ÆssenseGrows

AEtrium-4 System Installation Guide

PN 960-00009-01
2020-03-20

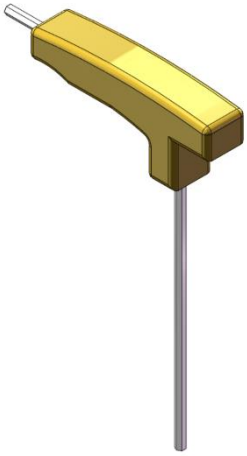
Installation Guides

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- ❑ Light Gantry (Optional)
- ❑ Light (Optional)

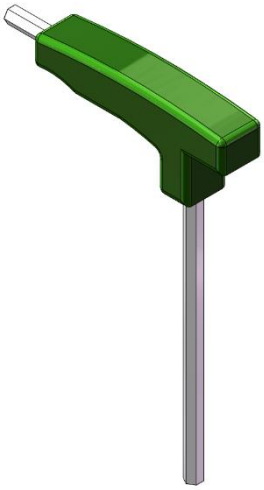


Installation Basics

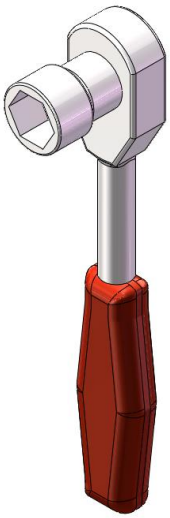
Tools You Need



3mm hex wrench



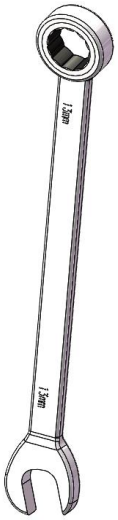
5mm hex wrench



13mm socket wrench

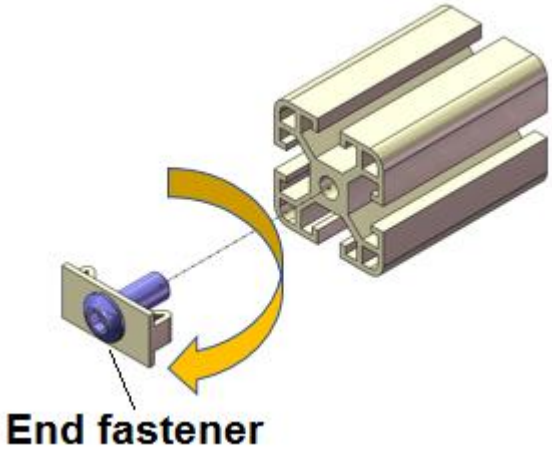


Philip screwdriver

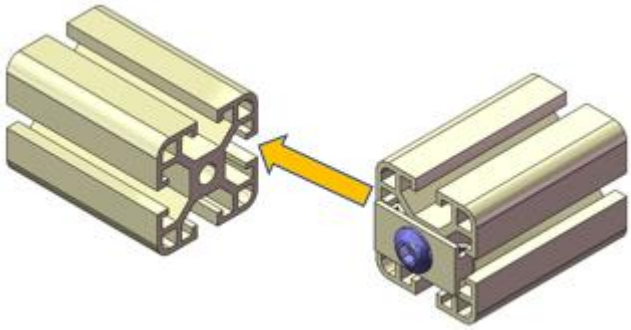


13mm wrench

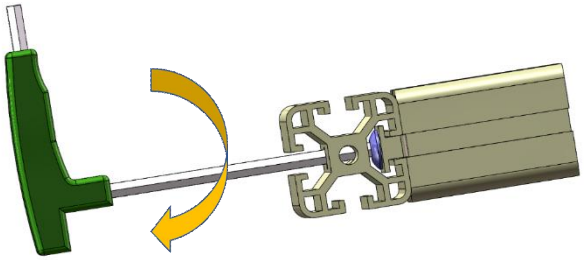
Tip 1 – Assembly using end fastener



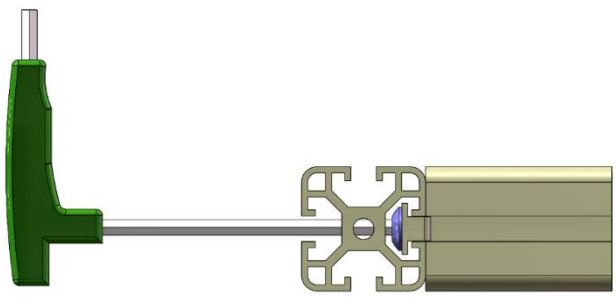
- Install end fastener onto the end of frame. DO NOT screw end fastener all the way down. This is usually pre-installed at factory.



