V-SYSTEM

SET-UP INSTRUCTIONS

Designed and manufactured by

ALIEN®
THE EVOLUTION OF HYDROPONICS

Distributed in North America by

BLACK DOG
Horticulture Technologies & Consulting

WELCOME TO V-SYSTEM

Thank you for purchasing an ALIEN HYDROPONICS V-SYSTEM!

Please check to ensure that you received all parts listed on your kit's packing list in good order. Pictures of the parts are shown on pages 3 and 4 of these instructions to help you determine what is what.

Please read and follow these set-up instructions- they are designed to get your V-SYSTEM set up quickly and correctly so you can start growing massive plants!

Important variations in how the V-SYSTEM kits get put together are shown in green throughout these instructions.

The first variation to note is on your kit's packing list, which specifies a "Kit Pipe Code" for your specific kit, which is either PS or PL. This pipe code is used throughout these instructions to customize your assembly, and refers to sets of different pipe and part sizes used in the kits.

If you cannot find the pipe code for your kit,
check which color and size of rigid pipe your kit came with
(the pipe has size markings on it):

22mm grey rigid pipe:	28mm white rigid pipe:
	
Your Kit's Pipe Code is: PS	Your Kit's Pipe Code is: PL

These instructions show what is possible with standard V-SYSTEM kits.

**Other system configurations are also possible;
contact our technical team for advice:**

https://alienhydro.com/contact

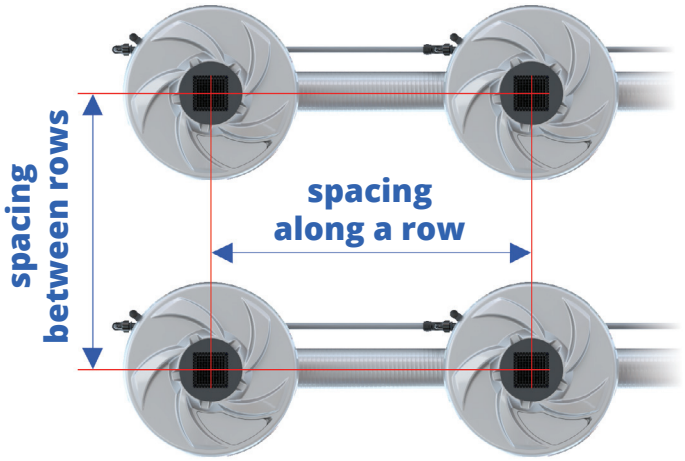
sales@alienhydro.com

720-420-1209

Before you begin the installation of the ALIEN® V-SYSTEM, consider the plant / pot spacings, possible access aisles between rows, and header / pump location which best suit your grow room layout.

Pot / Plant Spacing

The V-SYSTEM uses flexible spiral tubing which gives the grower some versatility on the layout of the plant pots as well as the header pot and pump position. All V-SYSTEM kits come with pipe lengths that allow plant / pot spacings up to 39.4" / 100cm between and along rows, but pots can also be placed closer together if you desire, down to a minimum of 26" / 65cm.

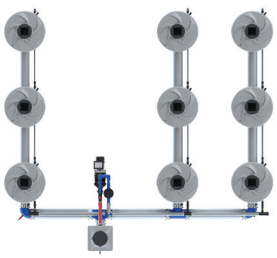


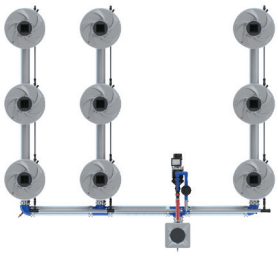
This spacing will dictate how wide your plants can grow before they run into each other and start shading each other out- and V-SYSTEM provides explosively-fast vegetative growth!

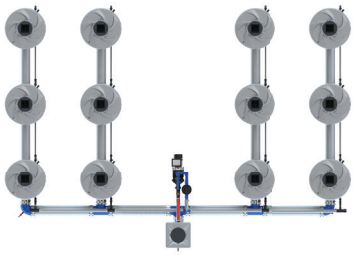
Wider plant spacings than the standard kit-supplied 39.4" / 100 cm are possible with custom pipe lengths; contact us for details.

Multi-Row Kit Aisle Options

Every 3 Row and 4 Row V-SYSTEM multi-row kit comes with enough pipe to allow creation of an access aisle between rows on either side of the header, as shown below:







With plants grown to the widest-possible 39.4" / 100cm plant spacing in the standard kits, the aisle would still be 38" / 96cm wide between the plants.

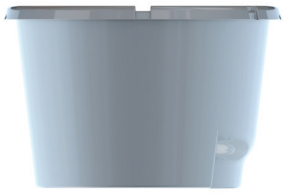
Aisles can be created in 2 Row kits with the addition of the **2 Row Aisle Kit**, and even wider aisles for 2, 3 and 4 rows are possible with special-order parts; contact us for details.

PART DESCRIPTIONS

Net Pot

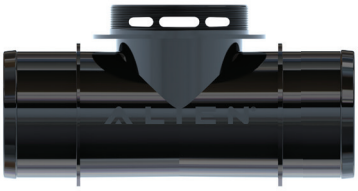
Lid Inspection Cover

Lid

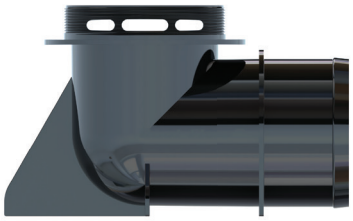


V-Pot

5” Clamp

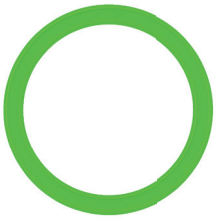


5” Dual-Flow Tee

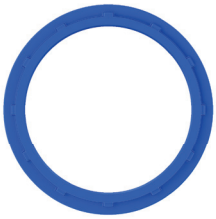


5” Dual-Flow Elbow

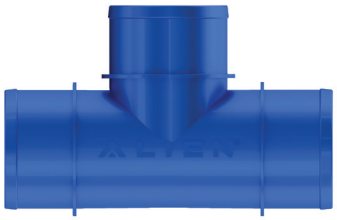
Pot Base



5” Silicone Washer

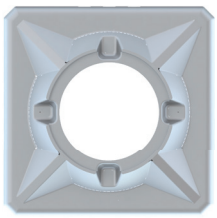


5” Nut

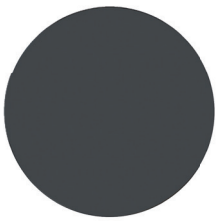


5” Tee

5” Elbow



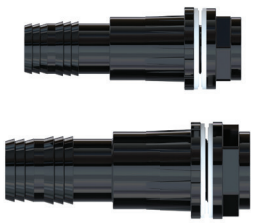
Header Lid



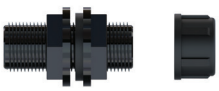
Header Blank

Header*

50mm Dual-Flow Straight Fitting

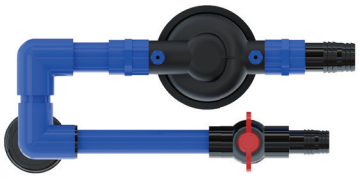


32mm & 40mm Tank Connectors

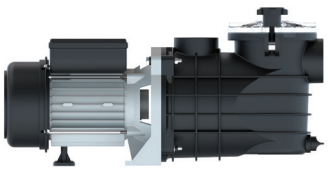


1” Threaded Tank Connector & Cap

Float Valve



Filter Manifold*



Vortex Pump

All possible parts are shown for reference only-
no individual V-SYSTEM kit uses all of these parts!

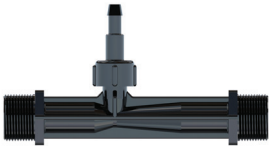
Inlet Tube, Wing Nut, Washer

Air Filter

Silencer

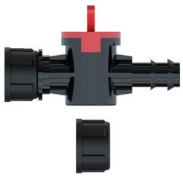
Push-Fit Connectors: Elbow, Reducing Elbow, Tee, End

Pipe Clamps Sizes 2, 3 & 4



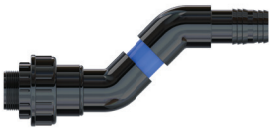
Venturi Valve

Pot Clip

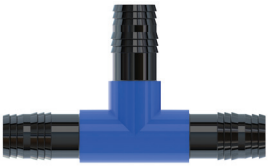


Drain Tap & Cap

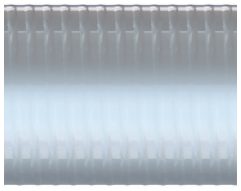
50mm Pump Inlet Manifold



40mm Pump Inlet Manifold*



Distribution Tee*



5” Silver Spiral Pipe

50mm Silver Soft Pipe

40mm Silver Spiral Pipe

32mm Red Spiral Pipe

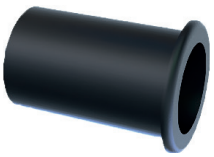
22mm Grey and 28mm White Rigid Pipe

6mm Blue Soft Pipe

Left Terminal*

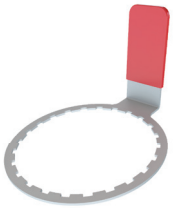
Center Terminal*

Right Terminal*



Rigid Pipe Insert*

50mm Barbed Elbow



5” Nut Wrench

8mm Socket

8mm Socket Driver

Pipe Cutter

Wrench

Silicone Grease

*** Color and/or exact appearance for these parts may vary slightly, depending on the specific V-SYSTEM kit.**

1-ROW HEADER AND PUMP CONFIGURATION OPTIONS

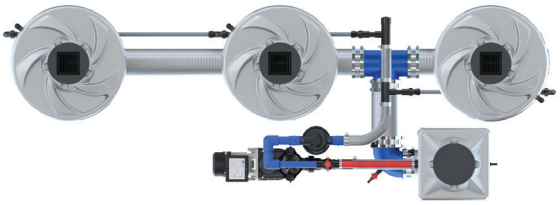
1-row systems can have the header placed in the middle of the row or at one end, though these are different kits as they require different parts.

1-Row Middle-Header Pump Placement Options:

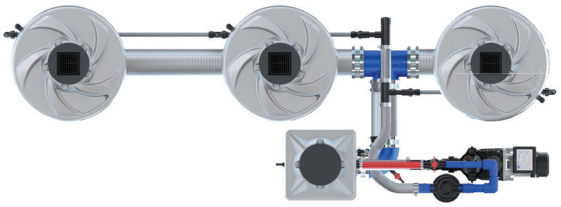
For **middle-header one-row systems**, the number of pots on either side of the header **must** be roughly equal with +/- 1 pot count on each side to get balanced water distribution to each pot.

The header and pump can be configured as shown below; there is no real advantage to either set-up other than what works best for your situation. Note that 3-pot systems are shown, but the relative header and pump placement would be the same for 2-to-20 pot systems.

Configuration 1MR



Configuration 1ML

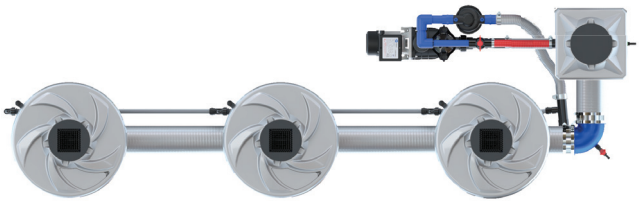


1-Row End-Header Pump Placement Options:

End-header one-row systems can have the pump and header configured in 3 different ways, as shown below. Note that 3-pot systems are shown, but the relative header and pump placement would be the same for 1-to-10 pot systems.

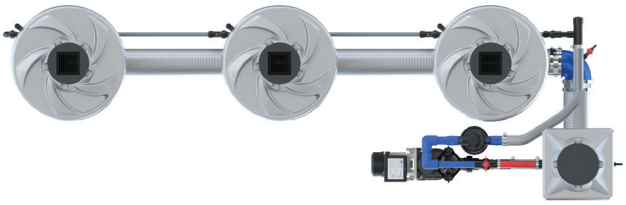
Configuration 1ER

This configuration initially looks roughly the same as the next one, but cannot be made as compact, and actually uses different parts. However, this placement may work best for your situation.



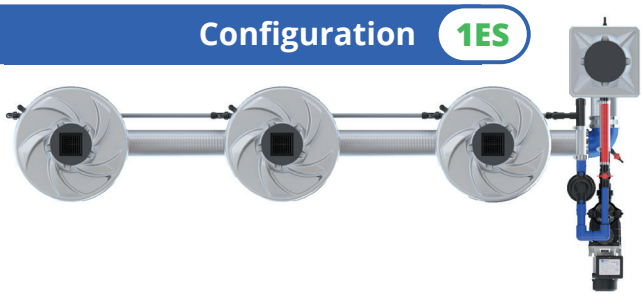
Configuration 1EL

This configuration can be made the most-compact of all 1-row end-header kits.



Configuration 1ES

To keep the header and pump both at the complete end of the row, for example out the end of a tent or room, this configuration is ideal.

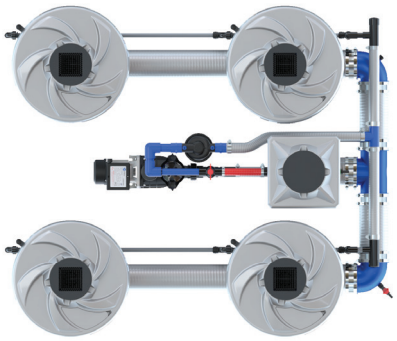


MULTI-ROW HEADER AND PUMP CONFIGURATION OPTIONS

Multiple-row systems allow 3 different layout configurations for the header and pump to best suit your needs.

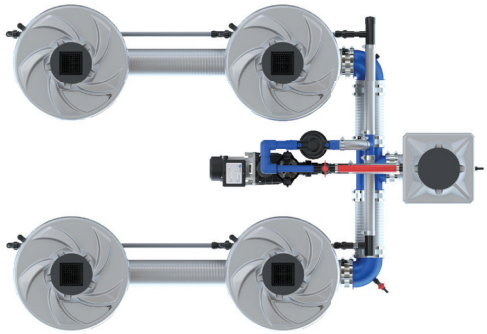
Configuration MIP

To allow the header to fit between the rows, this configuration requires at least 39” / 100cm pot center spacing between the rows. Ideal for fitting the entire system inside a tent or small room, this configuration presents more of a challenge to reach and clean the filters unless an aisle is created on each side of the header.



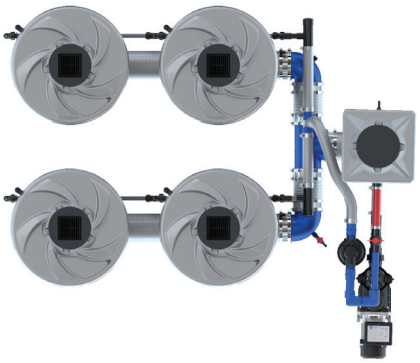
Configuration MSP

To allow the pump to fit between the rows, this configuration requires at least 39” / 100cm pot center spacing between the rows on either side of the pump / header. This configuration presents a slight challenge to reach and clean the filters unless an aisle is created on each side of the header, but also allows the header to be extended away from the main footprint, such as outside of a tent.

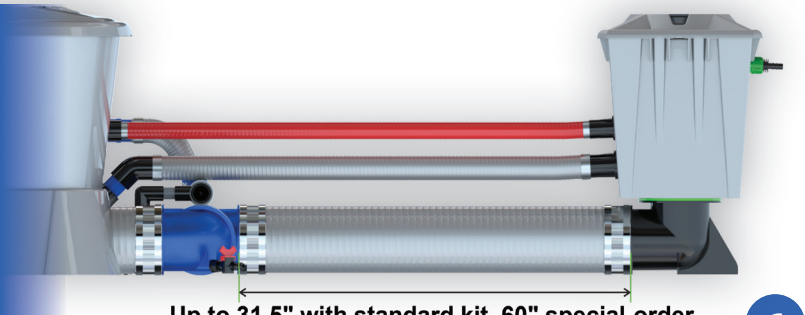


Configuration MOA

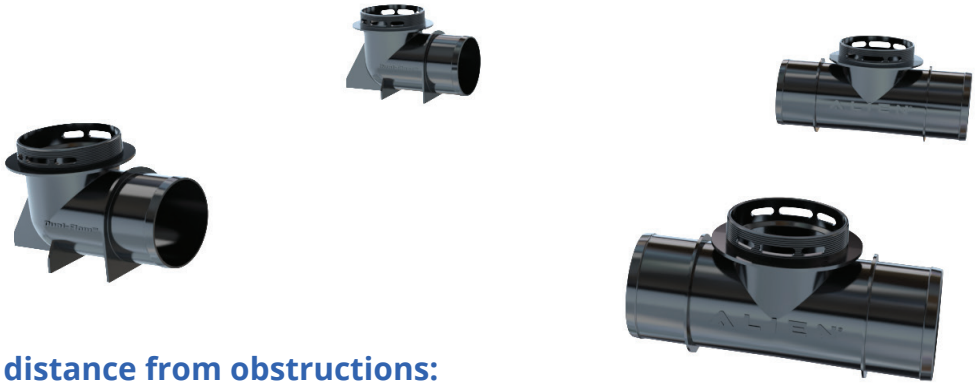
This configuration keeps the pump and header completely outside the plant canopy area or tent, allows plant centers to be as small as 26” / 65cm between rows on either side of the header, and provides easy access to the header and all filters.



The header can also be extended away from the system, for example to put it outside a grow tent. All standard multi-row kits support this, single-row kits to a lesser extent, but these can be upgraded- contact us for options!



1 Position the black Dual-Flow Tees and elbows where you would like the plants to be. Elbows go at the end of rows farthest from the header. Placing the pot bases and pots on top of the Dual-Flow fittings will ensure you have a good idea of how things will fit.

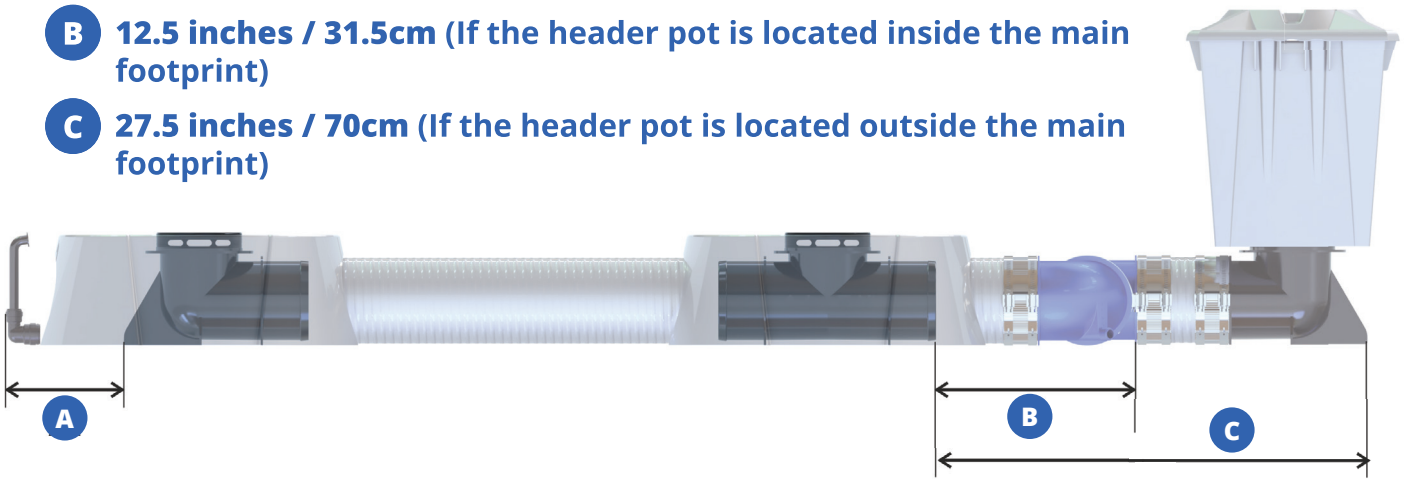


2 Minimum distance from obstructions:

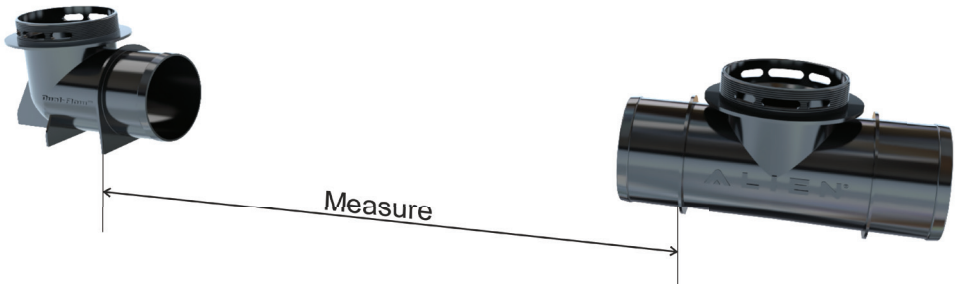
A **7.5 inches / 19cm**

B **12.5 inches / 31.5cm** (If the header pot is located inside the main footprint)

C **27.5 inches / 70cm** (If the header pot is located outside the main footprint)



3 Once you are confident the system will fit in your space, measure the distance between the flanges, and consult the tables on the next two pages to determine 5" pipe lengths.



Use the pipe cutter tool to cut the 5" pipe sections to length.

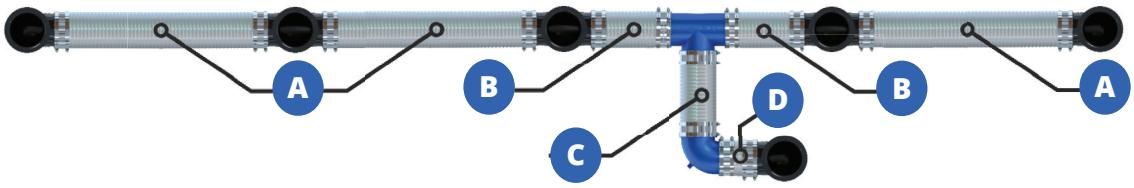
Be careful as the blade is very sharp!

It is OK if the ends of the 5" pipe cuts are a bit jagged- this is normal with the reinforcing spiral inside the tube, and will be hidden by the clamps. However, make sure to remove any "dangling" pieces / crumbs of pipe that may break off when fitting it to the Tees and elbows.

Read the next step #4 before assembling!

1-ROW KITS 5" PIPE LENGTH GUIDE

1-Row Middle Header Pipe Lengths:

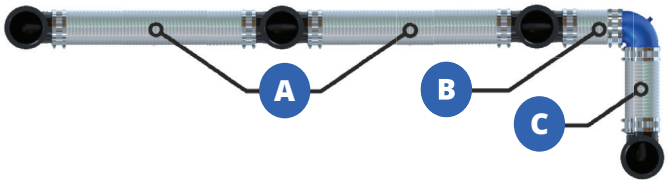


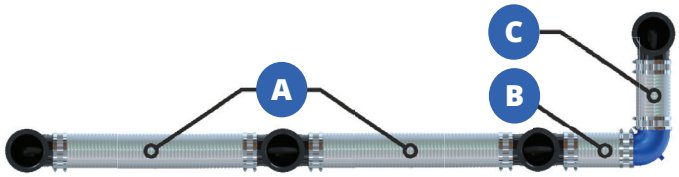
Along-Row Tube Cut Lengths	26" / 65cm Pot / Plant Centers (the minimum)	30" / 75cm Pot / Plant Centers	36" / 90cm Pot / Plant Centers	39" / 100cm Pot / Plant Centers
A	18" / 45cm	22" / 55cm	28" / 70cm	31.5" / 80cm
B Kit Pipe Code PS	8" / 20cm **	8" / 20cm **	11" / 27.5cm	12.5" / 32cm
B Kit Pipe Code PL	9.5" / 24cm **	9.5" / 24cm **	11" / 27.5cm	12.5" / 32cm

** To allow the nutrient distribution plumbing to fit, pipe length **B** cannot be shorter than **8" / 20cm for Kit Pipe Code PS** or **9.5" / 24cm for Kit Pipe Code PL**.

Header Tubes	Minimum	Maximum *
C	9.75" / 25cm	25.5" / 65cm
D	6" / 15cm	21.75" / 55cm

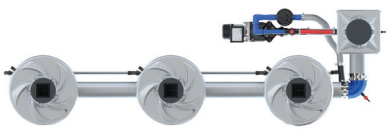
1-Row End Header Pipe Lengths:





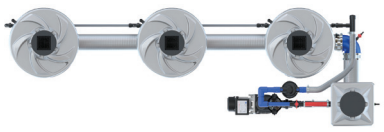
Along-Row Tube Cut Lengths	26" / 65cm Pot / Plant Centers (the minimum)	30" / 75cm Pot / Plant Centers	36" / 90cm Pot / Plant Centers	39" / 100cm Pot / Plant Centers
A	18" / 45cm	22" / 55cm	28" / 70cm	31.5" / 80cm

Header / Pump Configuration 1ER:



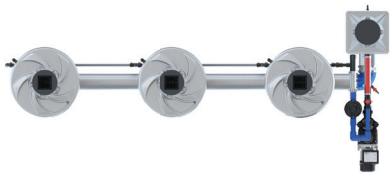
Header Tubes	Minimum for Kit Pipe Code		Maximum for Kit Pipe Code *	
	PS	PL	PS	PL
B	9" / 23cm	10.5" / 27cm	21.75" / 55cm	21.75" / 55cm
C	9.75" / 25cm	9.75" / 25cm	22.5" / 57cm	21" / 53cm

Header / Pump Configuration 1EL:



Header Tubes	Minimum for Kit Pipe Code		Maximum for Kit Pipe Code *	
	PS	PL	PS	PL
B	6" / 15cm	6" / 15cm	21.75" / 55cm	21.75" / 55cm
C	9.75" / 25cm	9.75" / 25cm	25.5" / 65cm	25.5" / 65cm

Header / Pump Configuration 1ES:

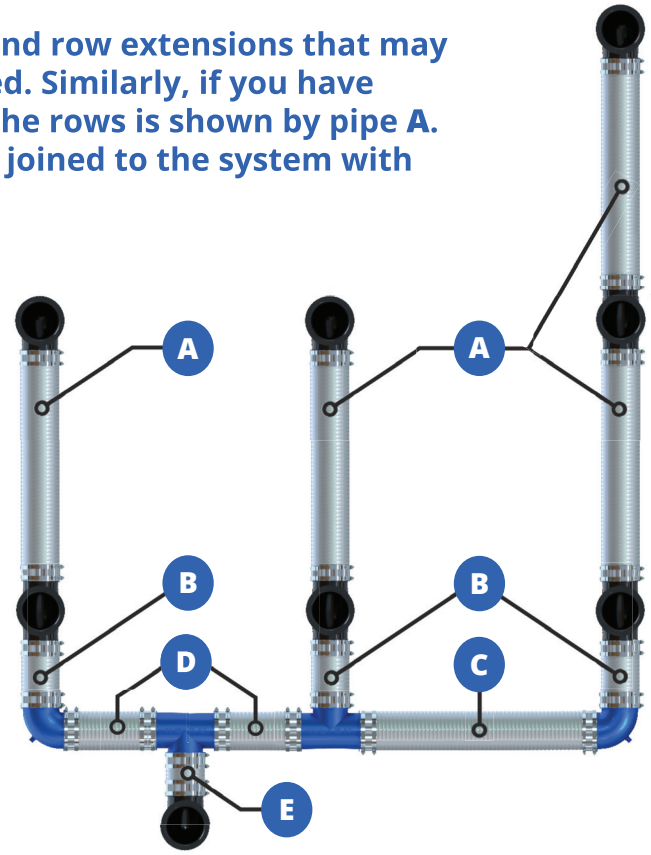


Header Tubes	Minimum for Kit Pipe Code		Maximum for Kit Pipe Code *	
	PS	PL	PS	PL
B	8" / 20cm	9.5" / 24cm	24.5" / 62cm	24.5" / 62cm
C	7" / 18cm	7" / 18cm	23.5" / 60cm	22" / 56cm

* Standard V-SYSTEM 1-row kits come with a single piece of 31.5" / 80cm long 5" spiral pipe to split between the two header tubes; **it is not possible with standard kits to maximize both of these dimensions at the same time.** The maximum length given above for one pipe is assuming the minimum length for the other. **With extra pipe almost anything is possible- contact us!**

MULTI-ROW KITS 5" PIPE LENGTH GUIDE

The diagram below and to the right shows rows and row extensions that may not be part of your kit; ignore what you don't need. Similarly, if you have more pots per row, the continued spacing along the rows is shown by pipe A. If you have a 4-row system, the 4th row would be joined to the system with another pipe C and another 5" blue Tee.

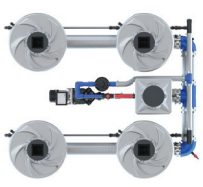
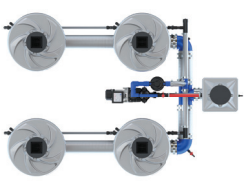
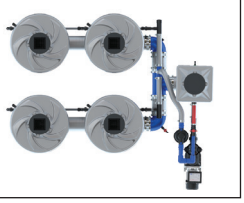


The tables below show the pipe lengths for the most common plant centers for multi-row systems, as well as the minimum and maximum pipe lengths for the different kit pipe codes and different header / pump configurations.

Tube Cut Lengths	26" / 65cm Pot / Plant Centers (the minimum)	30" / 75cm Pot / Plant Centers	36" / 90cm Pot / Plant Centers	39" / 100cm Pot / Plant Centers
A	18" / 45cm	22" / 55cm	28" / 70cm	31.5" / 80cm
B Kit Pipe Code PS	8" / 20cm	8" / 20cm	8" / 20cm	8" / 20cm
B Kit Pipe Code PL	9.5" / 24cm	9.5" / 24cm	9.5" / 24cm	9.5" / 24cm
C	18" / 45cm	22" / 55cm	28" / 70cm	31.5" / 80cm
D (configuration MOA only, with no aisle)	6" / 15cm	8" / 20cm	11" / 27.5cm	12.5" / 32cm

Tube	Configuration	Minimum	Maximum
D	MIP	12.5" / 32cm	31.5" / 80cm
D	MSP	12.5" / 32cm	31.5" / 80cm
D	MOA	See table above	31.5" / 80cm
E	All	6" / 15cm	31.5" / 80cm

Header / pump configurations, for reference:

MIP	MSP	MOA
		

ASSEMBLING THE 5" MANIFOLD

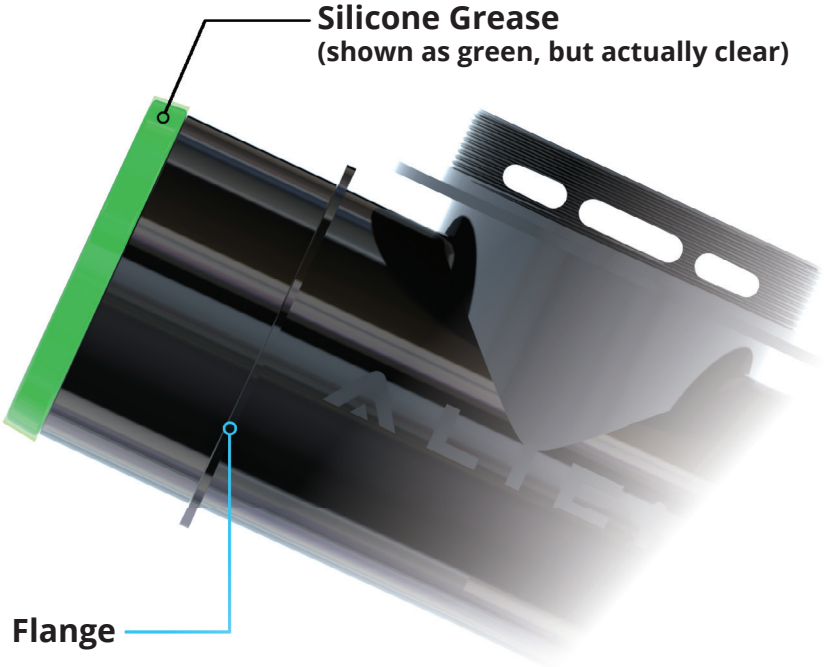
4 Spread a roughly 1/16th inch / 2mm thick layer of silicone grease around the slanted portion of the barb on the fitting to lubricate and seal the joint, then slide a 5" clamp over the pipe and push the pipe onto the fitting all the way to the flange.

Use the electric drill attachment (recommended) on chuck setting 5 maximum, or the 8mm socket driver to tighten, **but do not over-tighten the clamp.**

Silicone Grease

8mm Socket for Drill

8mm Socket Driver



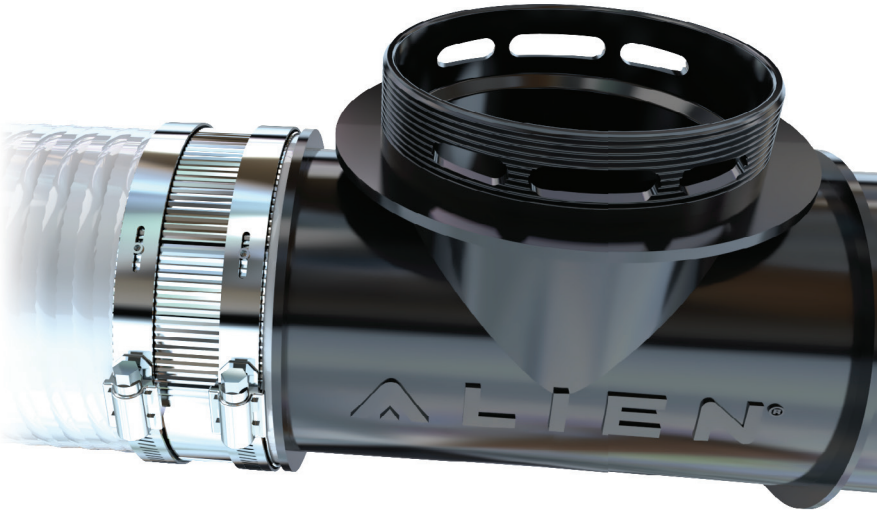
WARNING: do not over-tighten the 5" clamps!

If using an electric drill (as recommended), use chuck setting 5 maximum.

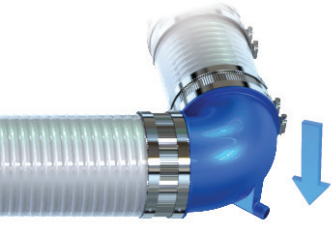
If tightening the clamp by hand with the manual socket driver, do so to approximately 10 inch-pounds / 0.83 foot-pounds / 1.13 N-m of torque maximum.

Over-tightening will cause leaks and can crack the fittings- the 5" clamps exert more force than you realize!

Ensure the clamp tightening nuts are located to the side as shown, and that no part of the clamp is positioned over the flange of the fitting- this can cause leaks.

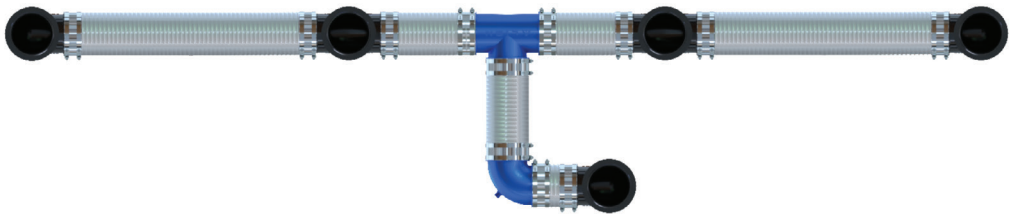


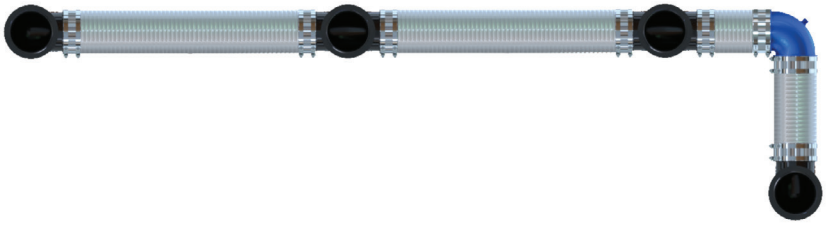
5 **Position the blue 5” fittings to complete the 5” pipe manifold that connects the rows and header.**

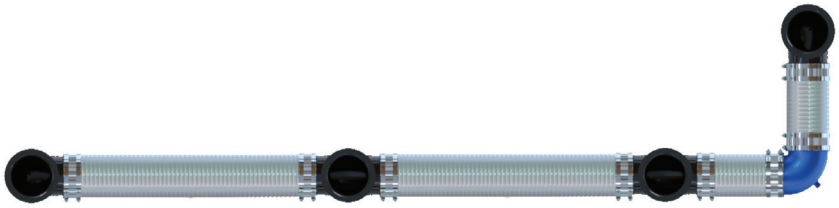


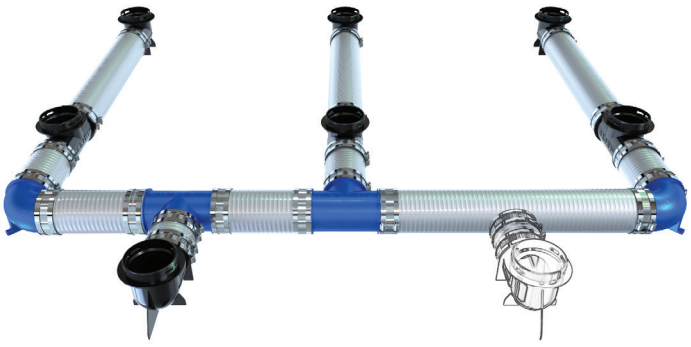
The drain outlets on the 5” blue elbows should be down, toward the floor.

Once you’re sure the system spacings are correct, cut, fit and clamp the 5” tube to complete your 5” manifold.



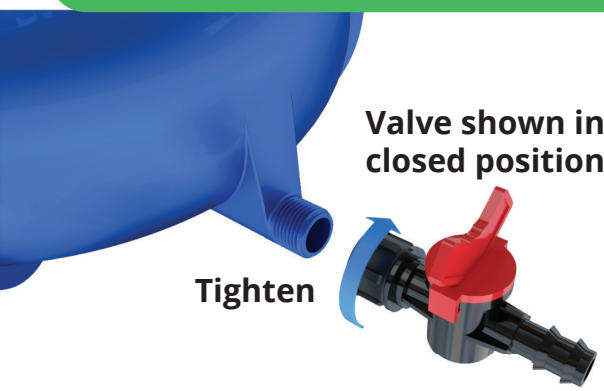




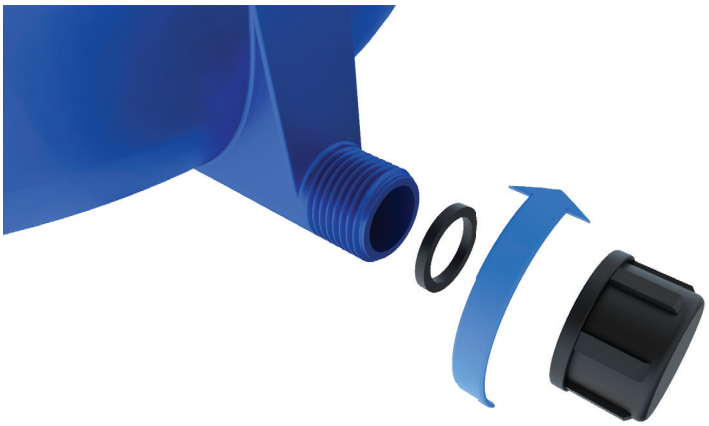


6 Screw the drain tap to one of the blue elbows as shown below. Ensure there is a washer inside.

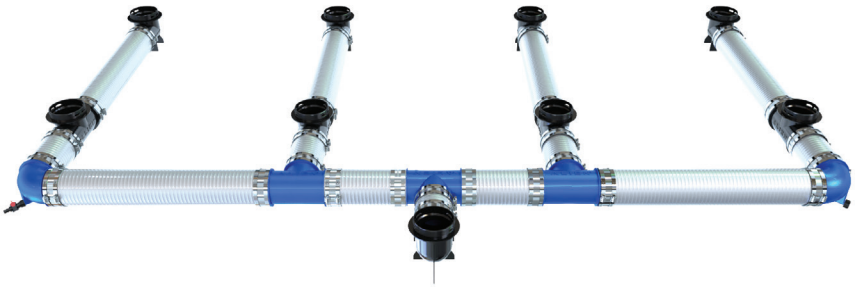
If you purchased the optional Pump-Out Kit:
Refer to those instructions before proceeding.



7 **For multi-row kits,** fit the cap and washer to the other blue elbow as shown below.



8 Ensure the drain tap is closed and fill the completed 5” pipe manifold with water to check for leaks.

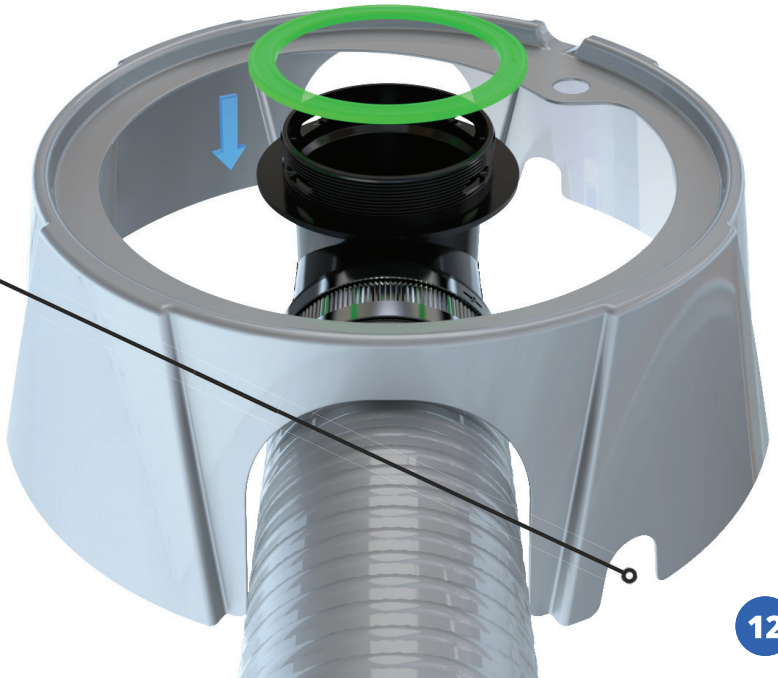


Remember, over-tightening the 5” clamps can cause leaks or make them worse! Avoid the temptation to just tighten them down more.

If you do find a leak, loosen the clamp and take the joint apart. Inspect for and remove any dirt or debris in the joint, then apply more silicone grease and re-assemble, tightening the 5” clamp with a drill on chuck setting 5 and re-test with water.

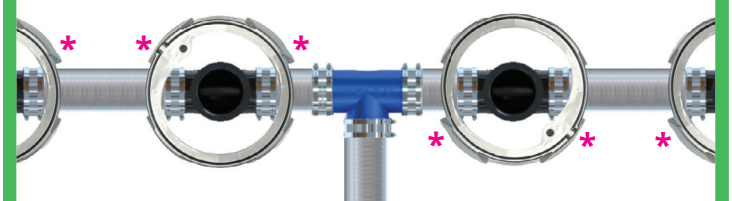
9 Position the pot bases as shown over where the plant pots will go, and place a green 5” silicone washer on top of each black Dual-Flow fitting.

Viewed from the start of each row (farthest from the black 5” Dual-Flow elbows at the ends of each row), the **distribution pipe cut-outs** in the bottom of the pot bases should be on the right side of the 5” pipe.



For 1 Row Middle Header Kits

Distribution pipe cut-outs (*) switch sides on either side of the blue Tee

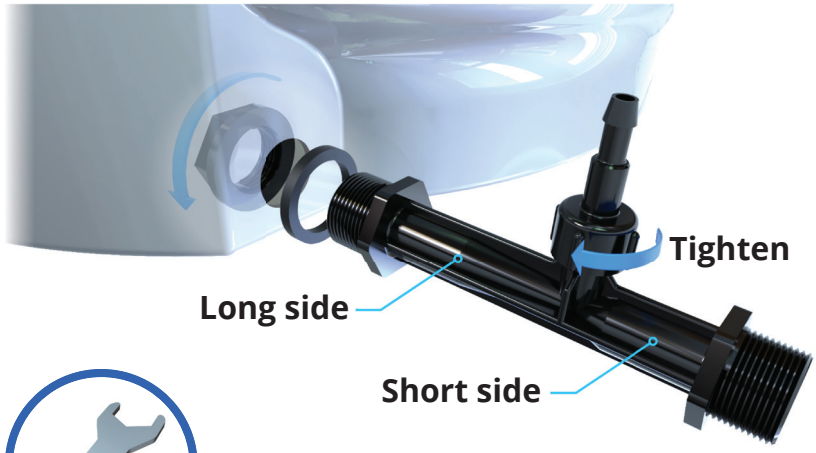


10 **Ensure the barbed air inlet valve on each Venturi is tightened.**

Install the Venturi valves in each pot. The rubber washer goes on the outside of the pot. The long side points towards the pot and the barbed air inlet points up. There is an arrow on the side of the Venturi to show the direction of flow.

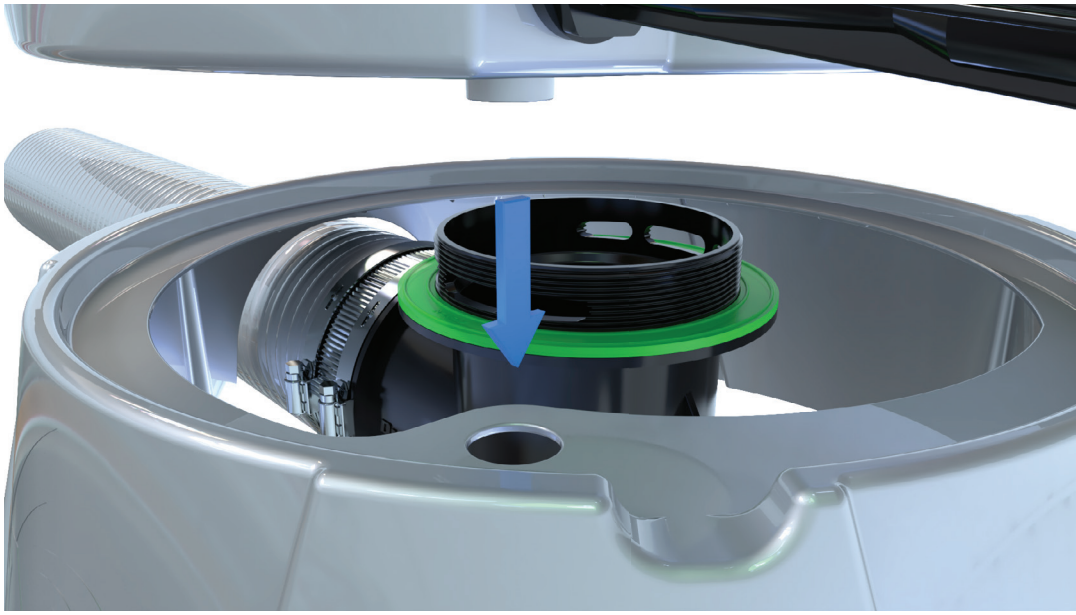
The system will not work with the Venturis installed backwards!

Use the wrench provided to tighten the nut inside the pot- the rubber gasket provides a seal, so it doesn't need to be extremely tight- don't over-tighten!

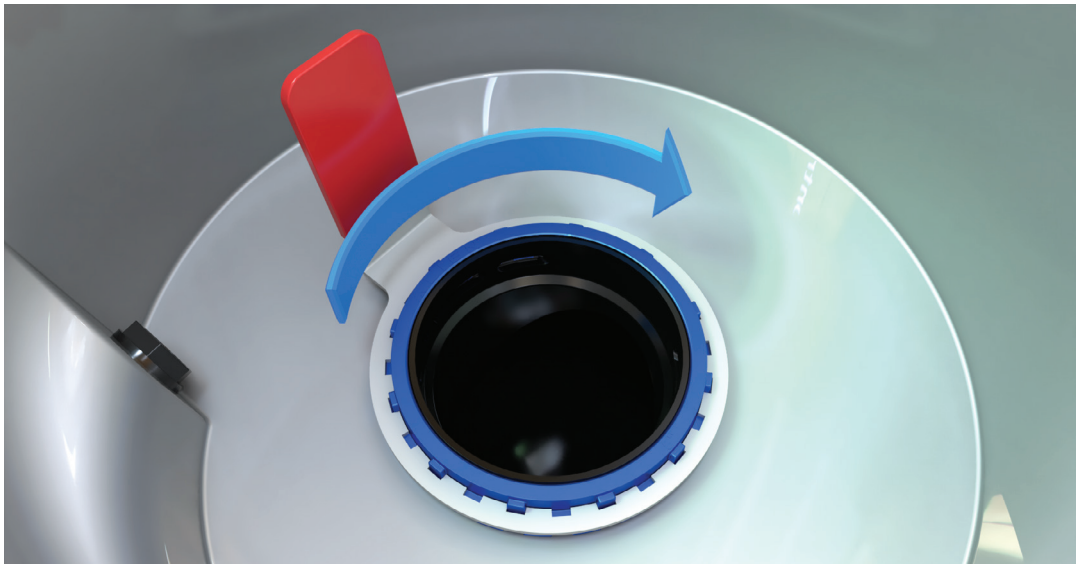


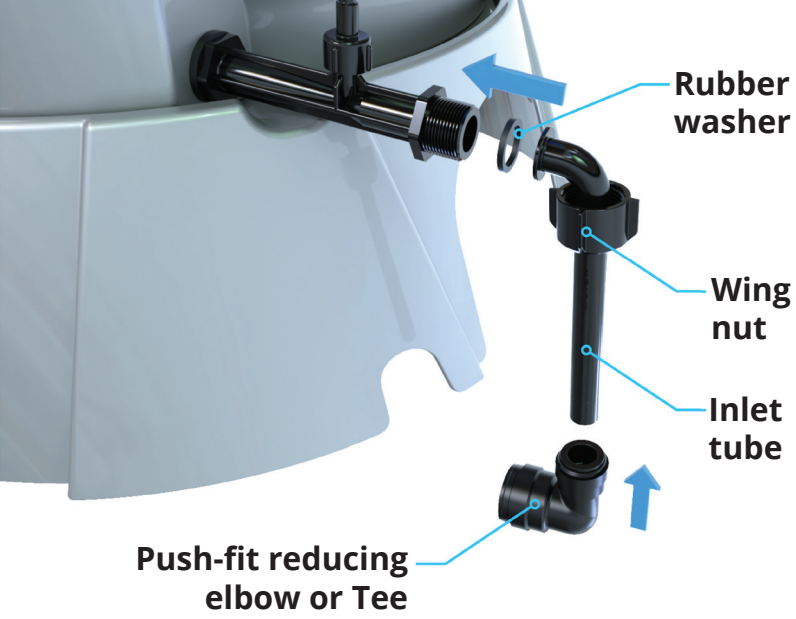
Wrench

11 **Put the pots on the pot bases using the locating hole in the bases. Ensure each pot is fully seated on the base.**



12 **Screw the blue 5" nuts on the threaded Dual-Flow fittings inside the pots and tighten with the nut wrench provided. Be careful- the wrench's teeth are sharp!**





13 Slide the wing nut onto the inlet tube. Place a washer inside the wing nut and screw onto the Venturi.

For Kit Pipe Code PS, reducing push-fit elbows go on the end of each row's distribution lines (farthest from the header- see graphic below), with Tees used on all other pots.

For Kit Pipe Code PL, push-fit Tees are used at every pot; the row ends will be dealt with a few steps from now.

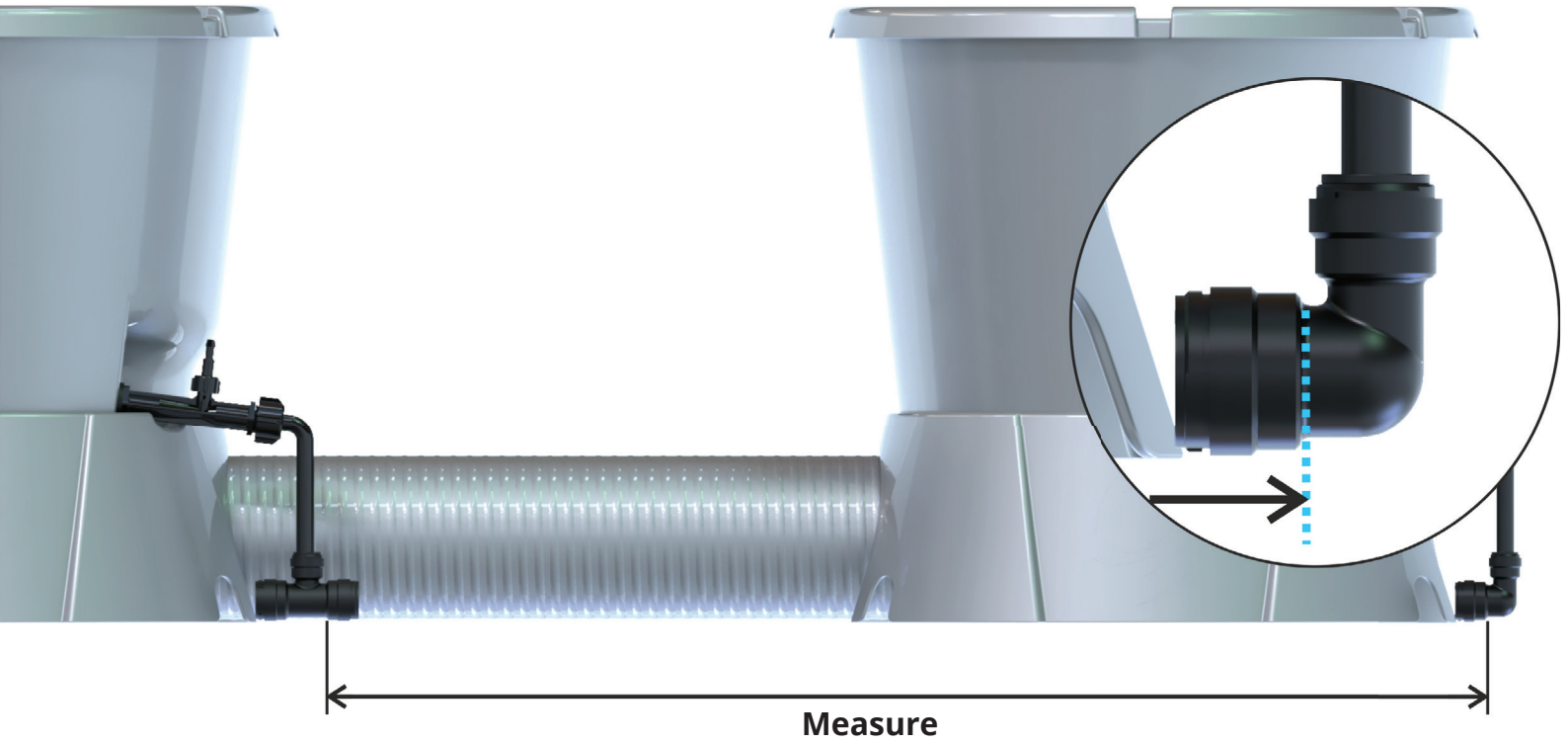
Push the stem of the Venturi inlet tube into the push-fit connector, making certain to seat it completely.

14 The push-fit connectors are joined with the rigid 22mm grey or 28mm white pipe, depending on your kit. To determine the length to cut the pipe to, take the measurement as shown below, including the extra portion of pipe that is inserted into the push-fit fittings on both sides, otherwise the pipe will be too short.

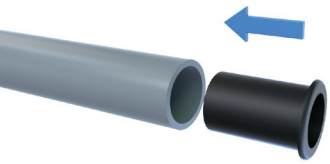
Don't put the pipe in the connectors yet!

For Kit Pipe Code PL:

Add 1/2 inch or 1.5cm to the total measurement taken as shown below, as the 28mm push-fit Tees and Elbows accept a little more pipe inside the fitting than the measurement point shown in the picture below.



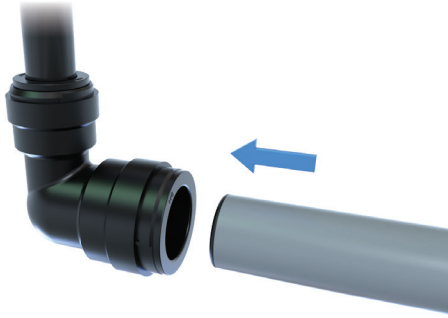
16 Between all pots along each individual row, measure and cut the 22mm grey or 28mm white rigid pipe to length and push a pipe insert into both ends of the pipe. Insert the pipe into the push-fit connections, ensuring to push all the way in.



Pipe inserts may vary in color from what is shown.

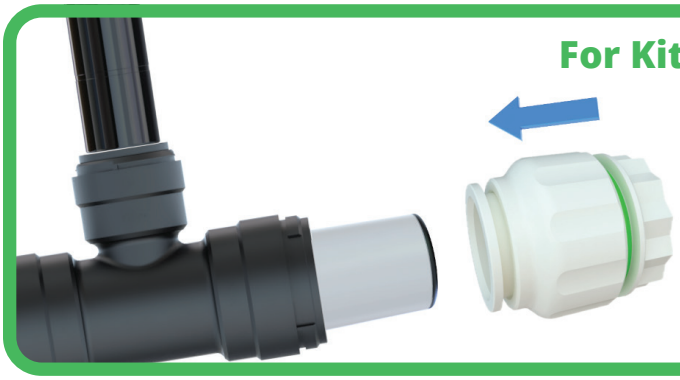
For 1-row middle header kits, do not connect the two pots on either side of the blue 5" Tee.

For the 1 Pot 1 Row End Header Kit and 2 Pot 1 Row Middle Header Kit, there is nothing to do for this step but look at the pictures to learn for the next steps.



16 Skip this step if your Kit Pipe Code is **PS**.

For Kit Pipe Code PL:

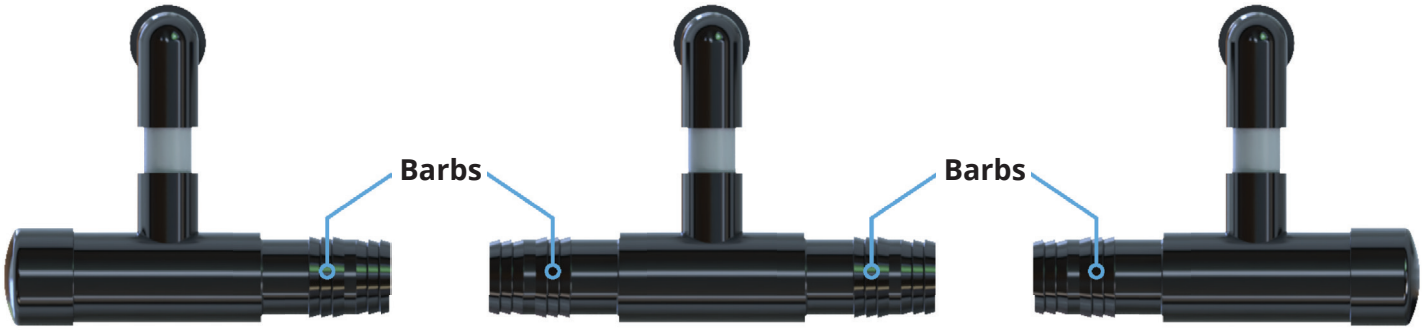


To terminate each row's distribution pipe farthest from the header, cut a 3.5" / 9cm piece of 28mm white pipe, push pipe inserts into both ends, and connect a push-fit stop-end to the Tee at the end of each row. Ensure the pipe is fully inserted.

17 Familiarize yourself with the terminal fittings that will connect to the rigid pipe.

Depending on your V-SYSTEM kit, you may have one, two or all three of these different terminal fittings:

Note that pipe color in these terminals may vary depending on your kit.



Left Terminal | Center Terminal | Right Terminal

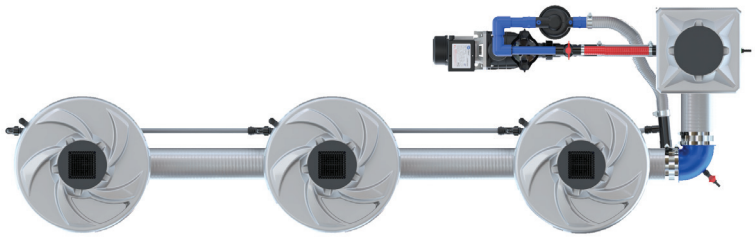
1-row middle-header kits use a Center Terminal closest to the pump/header and a Right Terminal farthest from the pump/header.

1-row end-header kits use only the Right Terminal.

Multi-row kits use (when viewed from 5" pipe the header pot and rows each branch off from, looking down the rows) the Left Terminal for the left-most row, Center Terminals for any center rows (in 3 and 4-row kits), and the Right Terminal for the right-most row. The "outside" Left and Right Terminals should have the barbed side of the fitting pointing inward, with a cap on the outside.

18 Configure and place each terminal in their appropriate location for your kit.

If you are building a 1-row, end-header kit with the header and pump configuration 1ER, like this:

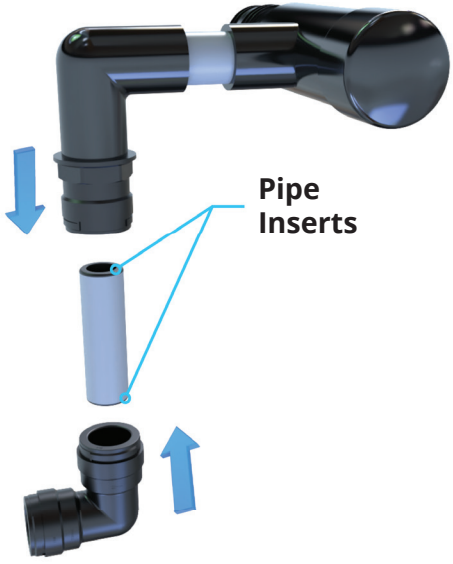


Please note that this header and pump configuration: (IEL) is different. The instructions inside this green box do not apply to this configuration or any other.

Place the Right Terminal that came with your kit as shown, note that you will not be using the non-reducing push-fit elbow and 2 pipe inserts that came with your kit (don't worry about having these extra parts at the end), then skip to the next step in the instructions.

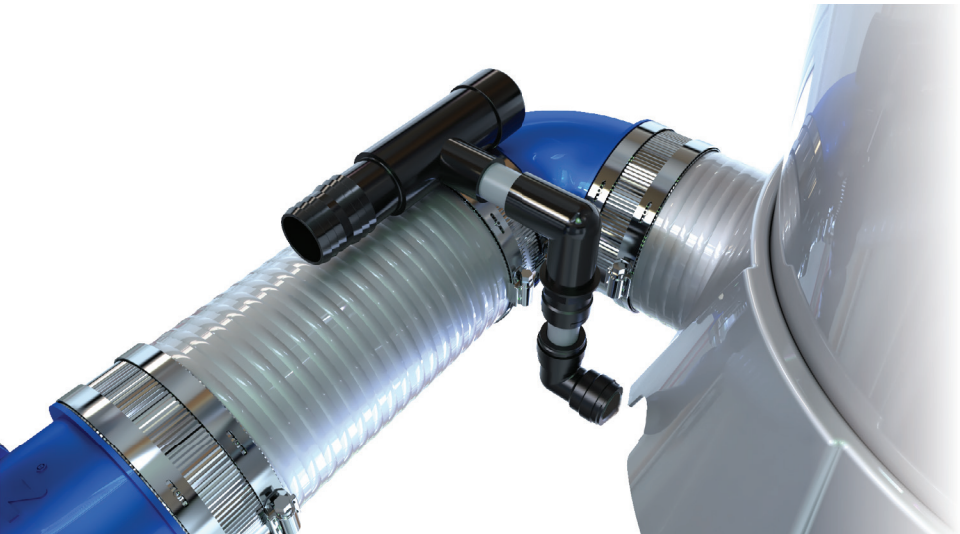
For Kit Pipe Code PS, cut a 3.5" / 8.5cm piece of 22mm grey rigid pipe for each terminal.

For Kit Pipe Code PL, cut a 3" / 7.5cm piece of 28mm white rigid pipe for each terminal.

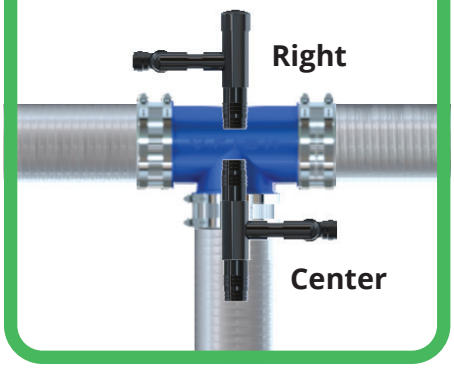


Push pipe inserts into both ends of each pipe, then use to connect a non-reducing push-fit elbow to each terminal, ensuring to push the pipe all the way in to both the terminals and elbows.

Place the terminals on top of the 5" manifold, with the elbows you just added pointing toward the distribution pipe cut-outs in the rows' pot bases as shown below.

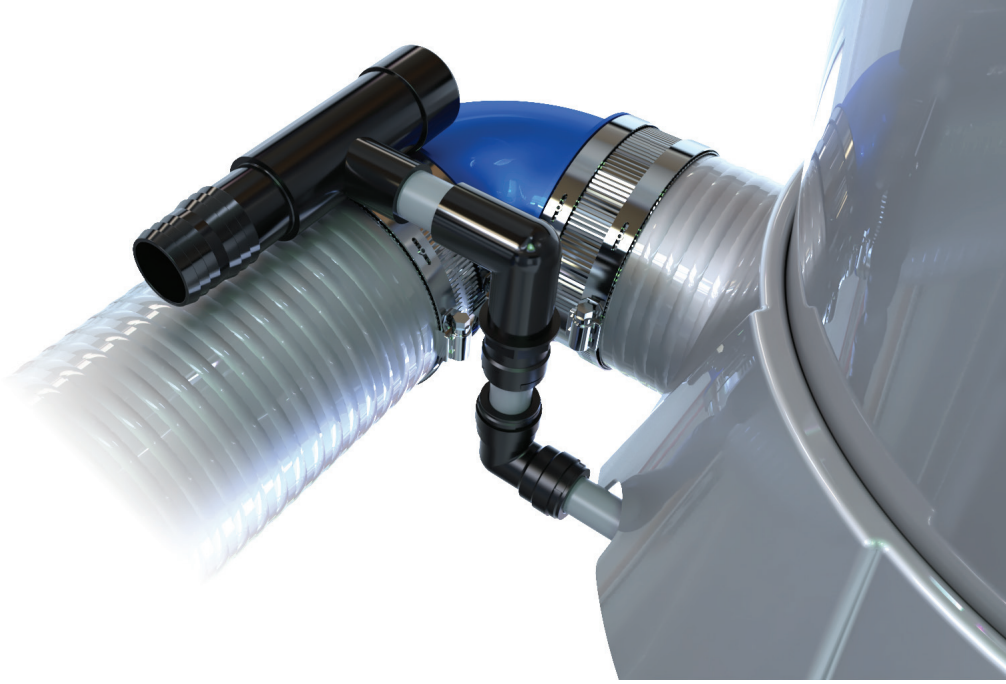


For 1 Row Middle Header Kits:



19 Measure (as shown in step 14), cut and fit 22mm grey or 28mm white rigid pipe between the terminals and the push-fit fitting for the first pot in each row closest to the terminal.

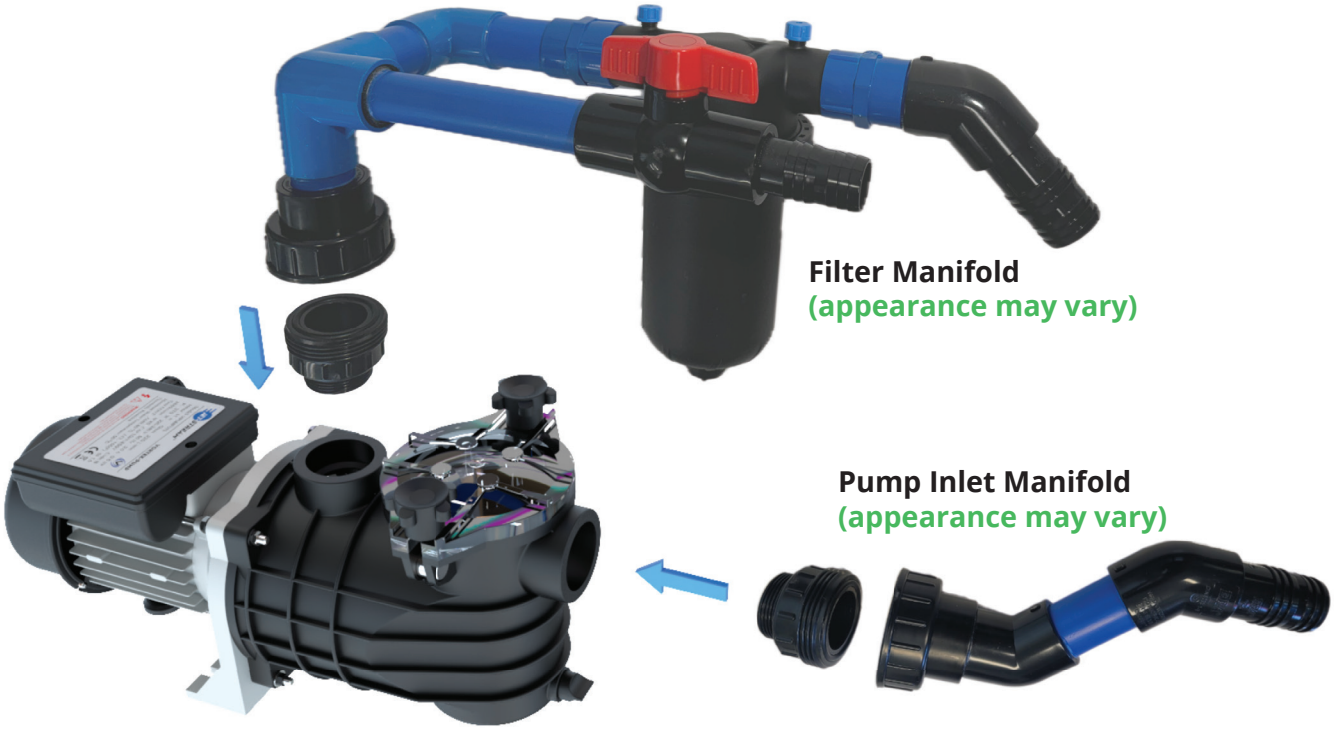
Ensure you push pipe inserts in both ends of the pipes, then fully insert the pipes into the push-fit fittings.



20 Fit the filter manifold and pump inlet manifold to the pump.

Unscrew the union on each manifold, then screw the pipe-threaded side of the union into the pump and re-connect the union.

Note that the pipe color for the filter manifold may vary.



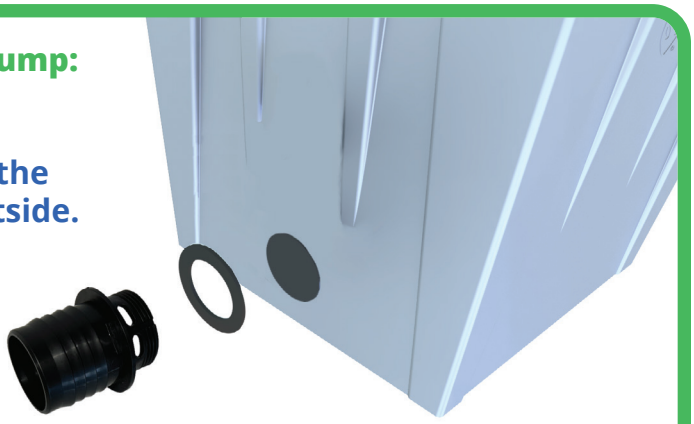
If your kit came with the 1500W Vortex Pump:
Your pump inlet manifold looks like this (when the union is separated):

21 Fit the tank connector(s) to the header.

If your kit came with the 1500W Vortex Pump:

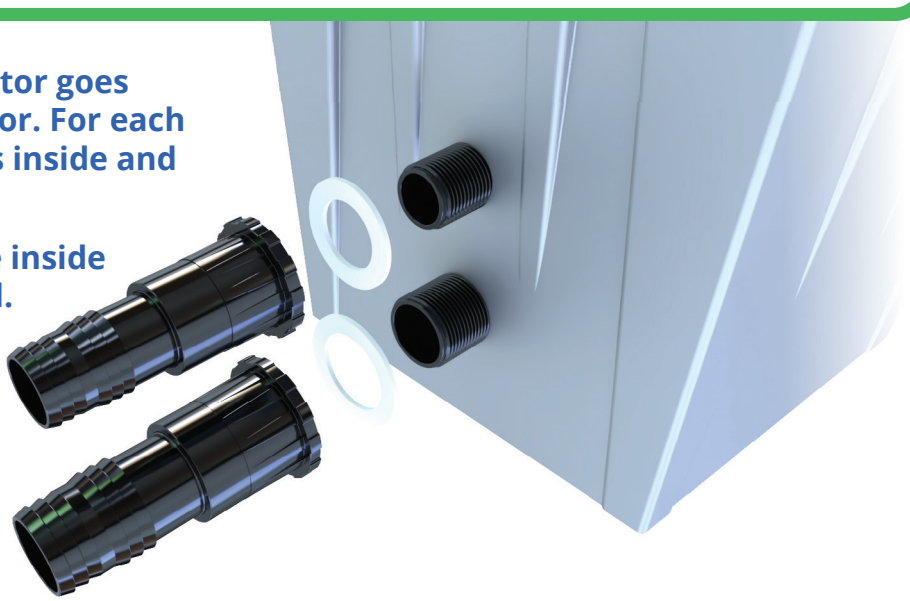
Fit the 50mm Dual-Flow Straight Fitting to the header. The rubber washer goes on the outside. Hold the barbed fitting on the outside and tighten the nut inside by hand.

Skip to the next step.



The smaller, 32mm tank connector goes above the larger 40mm connector. For each fitting, one silicone washer goes inside and one outside the tank.

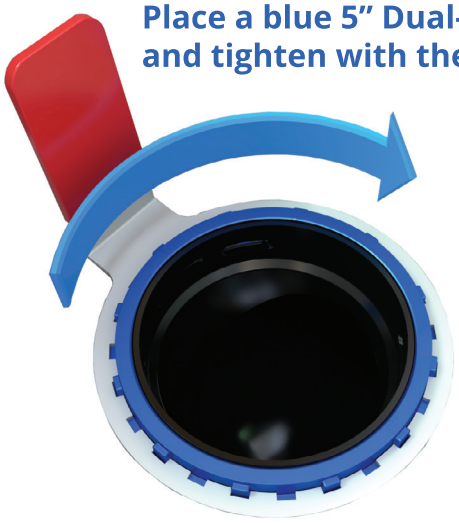
Hold the threaded fitting on the inside and tighten the outside by hand.

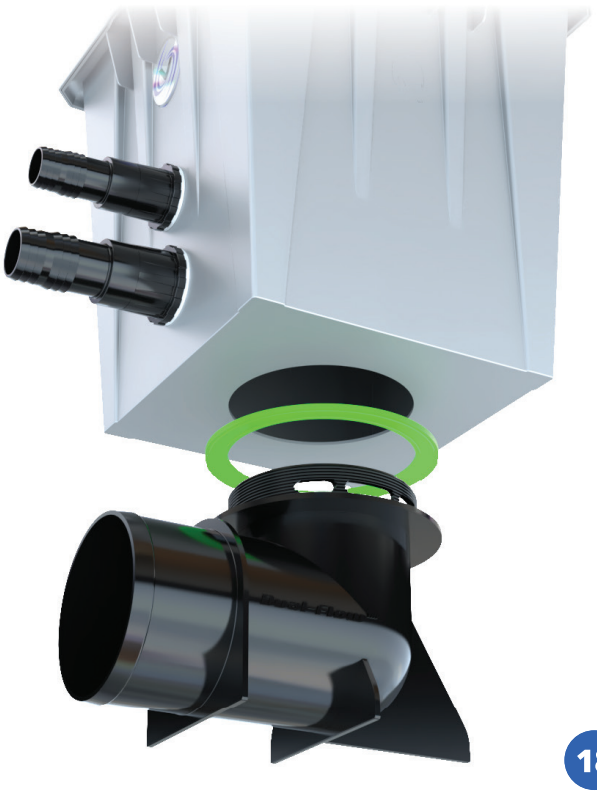


22 Ensure there is a 5” green silicone washer on top of the fitting, then place the header on the black 5” Dual-Flow elbow.

The tank connector(s) you just installed should be pointing toward where you want to put the pump.

Place a blue 5” Dual-Flow nut inside the header and tighten with the 5” wrench.





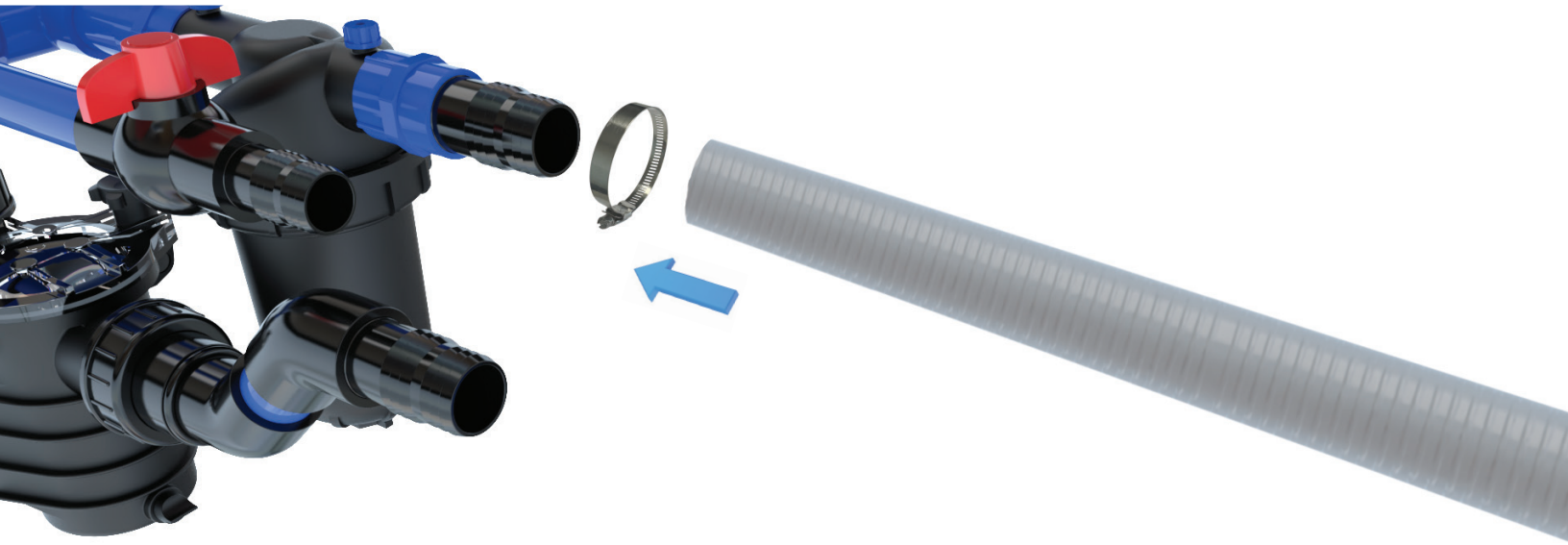
23 Connect an un-cut piece of pipe to the barbed fitting on the filter.

For Kit Pipe Code PS, this will be a 40mm silver spiral pipe.

For Kit Pipe Code PL, this will be a 50mm silver soft pipe.

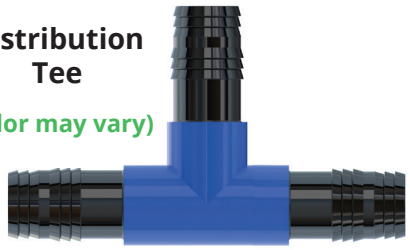
Warm the end of the pipe in some warm water and apply a small amount of the silicone grease to the barbed fitting on the filter to make the pipe easier to slide on.

Slide the largest pipe clamp you have left that came with your kit smaller than the 5" clamps (which you should have used all of by this point) over the pipe and tighten it to secure the connection on the filter's barbed fitting.

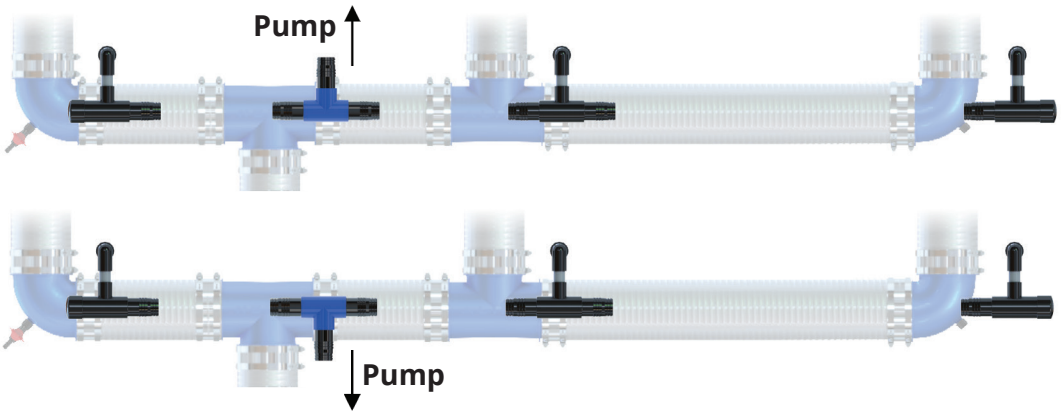


24 Skip this step if you have a **1 row kit**.

For Multi-Row Kits:



Place the distribution Tee that came with your kit halfway between the two terminals on either side of the 5" blue Tee that leads to the header in the 5" manifold. Aim the perpendicular part of the Tee toward the pump (regardless of which side the header is on), as shown below.



25 **Position your pump where you would like it to go, with the pump inlet manifold pointed toward the header pot's tank connector.**

Keep in mind that you will need to connect the barbed fitting of the pump inlet manifold to the header's tank connector with pipe when you are positioning the pump.

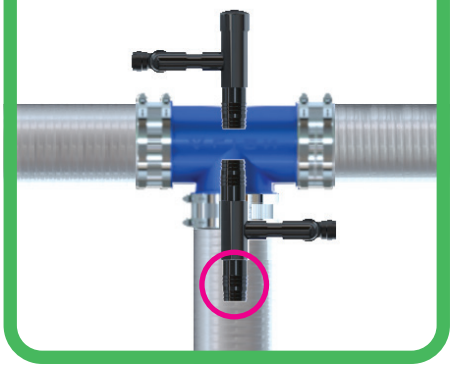
26 **Determine where the other end of the pipe connected to the filter needs to be connected.**

For multi-row kits, this is the perpendicular arm of the distribution Tee you just placed. Keep in mind that this arm can be angled up or down to make it easier to attach the pipe; the parallel barbed fittings just need to point toward the terminals on either side.

For 1 Row End Header kits, this is the only terminal you have.

For 1 Row Middle Header kits, this is the arm of the Center Terminal closest to the header / pump (circled in red to the right).

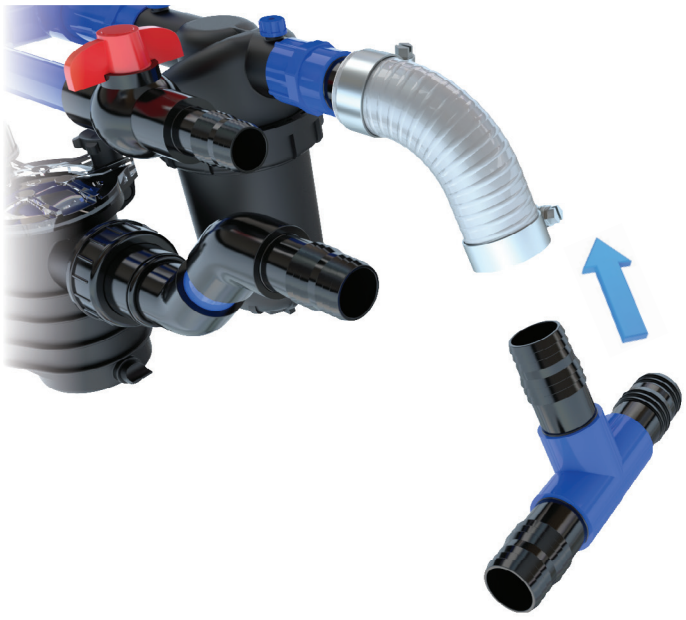
For 1 Row Middle Header Kits:



For Kit Pipe Code PL:

Your kit came with a 50mm barbed elbow which you can use to make a 90° bend in the pipe from the filter to the terminal or distribution Tee, if needed. Just make sure to put pipe clamps over the 50mm silver soft pipe before fitting the elbow, then tighten these clamps down on the elbow.

Mark where the pipe attached to the filter needs to be cut to attach to the distribution Tee or terminal and cut the pipe to length. Slide a pipe clamp over the pipe, slide the pipe onto the barbed fitting of the distribution Tee or terminal, and tighten the pipe clamp to secure it in place.

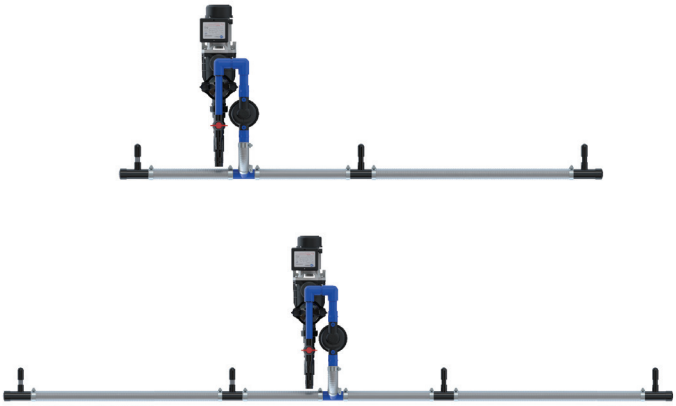


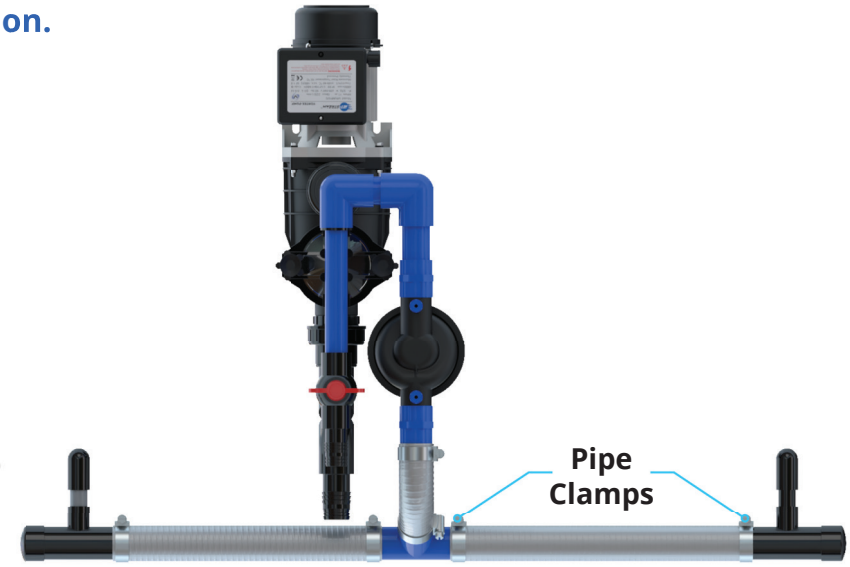
27 Connect the remaining barbed fittings on the terminals (and distribution Tee, if appropriate). **For 1 Row End Header kits,** there is nothing to do for this step.

For Kit Pipe Code PS, this will be with 40mm silver spiral pipe.

For Kit Pipe Code PL, this will be with 50mm silver soft pipe.

Use pipe clamps to secure each connection.





28 Connect the pump to the tank connector(s) in the header.

If your kit came with the 1500W Vortex Pump:

Use 50mm silver soft pipe to connect the pump inlet manifold to the Dual-Flow fitting in the header, with pipe clamps on both ends. Your kit does not need the pressure-adjusting valve that connects to the red pipe as seen in the picture below, so it does not come with the red pipe.

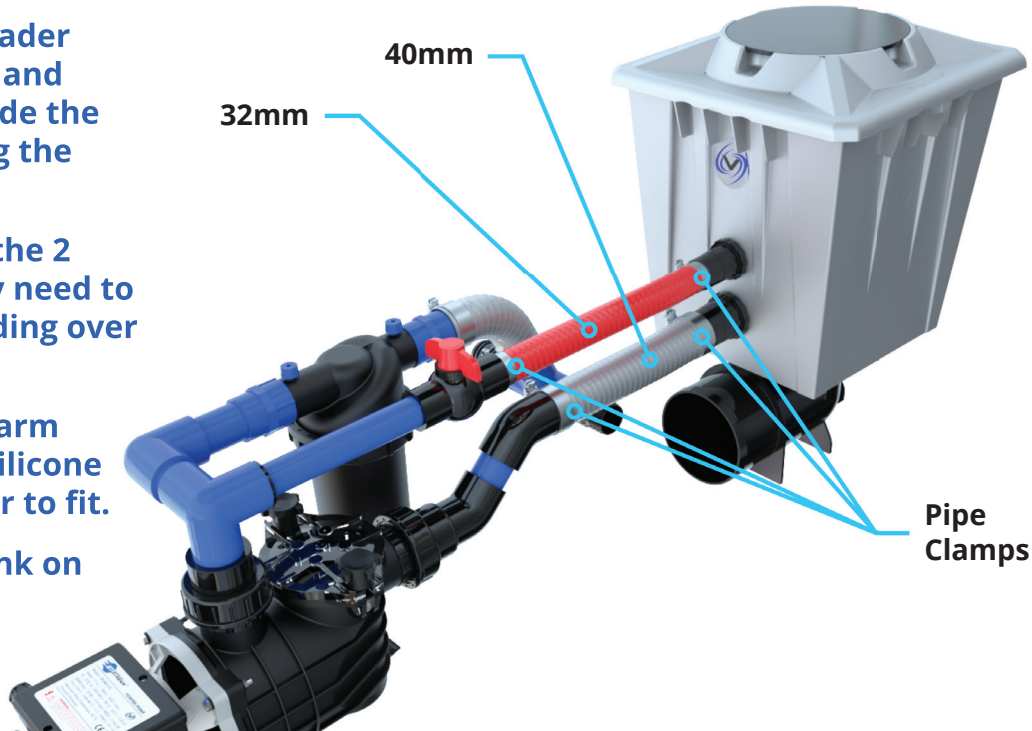
Place the header lid and blank on the header, then skip to the next step.

Connect the pump to the header using 40mm diameter silver and 32mm diameter red pipe- slide the pipe clamps on before fitting the pipe.

Note that the red pipe gets the 2 smaller clamps and you may need to loosen these a bit before sliding over the pipe.

Warming the pipe ends in warm water or using a tiny bit of silicone grease makes the pipe easier to fit.

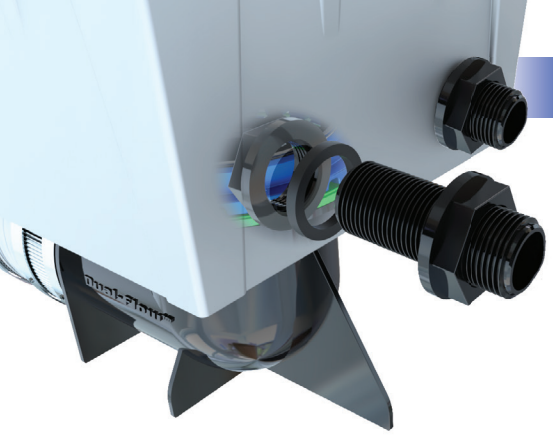
Place the header lid and blank on the header.



29 On each pot, fit pot clips to the slot in the pot above the Venturi inlet.

30 Place the air filter in the pot clip with the barbed fitting in the pot clip's hole. Connect to the silencer and Venturi valve as shown with 4" / 10cm lengths of 6mm blue pipe.

31 Place the lids, net pots and inspection covers on the pots.



32 Install the 1” threaded chiller fittings into the header from the outside.

The rubber washer goes on the outside of the header. Tighten the nut on the inside with the wrench provided.

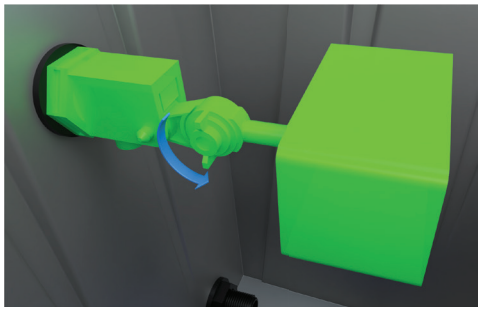
Wrench

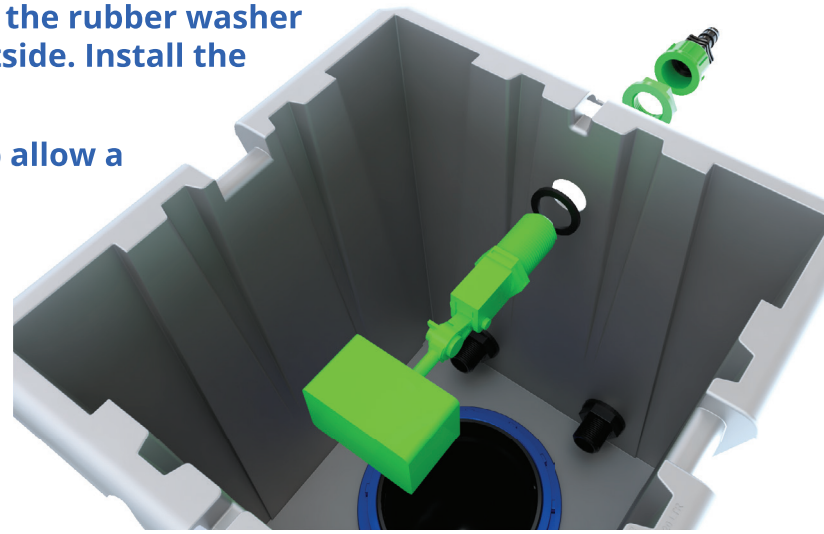
If a water chiller is not being installed, install the caps provided onto the threaded fittings.

These can be fitted inside or outside the header; installing on the inside will allow you to connect a chiller later and remove the caps without having to drain the system.

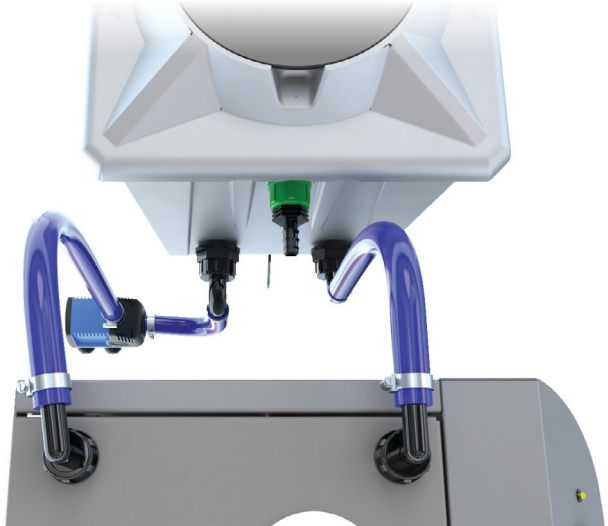
33 Install the float valve in the header with the rubber washer on the inside. Tighten the nut on the outside. Install the hose barb connector if desired.

Note that the float valve is adjustable to allow a specific fill level to be maintained.





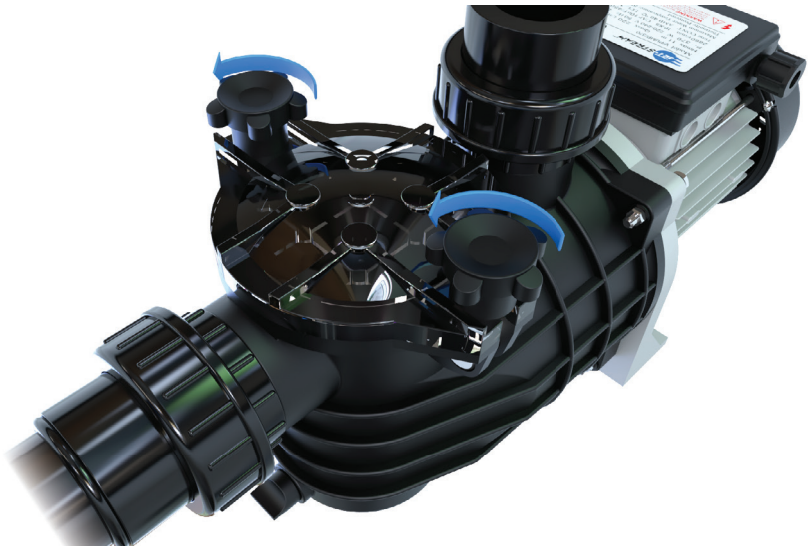
34 Install a water chiller and pump **(not included)** as shown. **If you purchased the optional water chiller kit,** refer to those instructions now.



FILLING THE SYSTEM

The system is ready to fill with water. Double check that the nuts on all pots, Venturis and pipe clamps are tight, and that the drain tap valve is closed.

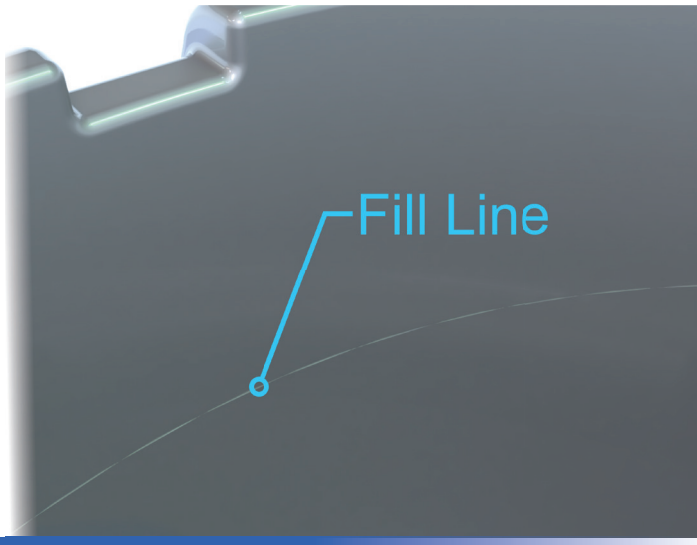
If your kit came with the 1500W Vortex Pump, ensure that the valve on the filter manifold is closed.



Loosen the pump filter lid. This will let air escape as the system fills, and ensures that the pump will be primed (filled with water).

When the water reaches the top of the pump filter lid and begins to overflow, tighten the lid again.

Fill the system until water reaches the fill line marked on the inside of the pots.



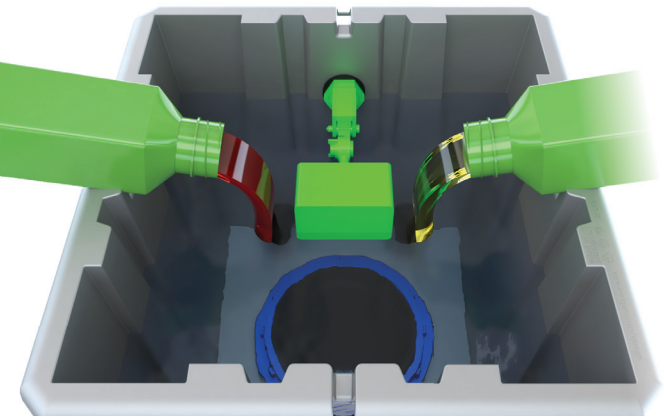
Ideally, let the system recirculate overnight to allow the water to reach a habitable temperature for the plants. Overly cold water can shock plants.

The ideal water temperature is 66-69 °F or 18-20 °C to keep the roots happy and suppress pathogens.

66 - 69 °F

18 - 20 °C

ADDING NUTRIENTS



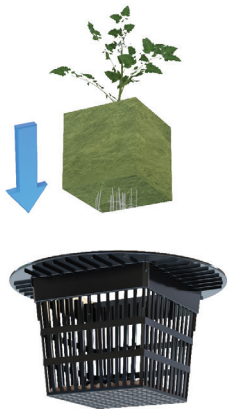
Add liquid nutrients to the header; they will immediately mix in the water pump and be distributed to each pot simultaneously. If plants are present in the system, add concentrated nutrients slowly to avoid shock.

Let the system recirculate for some time before taking a reading- 5 to 20 minutes, depending on the number of pots in the system.

Adjust accordingly. Do the same for pH adjustments.

PLANTING INTO THE SYSTEM

Place a rooted cutting into the center of the net pot.



Fill the void with substrate. Expanded clay pellets work well.

If the plants you are transplanting into the system have zero roots protruding the net pot, initially fill 3/4" / 2cm <u>above</u> the "fill line" on the pots to avoid dehydration.

NUTRIENT CHANGE-OUTS

The nutrient solution should be drained and replaced every 7-10 days. The drain tap can be opened to allow gravity to drain down the water, or a water pump can be connected.

A 5/8" / 16mm inner diameter tube can connect to the drain barb.

If you purchased the optional drain-out kit, just insert the red 15mm pipe attached to the pump into the push-fit connection, open the ball valve, and pump out the system as shown in the instructions that came with the drain-out kit.

FILTER CLEANING

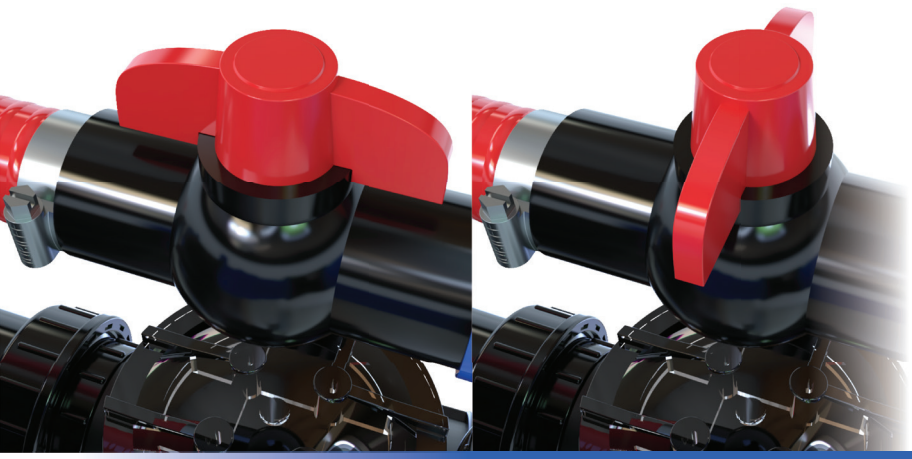
The water pump has a basket filter to catch larger debris before they get shredded in the pump. The secondary inline filter has a fine mesh filter to remove smaller debris and organic matter.

Both filters should be checked and cleaned when the system is empty, ideally every time when performing a nutrient change.

PRESSURE ADJUSTMENT

Valve fully open

Valve fully closed



The fully-closed position will provide maximum pressure to the Venturis. Slightly or fully opening the valve will reduce pressure and also decrease the sound of the aeration inside the pots.

TOP-UP TANKS

The system can be used without a top-up tank **(not included)**, but will require regular top-ups, especially in the flowering stage.

The float valve in the header pot can be connected to any tank or water butt to maintain fluid levels. The tank should be raised to allow gravity to deliver nutrient solution to the header.

A 5/8" / 16mm inner diameter tube can connect to the hose barb on the float valve, or a garden hose can be used without the barb.

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