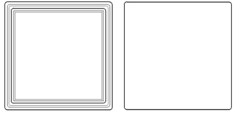
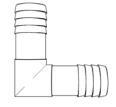
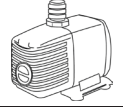


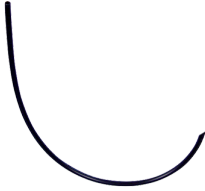

Top View

Bottom View

### Bottom Gutter



# GUTTER COMPONENTS

<p>Wall Channel 2-Tower (2) 4-Tower (2) 8-Tower (4)</p> 	<p>S-Clips 2-Tower (3) 4-Tower (5) 8-Tower (6)</p> 	<p>Tower Support Wedges 2-Tower (1) 4-Tower (2) 8-Tower (4)</p> 	<p>Drip Emitters 2-Tower (2) 4-Tower (4) 8-Tower (8)</p> 
<p>Top Gutter End Caps (2)</p> 	<p>Bottom Gutter End Caps (2) (Pre-Assembled &amp; Pre-Glued)</p> 	<p>1/2" Diameter 90° Elbow Joint (1)</p> 	<p>Active Aqua Pump 1-Tower (1-400gph) 4-Tower (1-400gph) 8-Tower (1-550gph)</p> 
<p>Nuts, Bolts, &amp; Lock Washers (for S-Clips) 2-Tower (12ea) 4-Tower (15) 8-Tower (18)</p> 	<p>Rubber Stopper 2-Tower (0) 4-Tower (1) 8-Tower (2)</p> 	<p>1/2" Diameter Black Poly Tubing (2)</p> 	<p>Pulling Hook (1)</p> 

Farm Wall Specifications			
	5-Foot Farm Walls		
	2-Towers	4-Towers	8-Towers
Approx. Size	23" (w) x 67" (h)	42" (w) x 67" (h)	80" (w) x 67" (h)
Area Needed (ft <sup>2</sup> )	10.7	19.5	37.3
Bottom Gutter Capacity (Gal/L)	1.7 / 6.5	3.0 / 11.0	5.7 / 21.7

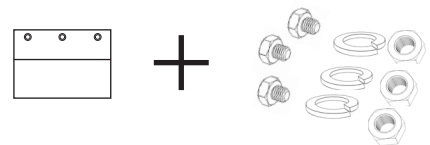
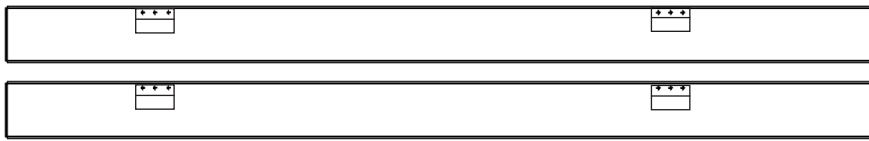
# STRUCTURAL ASSEMBLY

**Note:** We highly recommend using gloves when installing the gutter clips, bow ties, and PVC pipe to avoid any potential cuts.

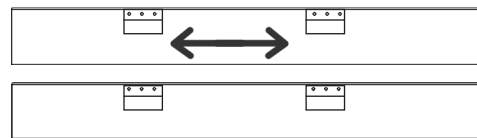
## 1. Gutter Clip Installation

Fasten two gutter clips to the back of both the top and bottom gutters. Use three bolts, lock washers, and nuts to secure each clip - place the lock washers and nuts on the inside of each gutter.

The clips should be oriented with the holes up and flush against the gutter. When placed properly the top half of the clip (the half with the holes) will lay flat against the gutter while the bottom half bends away creating space for the wall channel.

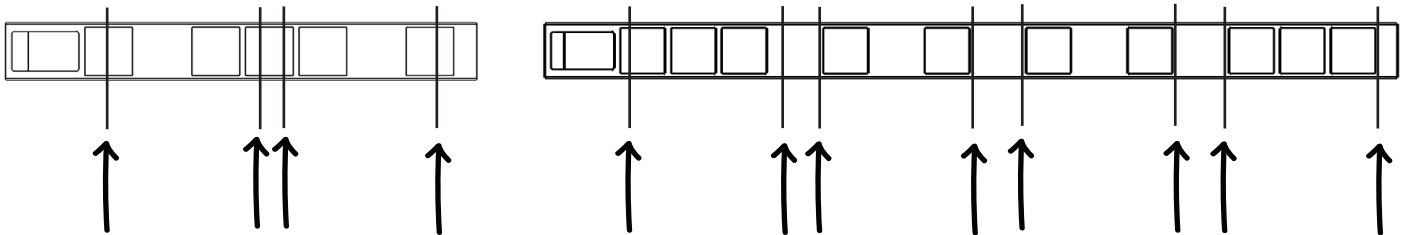


**Note:** The top gutter of a 4-Tower Farm Wall is drilled with an extra hole on the back. Fasten one bolt, washer, and nut through this hole. The top gutter will have to slide onto the wall channel for mounting.

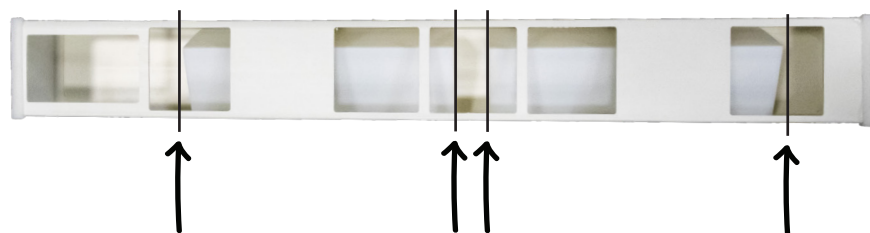


## 2. Tower Support (V's) Installation

4-Tower Farm Walls include two Tower Supports. 8-Tower Farm Walls include four Tower Supports. Tower Supports must be oriented correctly inside the bottom gutter to ensure proper function of your ZipGrow Farm Wall. The diagram below shows the correct position of each bow tie inside each gutter. Align the edges of Tower Supports to match the arrows to find the correct placement for the 4-Tower Farm Wall (left) and 8-Tower Farm Wall (right).



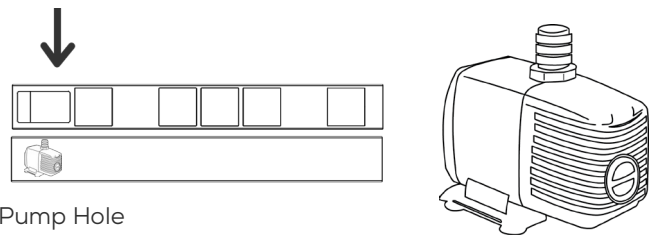
(Example 4-tower gutter)



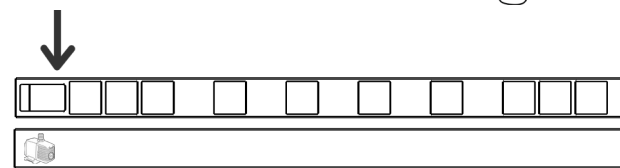
# IRRIGATION ASSEMBLY

1. Place the pump in the bottom gutter using the pump hole located on the left side of the gutter. Orient the pump so the intake faces into the gutter (see illustration below).

Pump Hole

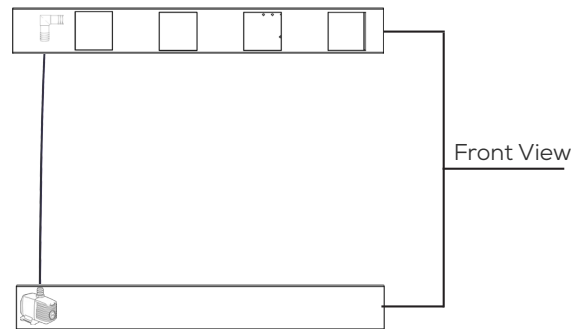
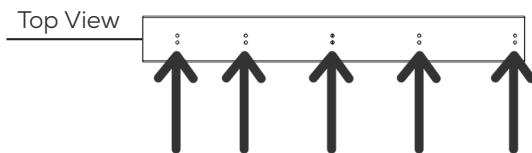


Pump Hole



**Note:** When plants grow, they lose water (transpire) as they let O<sub>2</sub> out and allow CO<sub>2</sub> in. Therefore, it is important to regularly monitor the water level of the ZipGrow Farm Wall. If the water level falls below the cover of the Aqua Active pump, the pump will burn up and fail. How much water your Farm Wall uses varies depending on the type of crop, crop maturity, and the temperature of your growing area. Top-Off Tanks can be used to reduce the frequency of monitoring.

2. Identify the black poly tubing with the 90° elbow joint and drippers attached. Orient the tubing in the top gutter so the elbow joint is on the same side of the system as the pump. Make sure the drippers and elbow are facing down (toward the bottom gutter) and each dripper is centered over each tower hole. Zip-tie the poly tubing to the top gutter using the pre-drilled holes on the top gutter.



4. Place the top and bottom gutters on corresponding wall channels.

5. Measure and trim the second piece of poly tubing so that it fits (with space to attach to the fittings) between the pump and elbow. For 5-foot Farm Walls, trimming may not be necessary.

6. To finish assembly simply push the end caps into place on the top gutter (no sealant required).

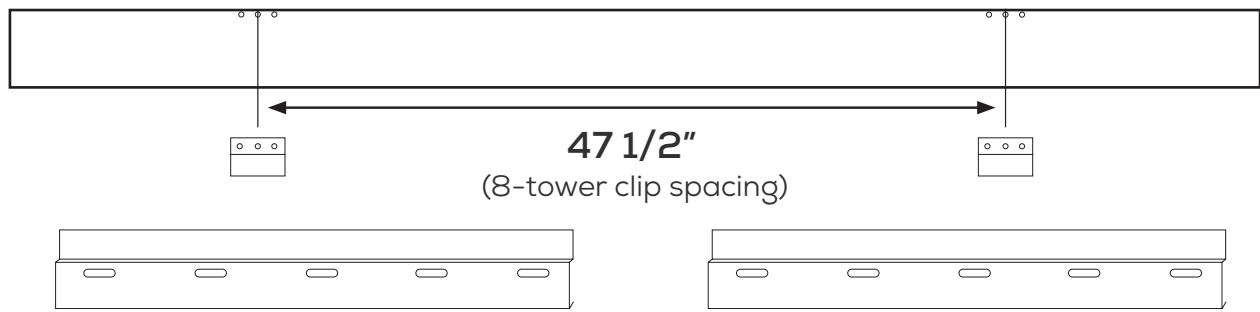
**Note:** To aid with connecting tube fitting you can soak the ends of the poly tubing in hot water.

# WALL CHANNEL MOUNTING

**Warning:** ZipGrow Farm Walls can weigh up to 230+lbs depending on how many towers, crop maturity, and number of Top-off Tanks. Because the Farm Wall can become very heavy it is critical that each wall channel is properly fastened securely to brick or studs within the wall. If you have not mounted similar equipment before, please consult a professional.

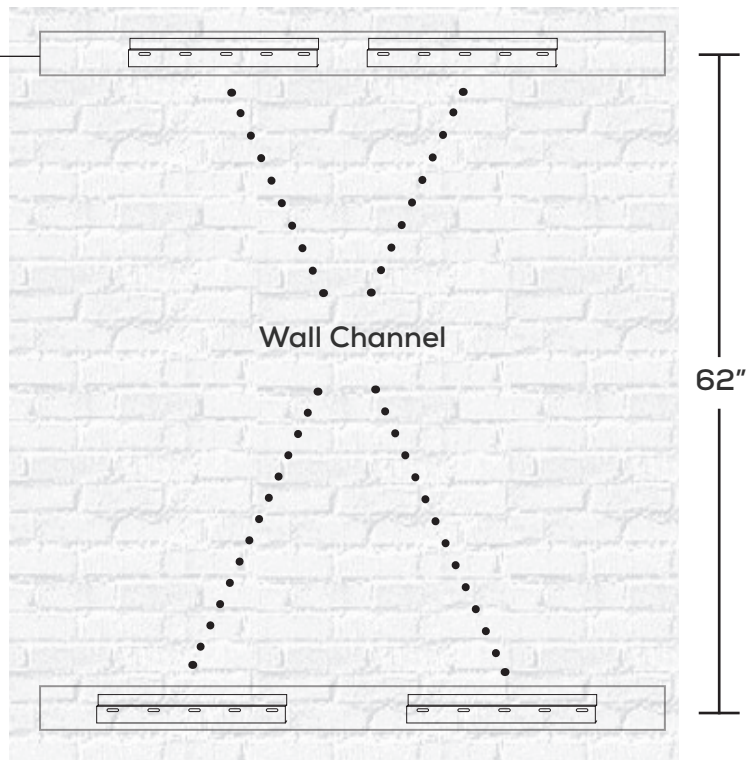
## 8 Tower Farm Wall

Mount the wall channels level so each gutter clip rests entirely on each channel.



Wall channel configurations for 5 foot 8-tower Farm Wall

(Gutter shown for illustration)

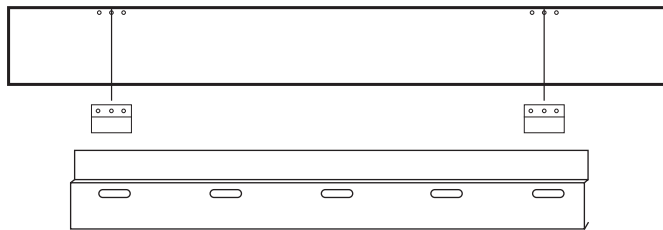


The distance between the top and bottom gutter wall channels is 62" for 5' Farm Walls.

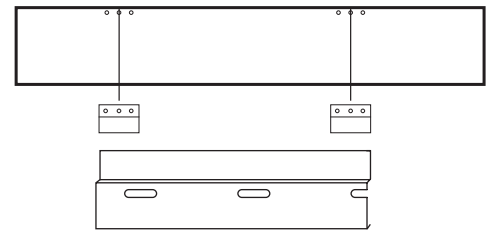
# WALL CHANNEL MOUNTING

Mount the wall channels level so each gutter clip rests entirely on each channel.

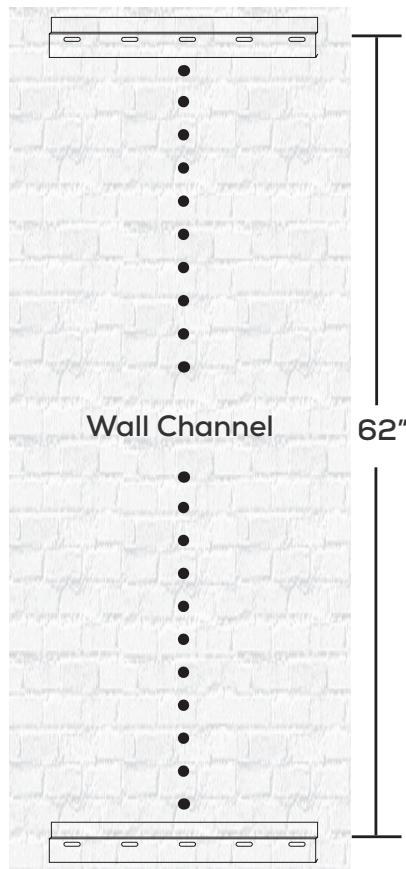
### 4 Tower Farm Wall



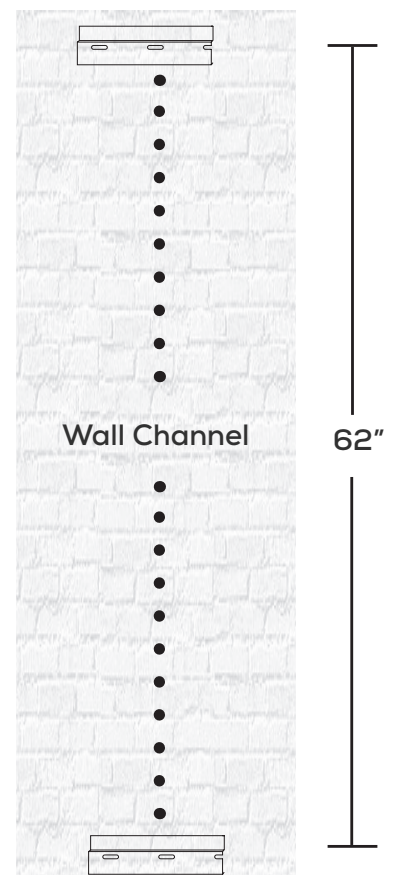
### 2 Tower Farm Wall



### Wall channel configurations for 5 foot 4-tower Farm Wall



### Wall channel configurations for 5 foot 2-tower Farm Wall



For more instruction, check out [this tutorial video on mounting a 4 or 2-tower Farm Wall](#).



# FARM WALL

When installing the ZipGrow Farm Wall there are three major considerations:

## Lighting

If not using the light kit, place your Farm Wall in a location that receives the correct amount of light for the crops that you are growing. If growing in the northern hemisphere, a South-facing wall is ideal to access the maximum amount of sunlight.

## Accessibility to water

It is recommended to place a Farm Wall near a spigot or sink to make the process of adding water easier.

## Structural support

When mounting the ZipGrow Farm Wall onto a wall, be sure to anchor the mounting channel into a structurally sound surface. Only attach the mounting channel to studs, brick, or cement.

**Note:** Drywall alone will not support a ZipGrow Farm Wall

## \*Safety Warning\*

*Do not place a ZipGrow Farm Wall above or immediately near to an electrical outlet.*



# PLANTING ZIPGROW

Now that your ZipGrow Farm Wall is completely assembled

It's time to plant your ZipGrow towers and start growing!

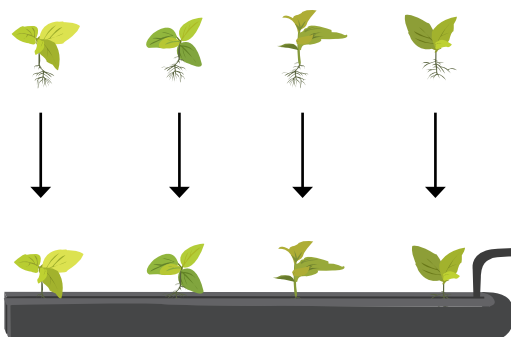
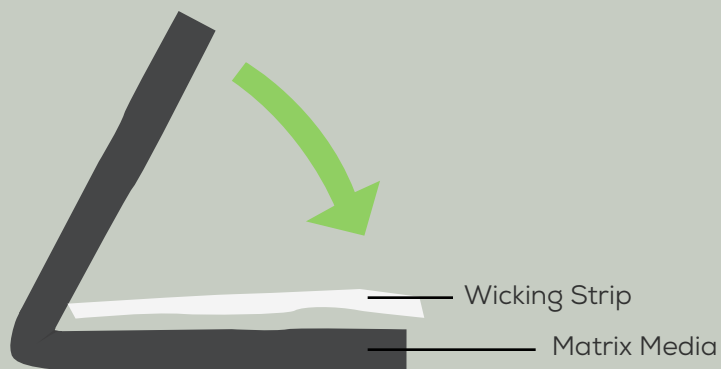


**1**

Remove the Matrix Media from the Tower with a pulling hook

**2**

Line the media with the wicking strip, which should not protrude from the media. It should be  $\frac{1}{2}$  inch from the edge of the media.



**3**

As you "zip" the media back into the Tower, sandwich the seedlings in the fold of the media.



Learn more about planting, growing, and selling crops at [Upstart University](#), the online training platform for innovative growers.

# NUTRIENTS & WATER MANAGEMENT

Fill the gutter to the top of the Tower Support with water and nutrient solution. When filled to the top of the Tower Support, one side of the Education Rack will hold approximately 4.8 gallons of solution. We recommend pre-mixed solutions like Dyna-Gro or Canna nutrient solutions, be sure to follow the dosing and mixing instructions of the fertilizer you choose to use. Depending on crop size, intensity of lighting, and outside temperature, the Education Rack may need to be refilled several times per week.

ZipGrow Farm Walls come with pre-mixed nutrient solutions, either CANNA or DYNA-GRO (location dependant). The nutrients we provide are specially formulated one-part nutrients for all hydroponic grow systems. For more information on CANNA and DYNA-GRO products, contents, associated hazards or personal protection requirements (MSDS) is available online at [cannagardening.com](http://cannagardening.com) and [dyna-gro.com](http://dyna-gro.com) (respectively). Be sure to read and follow the directions of the fertilizer. For additional information on choosing a nutrient mix, read [this blog post](#) on the topic.

In addition to nutrients, an essential component to proper water quality is managing pH. Most crops like pH to be between 6.2 and 6.8. Typically, most hydroponic systems will run more basic (higher in number) as a by-product of plant growth, however, sometimes hydroponic systems can also run more acidic (lower in number). To combat these fluctuations and to achieve pH values that are within a plant's normal growth range we recommend using pH stabilizers (as shown below).



# USING TOWER TOP-OFF TANKS

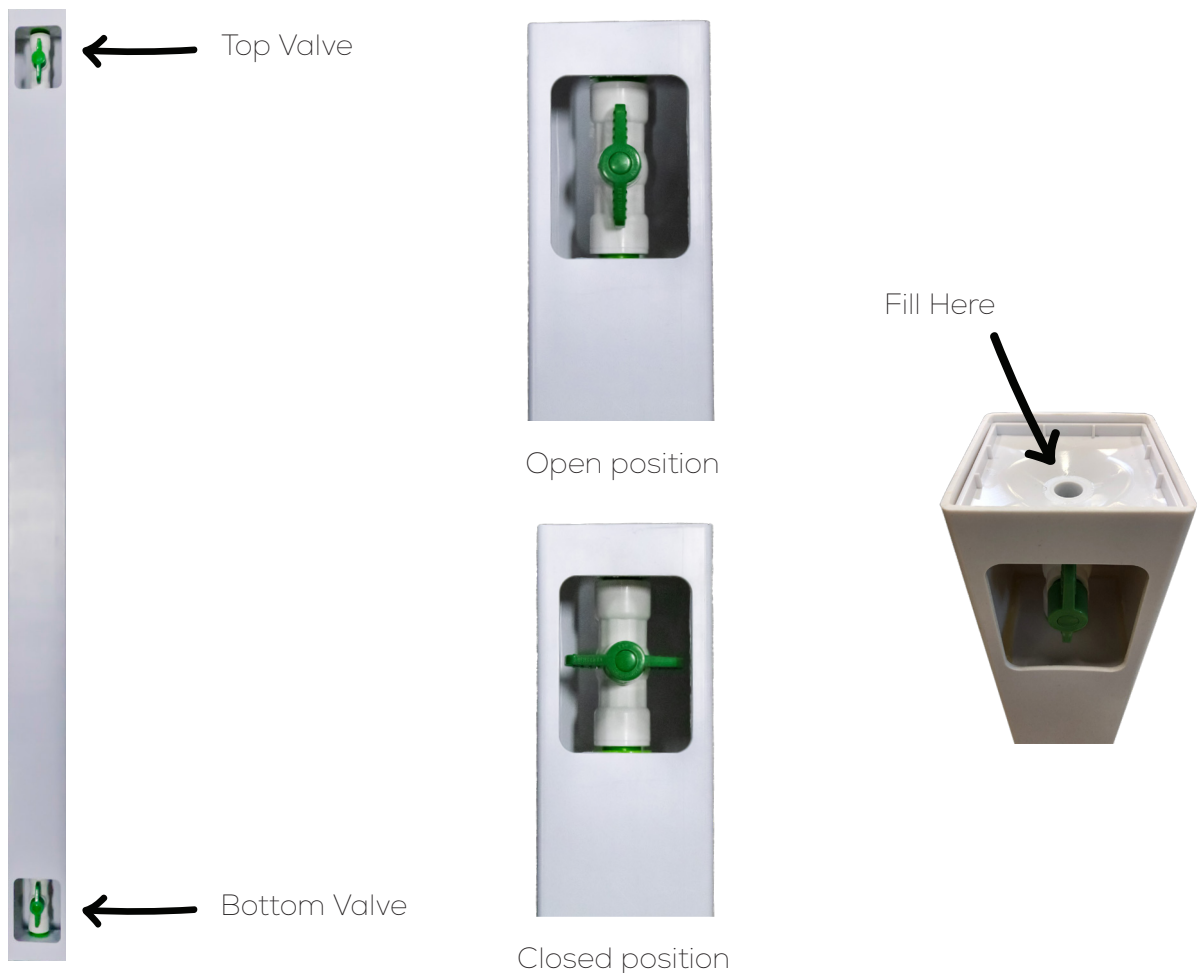
## Tower Top-off Tank

It's recommended to keep a Tower Top-off Tank or a stock of mixed solution on hand to make refilling a quick and easy process. Tower Top-off Tanks decrease the frequency of refilling the Farm Wall(s).

Tower Top-off Tank size (ft)	Volume (gal/L)
5	3.25 / 12.3

## Tower Top-Off Tank Instructions

1. Close bottom valve (turn to horizontal position) and open top valve (vertical position)
2. Fill Top-off Tank with water
3. Add appropriate amount of nutrient solution and give it a quick shake
4. Close top valve (horizontal position - make sure it is completely closed or the tank won't flow properly)
5. Place Tower Top-off Tank into ZipGrow Farm Wall
6. Open bottom valve (vertical position)



# TROUBLESHOOTING

## **Problem: Plant show signs of deficiency**

Plants with yellowing, brown spots, or necrosis may have a deficiency of one or multiple nutrients.

**Fix:** Make sure that you are applying fertilizers properly (instructions above). To learn more about nutrient deficiencies, [watch this video](#).

## **Problem: Pests and diseases on Farm Wall**

Insect pests like aphids, thrips, and whiteflies, and diseases like powdery mildew and botrytis occur on Farm Wall crops just like other crops.

**Fix:** You can use most conventional pest controls with these pests. For detailed recommendations, see the [Pest & Disease Packet](#).

## **Problem: Drip emitters are clogging**

Sometimes, drip emitters will become clogged with salt build up or soil particles, cutting the water off from plants.

**Fix:** Clean out the drip emitter by unscrewing the bottom of the dripper, cleaning out the membrane inside, or by taking out the membrane altogether. See how in [this video](#).

## **Problem: Algae build up in gutter**

Algae can cause daily fluctuations in pH and compete with plants for nutrients if there is too much. (A little bit of algae won't hurt.)

**Fix:** Algae is best controlled by shading. ZipGrow Towers are shaded by the Tower housing and by the black media inside, but the gutter may receive more sun. Shade the gutter by using something to cover any areas allowing light to hit the water.

## **Problem: Gutters are leaking**

Gutters may leak if the seal is not complete. This can happen if sealant didn't dry completely before adding water, but usually is caused when not enough sealant was used.

**Fix:** Empty and dry out the gutters completely. Marine-Grade Sealant or Boat Bond are the best sealants to prevent leaking. Fill the groove of the end caps with an adequate amount of sealant (at least 1/2 full around the entire groove). Secure the end caps to the bottom gutter so the edges of each gutter rests inside the groove of each end cap. Let sealant dry **completely** before use or further installation.



# TROUBLESHOOTING

## **Problem: Towers are leaking out the front**

If irrigation solution leaks from the front of the Towers, plants can get wet and grow diseased, or drip onto the floor and create a mess. This happens when the stream of water is diverted from the back of the Tower over the foliage or wicking strip.

**Fix #1:** Check the wicking strip placement. Wicking strips should be folded into the media with no white showing from the front. The edge of the strip should be half an inch from the face of the media.

**Fix #2:** Check the angle of the plants. If seedlings are planted at a downward angle, it create the perfect ramp for water to be diverted. Plant seedlings at an upward tilt instead; this way, water from the back of the Tower only touches the end of the plug and is wicked upward in a controlled way.

**Fix #3:** Check the plant. With large woody herbs like matured basil or other large plants, the base of the stem can grow thick and bulky, interrupting water flow and giving it only one place to go: forward. This rarely happens. If it does, reposition the Tower. You may need to replant if the crops are this large.



## WHO IS ZIPGROW?

ZipGrow is devoted to bringing extreme production to agriculture through cost-effective and extremely productive techniques.

We believe that the success of local and urban farmers is the success of the food system, so we make it our mission to help new farmers everywhere see success in their efforts. We want to help farmers live better, increase their margins, and provide quality food to their communities.

## CONTACT US

Thinking about urban farming? Learn everything you need to grow and sell produce at [Upstart University](#), the online training platform for unique farmers.

### Connect with other Farm Wall users

One mark of the food revolution is the incredible connectedness and support from fellow growers. You can join in on the conversation through the [ZipGrowers Facebook Community](#), where others post photos, ask questions, and share links to support each other with their systems. It's a great place to get ideas and inspiration!



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