- Slide the pre-installed end fastener into the T-slot of second frame. Loosen fastener if it is too tight to slide in.

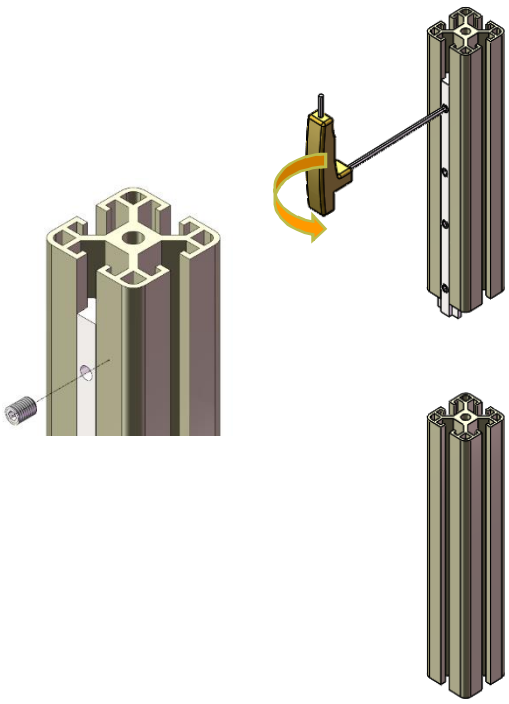


- Slide down and align fastener with pre-drilled hole on second frame.
- Use 5mm hex wrench to tighten fastener clockwise through pre-drilled hole.

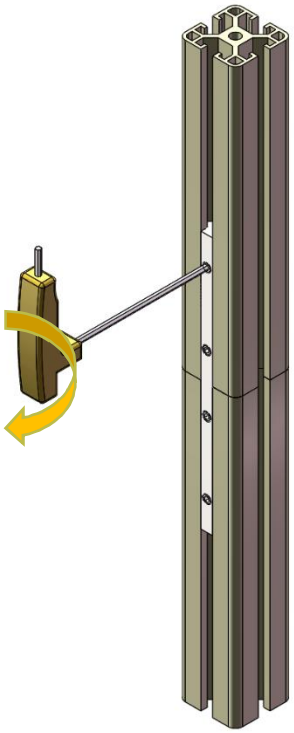


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Tip 2 – Assembly with mating bar

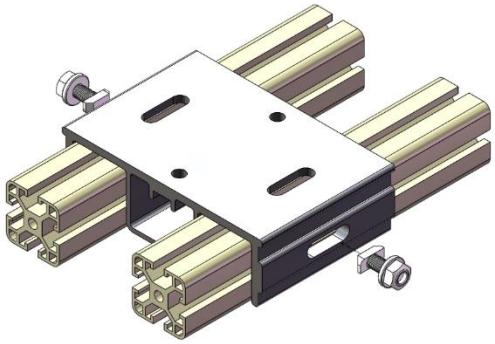


- Use 3mm hex wrench to loosen all 4 setscrews counterclockwise. DO NOT take any setscrew out.



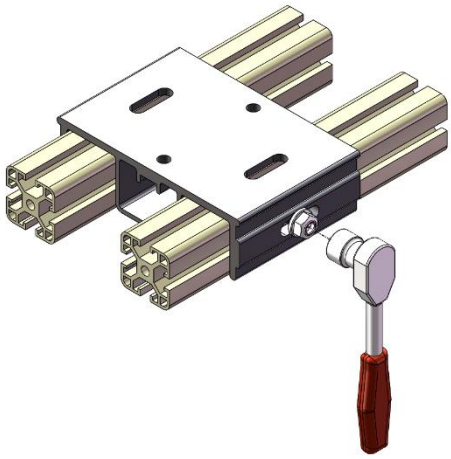
- Slide the mating bar into T-slot of second frame.
- Use the 3mm hex wrench to tighten all setscrews clockwise.

Tip 3 – Spacer installation

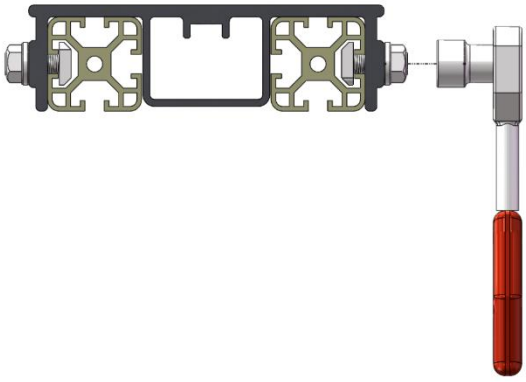




- Put the spacer onto frames (55mm apart).

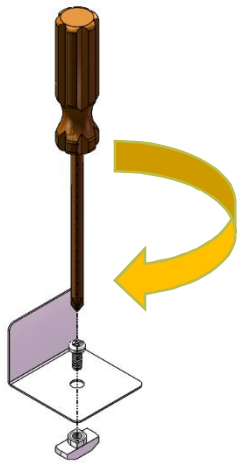


- Use M8 T-bolts and nuts to secure spacer onto the frame.



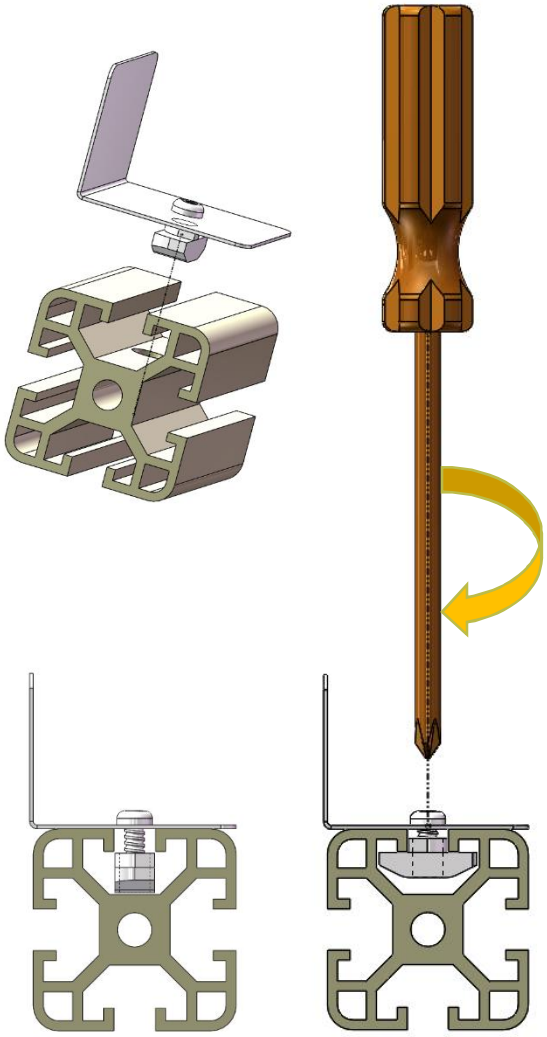
- Use 13mm socket wrench to tighten T-bolt clockwise. Nut will turn and hold T-bolt in place.

Tip 4 – Assembly using T-bolt and phillips screws



- Use phillips screwdriver to combine T-bolt and nut.

- Put the T-bolt into T-slot of frame.



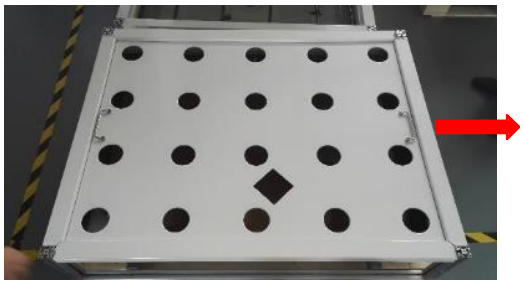
- Use phillips screwdriver to tighten T-bolt clockwise. Nut will turn and hold T-bolt in place.

Daughter Assembly

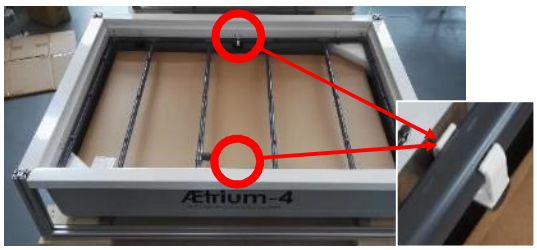
1. Unpacking & Parts List



- Unpack shipping package by cutting both green straps and removing plastic cover. There are 3 daughters in each package.



- Remove 20-hole grow tray and put it aside.



- Remove spray manifold and white clamps that hold the manifold and put them aside with grow tray.
- Remove the parts and confirm based on table below.



Item	Description
1	Drain pipe
2	Pressure pipe
3	Pressure valve
4	Spacer x2 (for connecting tubs)
5	T connector (for return pipe)
6	Accessories (See next page for details)
7	Leg frame x2
8	Leg cross bar

6. Accessories

1



2



3



4



5



6



Item	Description
6.1	T-bolts x9
6.2	End cover for aluminum frame x4
6.3	Gasket for T Joint x1
6.4	T Joint x1
6.5	Square hole cover x1
6.6	3.75” hole cover x20
6.7	Drain pipe hanger x1
6.8	Pressure hose x2

7



8



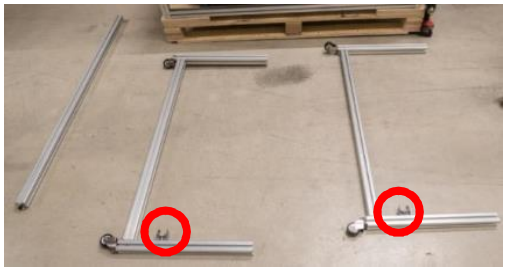
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2. Assembly

Å Find leg parts (item 7 & 8)







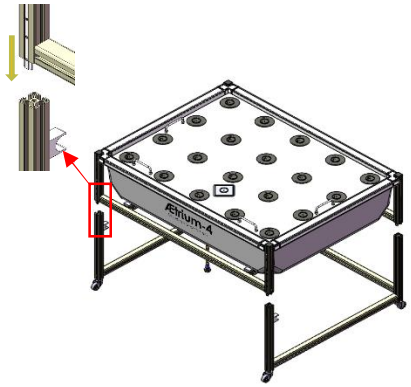
Note: Please make sure both piping clips (in red circle) are at the same side (front side) as shown in picture.



Å Slide pre-installed fastener (see Tip 1) on both ends of cross bar into rear side of leg frames (the side without piping clip).

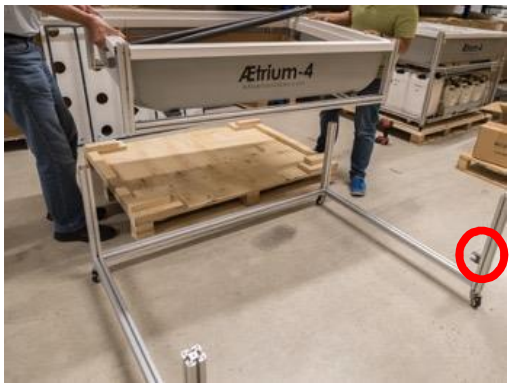


Å Slide crossbar down and align fastener on crossbar with pre-drilled hole on leg frames.
Å Use 5mm hex wrench to tighten fasteners through side hole.



Å Slide all mating bars out for ½" from tub.

Note: Make sure one mating bar is installed at the same side of pipe clip and one mating bar installed on the opposite side (as shown in picture).

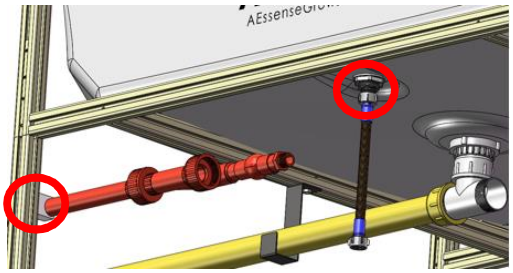


- Put pre-assembled tub frame onto the legs, and position pressure pipe connector towards front side of legs.
- Move mating bars half way up to upper frame and tighten all mating bars.

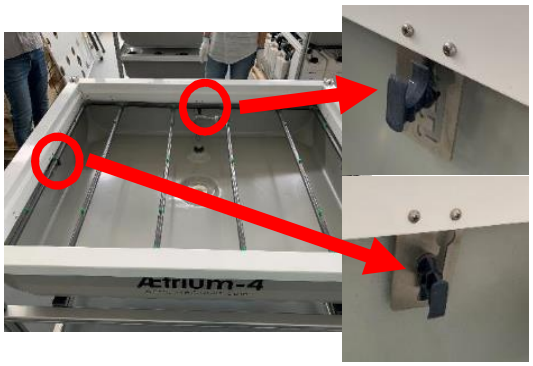


CAUTION!

Pre-assembled tub frame weighs 55 kg or 121 pounds approximately. It requires at least two people to lift tub frame.



Note: Please make sure the pressure hose is at the same side of piping clip.



- The spray manifold rests on four adjustable holders. User can adjust height of manifold by moving plastic clips to one of three locations on metal plate.

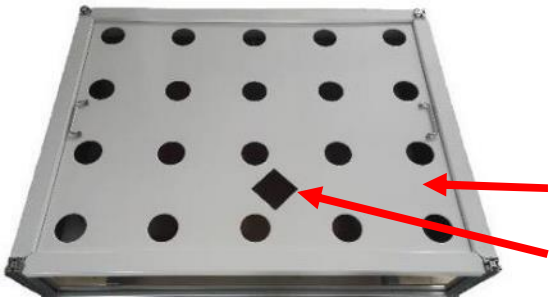


- Attach pressure hose to both fittings and tighten connectors manually. DO NOT use wrench or other tool!

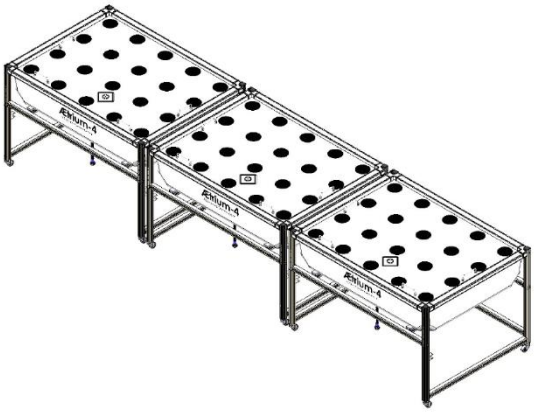


- Take out gasket from accessories bag and put it inside the “T” Joint. Make sure the gasket is seated without crimping.
- Install the T-pipe fitting onto the bottom of the tub so that the T-pipe fitting points in the direction of the adjacent Tub.

Note: please tighten the fitting to the tub and keep the T-joints loose for later installation and adjustment of drain line.



- Place grow tray back to tub and make sure the root access hole is at the same side of pressure hose.



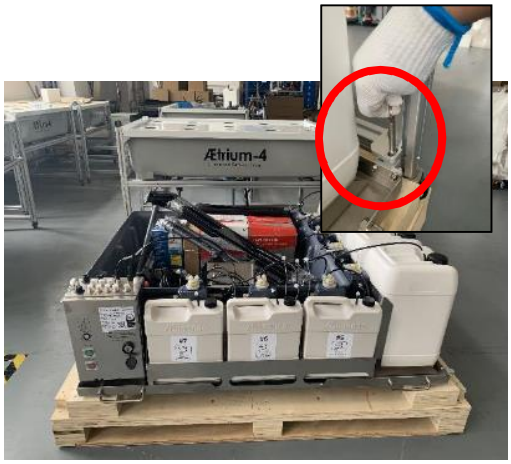
- