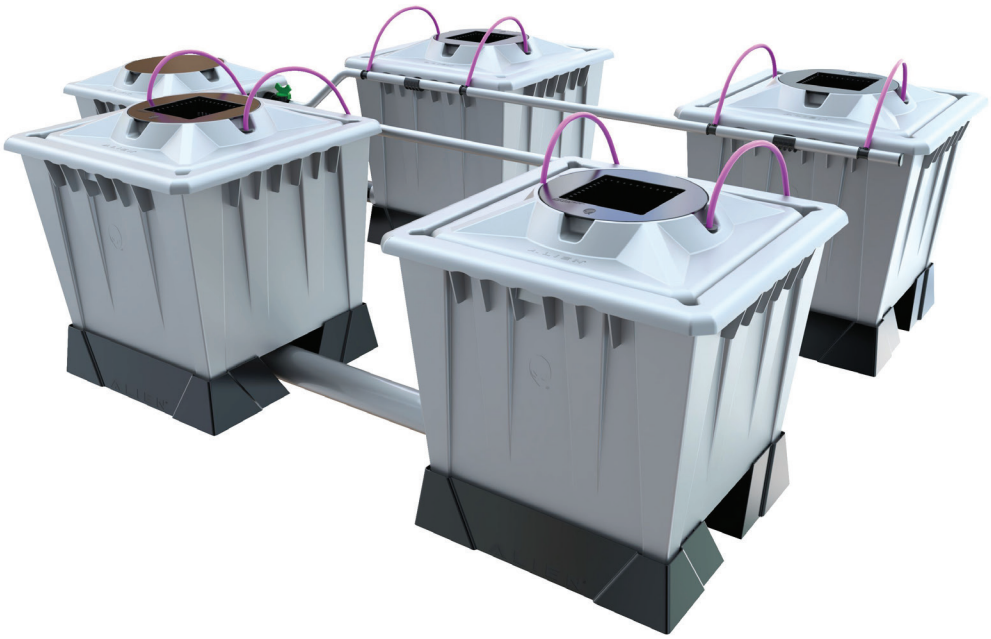
AERO™



SET-UP INSTRUCTIONS

AERO Designed and manufactured by

ALIEN®
THE EVOLUTION OF HYDROPONICS

Distributed in North America by

BLACK DOG
Horticulture Technologies & Consulting

WELCOME TO AERO

Thank you for purchasing an ALIEN HYDROPONICS AERO KIT!

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 page 3 and 4 of these instructions to help you determine what the parts look like.

This kit assembles without needing to glue any pipe or fittings, enabling the fastest set-up time and ease of reconfiguring the system later.

Please note: The AERO system kits come in 2 available pot sizes: 4 gallon / 15 liter, or 8 gallon / 30 liter pots. To best fit the plant sizes that these pots can grow, the allowed plant / pot spacing with the pipe supplied with your kit depends on the pot size. Please pay attention to the minimum and maximum pipe lengths allowed based on the pot size for the kit you received.

AERO kits also offer a choice of compact or remote header placement, which require different parts and layouts, so pay attention to which kit you ordered for header placement.

If you have any questions or issues, contact our technical team for advice:

https://alienhydro.com/contact

sales@alienhydro.com

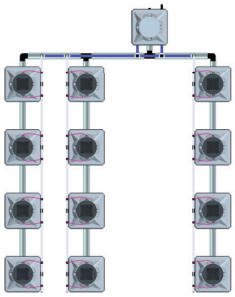
720-420-1209

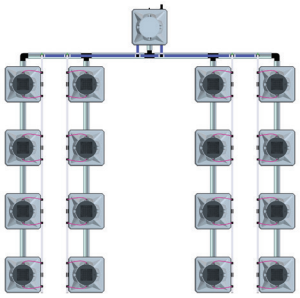
INITIAL CONSIDERATIONS

Before you begin the installation of the ALIEN® AERO system, consider the kit plant / pot spacings which best suit your grow room layout. The ALIEN Kit Configurator on our website can help determine how your kit can be configured to best fit your growing area:

https://www.AlienHydro.com/setup

3-row and 4-row kits with more than 2 pots per row come with enough pipe to create an aisle between rows so that you can easily access all of your plants throughout the growing cycle. If your space allows, we highly recommend incorporating an aisle in your layout so you never have to reach over one plant to access another.





Reservoir Tank

AERO systems require a reservoir or tank (**not included with AERO kits!**) to hold the nutrient solution that will be sprayed on the plants' roots. The ideal size of the tank depends on how frequently you wish to change nutrients and whether you are configuring your AERO system to be recirculating or drain-to-waste. ALIEN offers collapsible reservoir tanks:

https://www.AlienHydro.com/tanks

Recirculate or Drain-to-Waste

The AERO header contains a drain pump to remove excess water that has dripped off plants' roots so that they are never sitting in water. This pump can return excess water to the nutrient reservoir for a recirculating system, or it can pump all excess water to a drain for a drain-to-waste configuration. Both methods have advantages and drawbacks.

Recirculating systems are extremely efficient with nutrients and water, however they require a bit more monitoring to ensure the nutrient concentration levels and pH are remaining stable between changing out the nutrient reservoir's contents. In addition, if one plant in the system becomes infected with a bacterial or fungal pathogen, the recirculating water can cross-contaminate other plants in the system.

Drain-to-waste systems will use more nutrients and water, but as the plants are always only getting "fresh" nutrients from the reservoir, cross-contamination is virtually eliminated and the nutrient reservoir alwas has "fresh" nutrients.

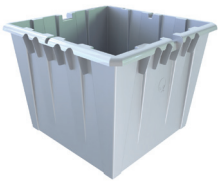
Chiller

If configured as a recirculating system, a water chiller is highly recommended for the AERO reservoir tank to keep water temperatures in an optimal range to discourage pathogenic bacteria and fungi from growing in the reservoir and on roots.

A separate pump is required for the chiller as the AERO pressure pump is only running when water / nutrients are being sprayed on the plants' roots. For more information, see page 16.

PART DESCRIPTIONS

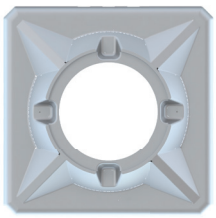
4 gallon / 15L Pot



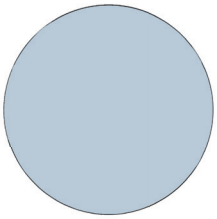
8 gallon / 30L Pot

Header*

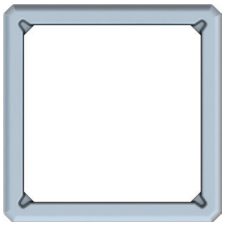
Net Pot



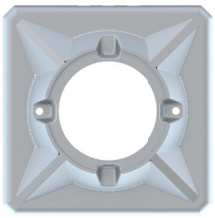
Header Lid



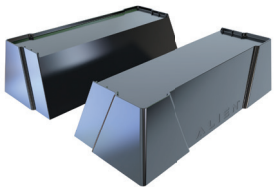
Header Blank



Large Pot
Lid Adapter



AERO Lid



Pot Stands*

50mm Dual-Flow Tee

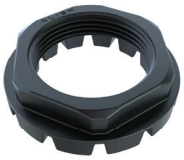
50mm Dual-Flow
Elbow

50mm Dual-Flow
Straight

50mm Barbed
Elbow

50mm Barbed Tee

50mm Washer



50mm Dual-Flow
Nut

Pressure Water
Pump*

JET-STREAM
DRAIN Pump*

DRAIN Pump Power
Adapter*

DRAIN Pump
Pipe Adapter*

Cycle Timer*

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

All possible parts are shown for reference only-
No AERO kit comes with or uses all of the parts above!

Tee 16mm - 4mm

Valve 16mm Green

Pot Clip 16mm

Plug- 16mm

Drain Cover - Copper

Elbow 19mm Barbed

Tee 19mm Barbed

Elbow 19mm Barbed - 3/4" Male

Tee 19mm Barbed - 3/4" Male

Siphon Tee 19mm

Elbow 25mm Barbed

Tee 25mm Barbed

Elbow 25mm Barbed - 3/4" Male

Tee 25mm Barbed - 3/4" Male

Siphon Tee 25mm

50mm Silver Pipe

40mm Silver Pipe

25mm Blue Pipe

19mm Blue Pipe

19mm Black Pipe

16mm Silver Pipe

4mm Pink Pipe

Elbow 20mm Barbed - 3/4" Female

Elbow 40mm Barbed

Siphon Tee 40mm

Pipe Clamps

Grommet

Black Sprinkler

Wrench 50mm

Pipe Cutter

All possible parts are shown for reference only-
No AERO kit comes with or uses all of the parts above!

1 Determine the 50mm pipe lengths you will need to cut for your kit's configuration. Keep in mind the kit only comes with enough pipe to allow certain maximum pot spacing so do not cut any pipe until you get to step 2. There are two ways to determine pipe lengths:

Option 1 (easiest and fastest): Go to our website's setup configurator at:

https://www.AlienHydro.com/setup

Enter the kit code specified in the top left corner of your kit's packing list, then configure your kit's setup to your desires. When you have decided on the configuration you want, select the option "**Show Pipe Manifold Assembly**" under the "Display" tab and it will show you how long each piece of 50mm pipe needs to be, as well as where all the 50mm Dual-Flow and barbed fittings need to go.

Skip ahead to step 2 on page 8.

Option 2: Determine the pipe lengths to cut by laying out your kit's pots and measuring.

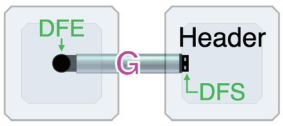
Place the pots where you want them and temporarily put the appropriate Dual-Flow fittings into them. Reference the diagrams on the next 2 pages to determine which 50mm Dual-Flow fittings need to go in each pot for your kit, and where 50mm Barbed Tee(s) and 50mm Barbed Elbows need to go.

Abbreviations used in the diagrams for 50mm fittings:

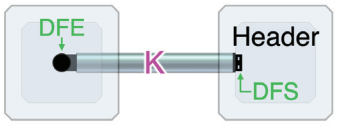
BE	BT	DFE	DFS	DFT
Barbed Elbow	Barbed Tee	Dual-Flow Elbow	Dual-Flow Straight	Dual-Flow Tee
				

To temporarily put the appropriate Dual-Flow fittings into the pots, put the pots on their side, place the 50mm washer on the outside of the pot and put the threaded side of the fitting into the hole at the base of the pot, then place and gently hand-tighten a 50mm Dual-Flow Nut on the inside of the pot as shown:

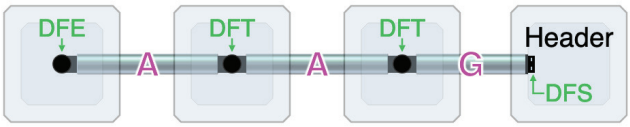
1 POT COMPACT HEADER



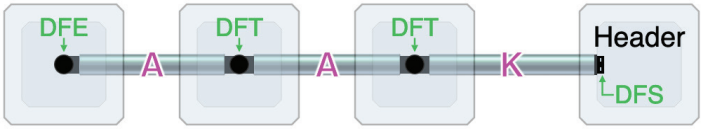
1 POT REMOTE HEADER



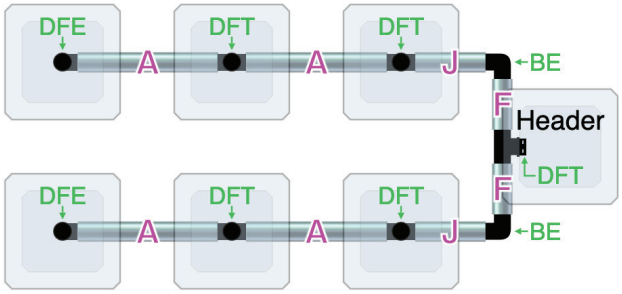
1 ROW COMPACT HEADER



1 ROW REMOTE HEADER



2 ROW COMPACT HEADER



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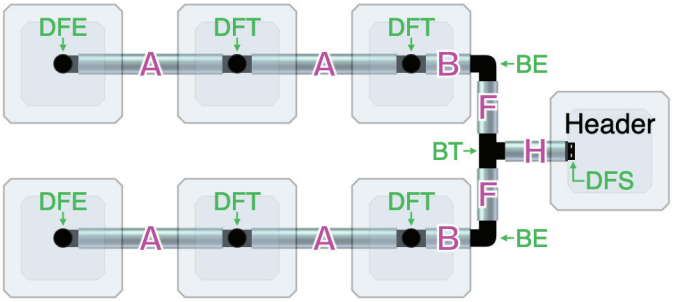

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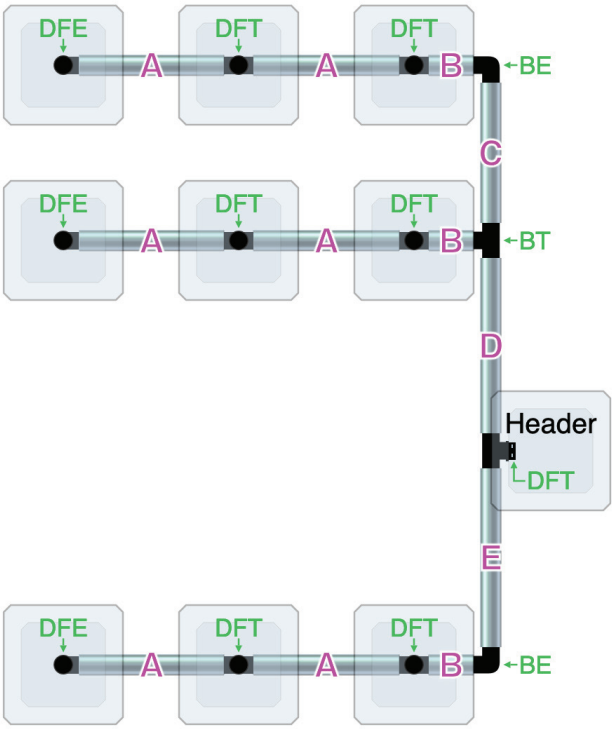

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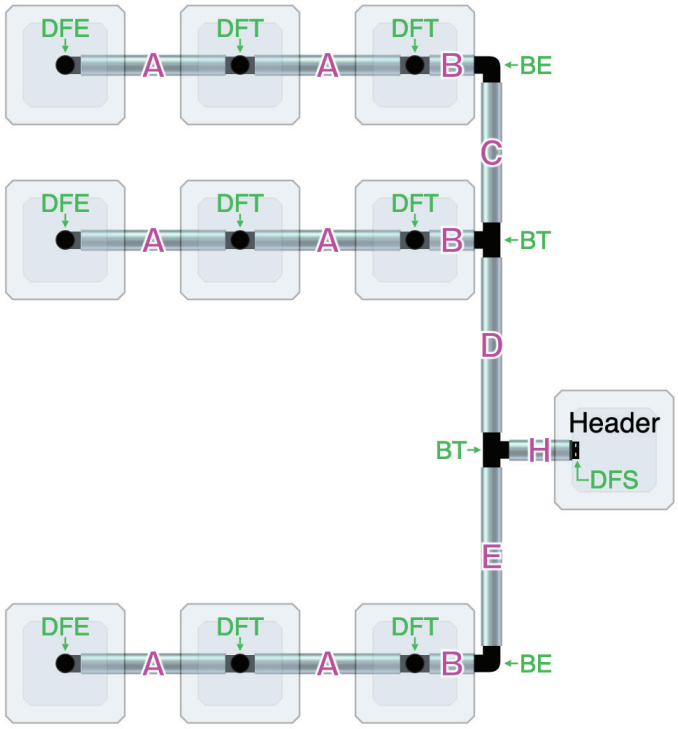
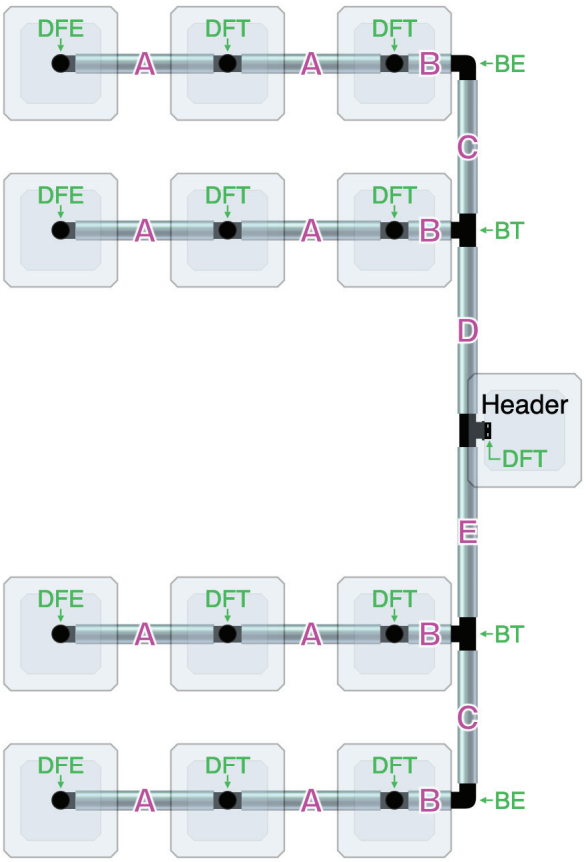
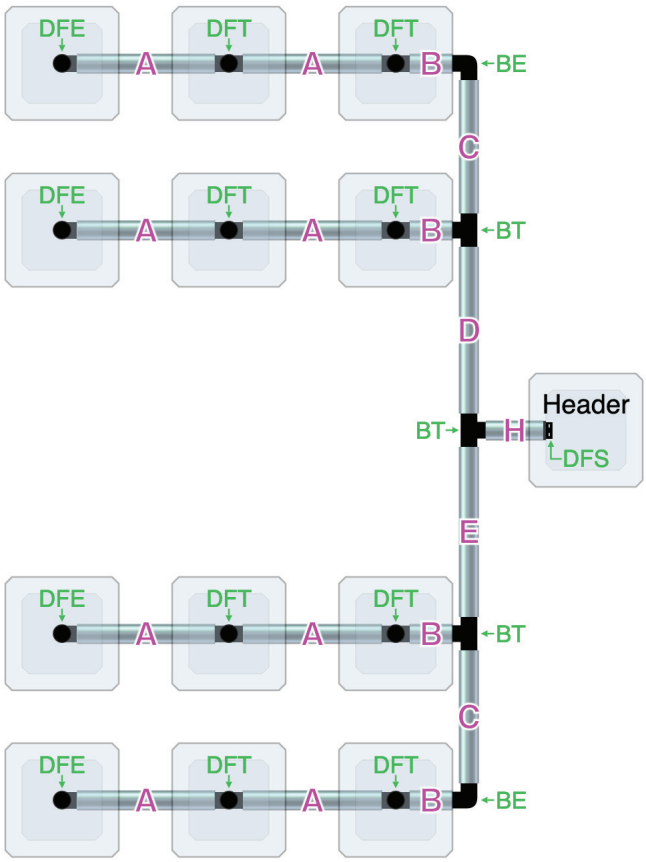


4 ROW COMPACT HEADER



4 ROW REMOTE HEADER



Once all the 50mm Dual-Flow fittings are attached to the pots, the pots are placed where you want them, and the 50mm Barbed Tees and Elbows (if used) are placed where you want, measure the distance between the flanges of the 50mm fittings to determine pipe lengths.

Before cutting any pipe, make certain that the pipe length you want to cut complies with the minimum / maximum pipe length in the tables below, matching the pipe segments to the diagrams for your kit.

15L Pot Kits:

Pipe Label	Minimum	Maximum
A	9 ½" / 24cm	19 ⅝" / 50cm
B	3 ⅞" / 10cm	9 ⅞" / 25cm
C	11" / 28cm	19 ⅝" / 50cm
D	3 ⅞" / 10cm	19 ⅝" / 50cm
E	3 ⅞" / 10cm	35 ⅜" / 90cm
F	3 ⅞" / 10cm	7 ⅞" / 20cm
G	12 ¼" / 31cm	19 ⅝" / 50cm
H	3 ⅞" / 10cm	39 ⅜" / 100cm
J	7 ⅞" / 20cm	9 ⅞" / 25cm
K	12 ¼" / 31cm	39 ⅜" / 100cm

30L Pot Kits:

Pipe Label	Minimum	Maximum
A	13" / 33cm	26" / 66cm
B	4 ½" / 11.5cm	13" / 33cm
C	14 ⅛" / 36cm	26" / 66cm
D	5 ⅛" / 13cm	26" / 66cm
E	5 ⅛" / 13cm	35 ⅜" / 90cm
F	5 ⅛" / 13cm	10 ⅞" / 27.5cm
G	13 ¾" / 35cm	26" / 66cm
H	3 ⅞" / 10cm	39 ⅜" / 100cm
J	9 ⅜" / 24cm	13" / 33cm
K	13 ¾" / 35cm	39 ⅜" / 100cm

Note that position of pipe segments **D** (shorter) and **E** (longer) can be reversed from how they are shown in the diagrams; this will have no impact on kit setup for 3 and 4 row kits.

Once you have noted the pipe lengths you need to cut, remove the Dual-Flow fittings from the pots- it is much easier to put the pipe on the fittings when they are not attached to pots.

2 Your kit came with pre-cut lengths of 50mm silver pipe- either 26" / 66cm pieces, 39" / 100cm pieces, or a combination of both. When cutting this pipe to length:

Pipe Cutter

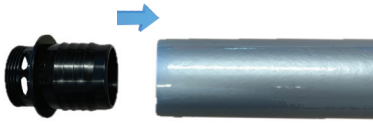
1. Identify the longest segment you still need to cut.
2. Identify the shortest piece of pipe you have left that is long enough for the segment, and cut the segment from this piece using the supplied pipe cutter- **be careful, the blade is very sharp!**
3. Set aside your newly-cut segment in a "finished" area so you don't accidentally cut it later; it may be helpful to label the pieces after you have cut them.
4. Repeat until you have all the segments you need for your kit.

3 Determine which 50mm fittings need to go in each end of the pipe segments, using the diagram from our website's setup configurator or the diagrams on pages 6 and 7.

Abbreviations used in the diagrams for 50mm fittings:

BE	BT	DFE	DFS	DFT
Barbed Elbow	Barbed Tee	Dual-Flow Elbow	Dual-Flow Straight	Dual-Flow Tee
				

Heat the ends of the pipe in hot water (a heat gun is NOT recommended as it can over-heat the pipe!) and when warm, insert the barbed fitting into the pipe, pushing the fitting into the pipe all the way to the flange.



Once inserted into the pipe, the fittings can be rotated to get proper alignment without having to remove them from the pipe.

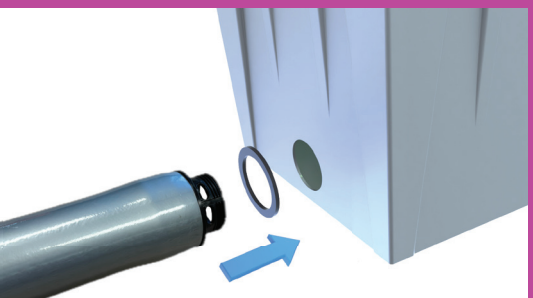
The 50mm pipe can be pushed onto the barbed fittings once; if removed and put on again, the pipe will be stretched out and leak without a 60mm pipe clamp (Clamp Size 4 available on our website).

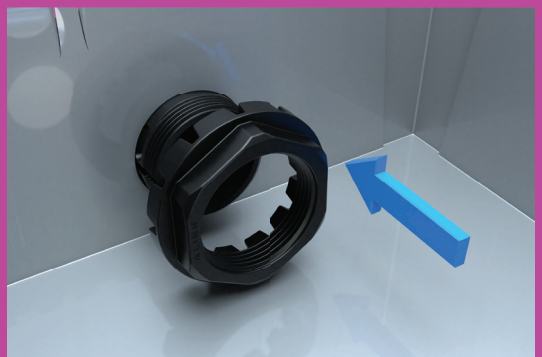
As you assemble the 50mm pipe manifold, the threaded side of the Dual-Flow fittings should be facing up to go into the bottom of the pots, and horizontally to go into the header.

4 Insert the threaded end of the 50mm Dual-Flow Straight or Tee fitting meant for the header into the hole on the side near the bottom of the header, with a 50mm rubber washer on the outside of the header, then place and tighten a 50mm Dual-Flow Nut on the inside as shown.

Use the supplied 50mm wrench on the nut to ensure it is tight.

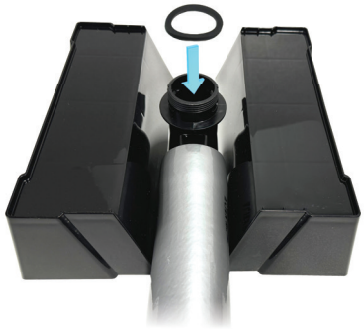

50mm Wrench





5 For each pot location, place a 50mm rubber washer on the top of each 50mm Dual-Flow fitting around the threads, then place a pair of pot stands on either side of the fittings to hold the pots.

The header is not placed on any pot stands; it is deliberately lower than the pots to allow complete drainage.



6 Place a pot onto each Dual-Flow fitting, adjusting the pot stands and snapping the pot into the stands so it can't slide off.

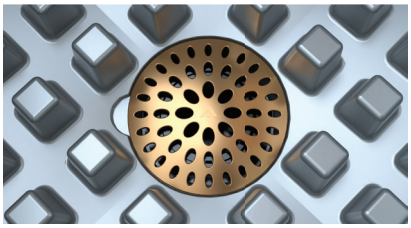
50mm Wrench

Fit a 50mm Dual-Flow Nut onto the threaded fitting and tighten with the 50mm wrench.

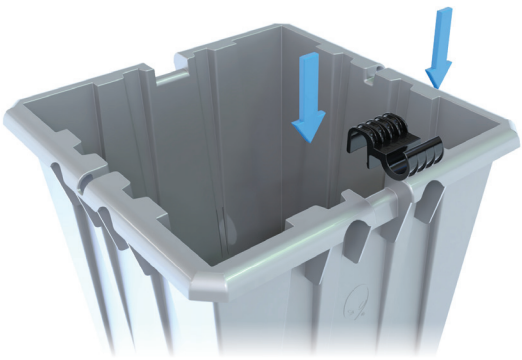
7 Place a copper drain cover in the bottom of each pot to deter roots from entering the pipes.

Note that the copper will discolor over time with use; this is normal.

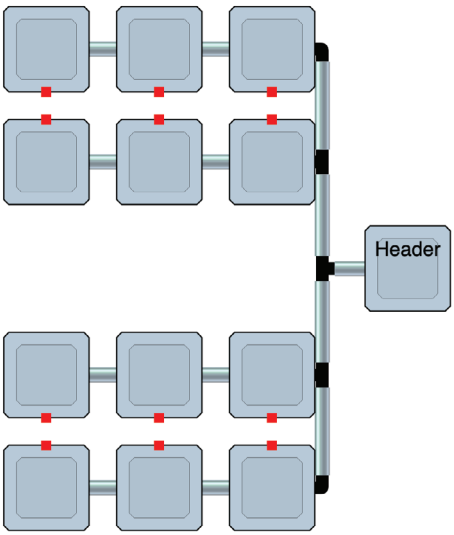
We recommend replacing the copper drain covers every 6 months to maintain performance.



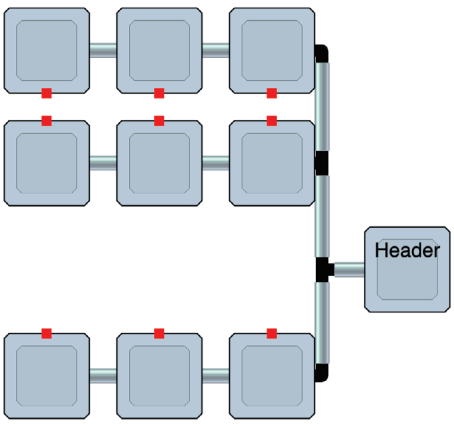
8 Attach one 16mm pot clip to each of the pots as shown to hold the 16mm nutrient distribution line. Recommended placement is shown below with the pot clips highlighted in red.



4 Row:



3 Row:



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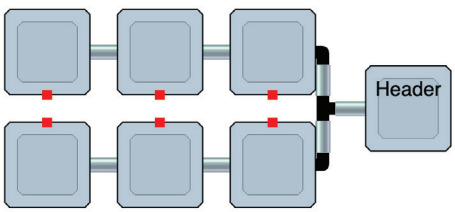
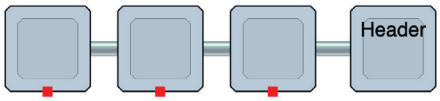
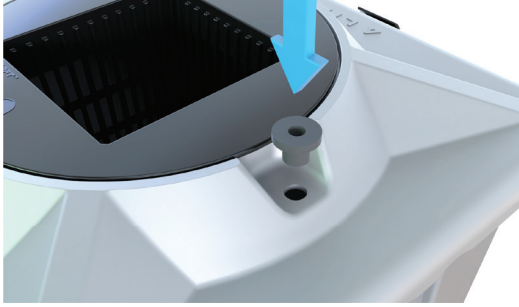


1 Row:

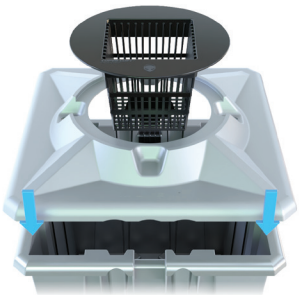




9 Push-fit 2 grommets into each AERO Lid.

Place the pot lids and net pots in position on each pot. If you have a 30L pot kit, the large pot lid adapter is also required.

15L Pots



30L Pots

10 **If you have a 1 or 2 row kit,** screw the 16mm barbed green-handled valves onto the threaded connections just below the top of the header.

Skip ahead to step 13.

11 **For 3 and 4 row kits with 3 to 20 total pots,** screw the 20mm barbed - 3/4" female elbow onto the threaded connections just below the top of the header, with the elbows aiming down.

20mm Barbed - 3/4" Female Elbow

12 **For 3 and 4 row kits,** screw the 16mm barbed green-handled valves onto the threads of the threaded tees and elbows.

Kits with 3 to 20 pots use 19mm threaded elbows and tees; 21 to 36 pot kits use 25mm threaded elbows and tees.

19mm or 25mm Threaded Elbow

19mm or 25mm Threaded Tee

13 Tips for working with our flexible pipe:

Measure the exact length you need by:

1. Slide one end of your "bulk" pipe onto the barbs of the first fitting you want to connect.
2. Lay out the pipe to where you want to put the next fitting.
3. Not forgetting to cut it long enough to go over the barbs of the next fitting, cut it to length.
4. If the pipe needs pipe clamps, slide 2 onto the end of the new pipe segment you just cut.
5. Push the barbs of the next fitting into the end of the pipe.
6. If using clamps, move these to each end of the pipe over the barbs and hand-tighten.

Unlike the 50mm pipe, once smaller pipes have been slid over a barbed fitting, the fitting can be removed from the pipe by:

1. Removing the pipe clamp (if there is one).
2. Gently and slowly rock the fitting out while pulling on it.
3. The fitting can be re-inserted. Re-tighten pipe clamp, if using.

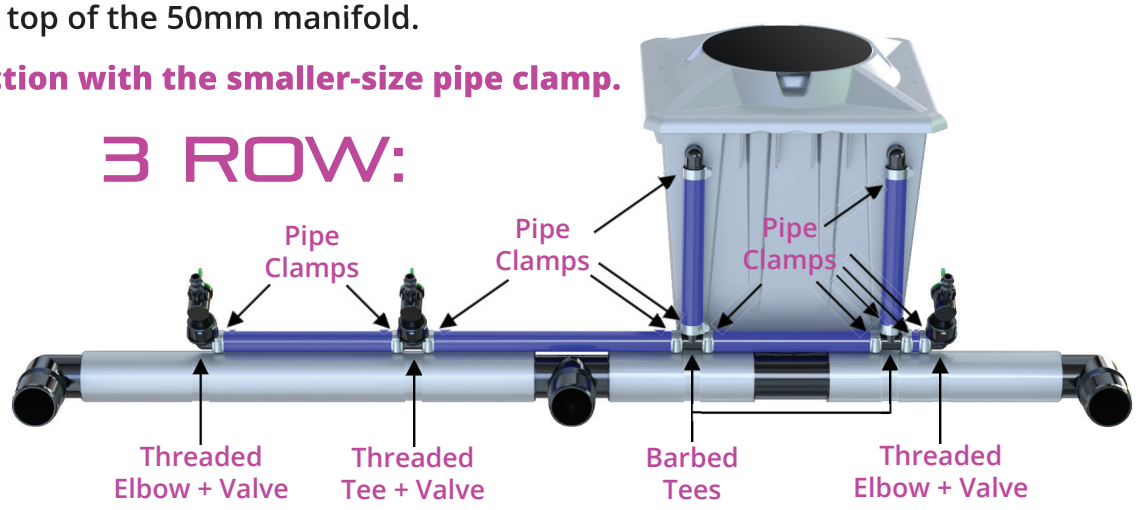
14 For 3 and 4 row kits, using the blue 19mm or 25mm pipe, connect the barbed elbows on the side of the header facing the pots to the threaded tees and elbows with valves that you assembled in step 12, as shown below.

The valves should be placed to line up with the side of each row of pots that you placed the pot clips on, with the barbed side of the valve aiming up toward the corner of the first pot in the row. Use two 19mm or 25mm barbed tees to connect the pipes coming from the header to the pipe sitting on top of the 50mm manifold.

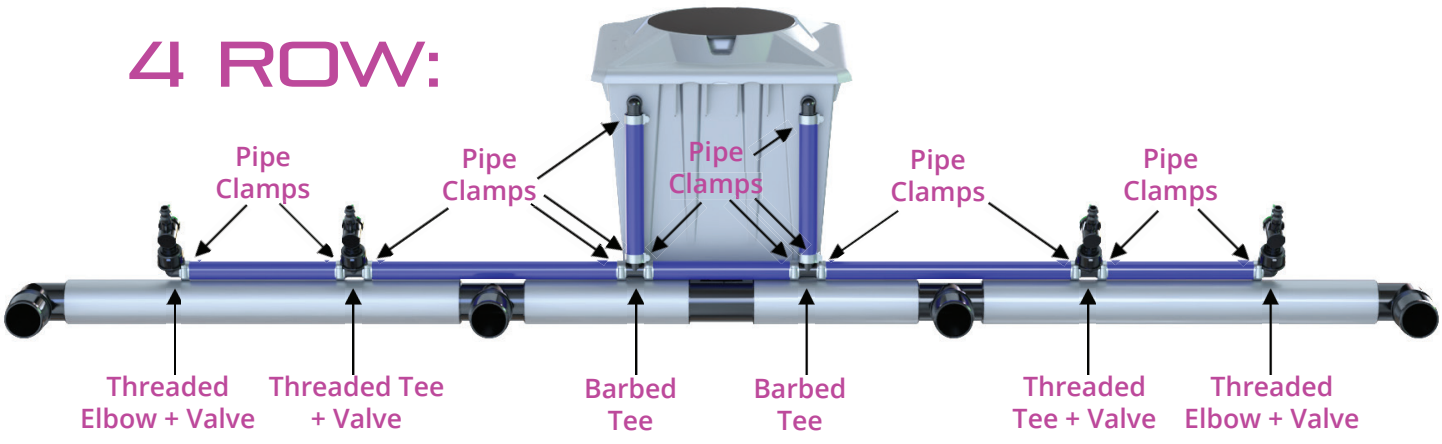
Secure each connection with the smaller-size pipe clamp.

19mm or 25mm
Barbed Tee

3 ROW:



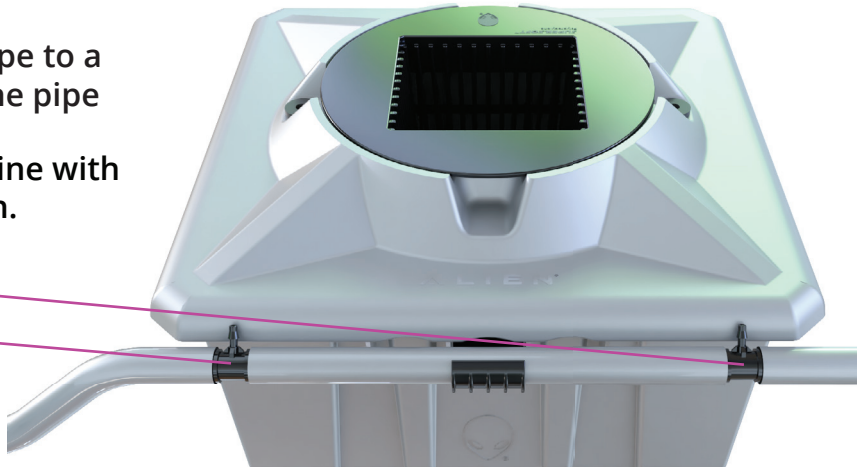
4 ROW:



15 Connect one end of the 16mm silver pipe to a barbed green-handled valve and run the pipe up through the pot clips row along the row, inserting two 16mm - 4mm tees per pot, in-line with where the grommets in the lid are, as shown.

Plug- 16mm

Tee 16mm - 4mm



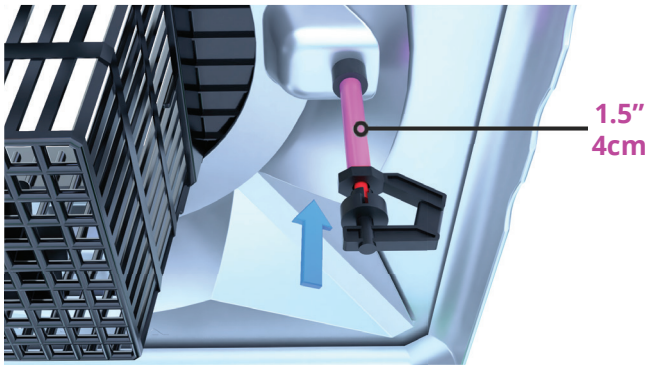
At the end of each row, insert a 16mm plug just past the second 16mm - 4mm tee for the pot.

Repeat for all rows.

If you have a 1-row kit, close the green-handled valve you aren't using on the header by turning the handle perpendicular to the barbed nozzle.

16 From the top, push one end of the 4mm pink pipe through the grommet in a pot lid until **1.5" / 4cm** hangs beneath the lid. Attach a sprinkler, as shown.

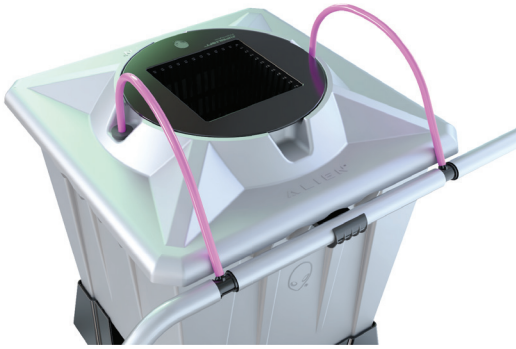
Black Sprinkler



Aim the black support arm to the outside of the pot.

Allowing enough pipe to ensure the sprinklers are hanging vertically inside the pot and the lid can be lifted slightly, cut and attach the other end of the pipe to the 16mm - 4mm tee, as shown.

Repeat for all grommet holes in all lids (except the header).



17 Attach the DRAIN pump pipe adapter to the red DRAIN pump and place it in the bottom of the header, ensuring the bottom of the pump is lying flat. Attach the other end of the DRAIN pump pipe adapter to the barbed elbow inside the header, as shown.

Attach the pump's power cord to the DRAIN pump power adapter.

JET-STREAM DRAIN Pump

DRAIN Pump Power Adapter

DRAIN Pump Pipe Adapter

18 Using 25mm blue pipe for 1 - 20 pot kits or 40mm silver pipe for 21 - 36 pot kits, attach a pipe to the pressure pump's outlet and secure with a pipe clamp.

If you purchased an ALIEN GardenTank to go with your AERO kit, follow the instructions that came with it to assemble it now.

Pressure pump appearance will vary

19 Place the pressure pump in the bottom of your tank / reservoir and fit the 25mm or 40mm siphon tee to the blue pipe just below the lid / rim of the tank, using two 25mm or 40mm barbed elbows to create a "U" to go over the side of the tank, as shown. Use pipe clamps on all connections.

19 / 25 / 40 mm Barbed Elbows

Siphon Tee 19mm

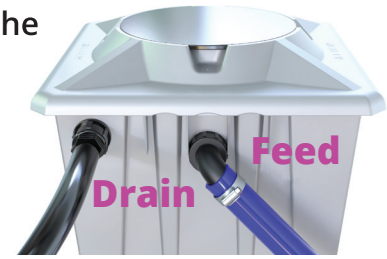
Siphon Tee 25mm

Siphon Tee 40mm

If running as a recirculating system, attach the 19mm siphon tee to two 19mm barbed elbows using 19mm black pipe and suspended at the top of the tank, as shown. No pipe clamps are needed for this.

Note that siphon tees cannot be submerged and must remain above the maximum water level in the tank or drain to work properly.

20 Connect the 25mm blue or 40mm silver feed pipe from the tank to the header's feed elbow using clamps.



Connect the 19mm black pipe to the drain barb on the header; a pipe clamp is not required.

If running as a recirculating system, connect the other end of the black pipe to the 19mm siphon tee assembly at the tank.

If running as a drain-to-waste system, run the other end of the black pipe to a drain instead of back to the tank, utilizing the 19mm siphon tee and elbows if the drain point is higher than the DRAIN pump in the header.

21 Plug the DRAIN pump's power adapter into a power outlet. This pump should always have power, as it automatically turns on only when there is water in the header.

Plug the pressure pump's power cord into the outlet on the cycle timer, and plug the cycle timer into an outlet. This pump will only be run for short cycles during feeding, controlled by the cycle timer. Do not run the pressure pump unless it is submerged in water.

Cycle Timer

Fill the Tank / Reservoir

Fill the tank with water and add the required amount of nutrients. After the first feed, it may be helpful to top up the tank again as some water will remain in the system.

Excessively cold water (less than 63 °F / 17 °C for most plants) can shock the plants' roots, so try to adjust the temperature of the water with warm water or allowing it to get to room temperature before using it for feeding.

Set Feeding Duration and Frequency

AERO utilizes an aeroponic technique with plants' roots suspended in air, requiring feeding little, but often. The pressure pump has a high flow rate and does not need to be run very long during each feeding. Set the interval timer to feed your plants accordingly.

We recommend 30-60 seconds "on" time, followed by 30-60 minutes off. As your plants grow or you better adapt the system to your particular grow environment, you can tweak these settings to better match your plants' needs. This is the advantage of the aeroponic technique- you can finely-tune feedings to control plant growth.

Please note that the DRAIN pump cannot pump waste water out of the system as fast as the pressure pump can fill it, so it is possible for pots to over-fill if the feeding duration is set too long. Monitor the first feeding after adjusting feed duration to ensure this is not a problem.

The green-handled valves can be used to reduce water pressure being delivered to each row of pots.

Test the System

We recommend test-running the system for at least one feeding to check for any necessary adjustments before planting into it. Ensure the sprinklers are working properly in each pot by removing the net pot and placing your hand in the hole to ensure water is coming from both sides.

Keep in mind if you run the system without the net pots, or no substrate in the net pots, that splashing out through the the lid hole / net pots will be eliminated once you put substrate in them.

If excessive drips come out from under the pot lid, the pressure being delivered to the sprinklers can be adjusted per row using the green-handled valves.

If water continues to flow out of the sprinklers after the pump has shut off, ensure the siphon tee in the blue pipe above your reservoir tank is installed properly (see step 19, page 13).

Planting Into the System

Place a layer of substrate into the bottom of the net pot, level with the raised grid. Expanded clay pellets work well.

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

Fill the void with substrate and place the net pot back into the AERO pot lid. Give the plant a watering from the top to wet the substrate to start.

Maintenance

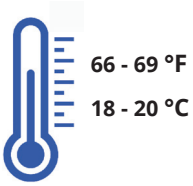
The filter in the header should be checked regularly. If you use mineral “salts” based fertilizers, the filter should require minimal cleaning, but if using organic nutrients or additives it will require regular cleaning. Unscrew the lid of the filter and remove the mesh cartridge for cleaning.

A toothbrush may be helpful to clean the mesh under running water.

There are several ways to drain the tank / reservoir for nutrient change-outs:

- If you have an ALIEN GardenTank, connect a 5/8” / 16mm pipe (available from our website or hardware stores) to the green valve at the bottom of the tank to drain it.
- Disconnect the pipe from the pressure pump and attach a drain line to it.
- Use a separate pump.
- Run the water through the system by turning the pressure pump on and having the drain line from the DRAIN pump going to waste.

Reservoir Tank Chiller



If you are running AERO as a recirculating system, we recommend using a water chiller for the tank / reservoir to maintain an ideal water temperature for plants and suppress pathogenic growth in your tank: 66-69 °F or 18-20 °C.

If run as drain-to-waste, using a chiller can help slow down bacterial growth in the tank, especially if using organic nutrients.

Use a separate submersible pump in the bottom of the tank / reservoir to circulate the water through an external chiller, or use a submersible chiller. The chiller only needs to be sized to the volume of the tank, not the entire AERO system.

ALIEN North America offers chillers and chiller hook-up kits for reservoir tanks; contact us for details or if you have any questions about chiller sizing or deployment.

Cleaning Between Crops

At the end of a crop cycle, drain the tank and fill with clean water and hypochlorous acid. Run the system with the red DRAIN pump pipe directed to waste, and check that all sprinklers are working correctly by placing your hand through the lid hole and ensure water is coming from both sides.

Allow the hypochlorous acid mixture to sit on pot surfaces for half an hour, then clean the inside of the pots with a soft non-abrasive cloth and run the system again to rinse.

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THE EVOLUTION OF HYDROPONICS

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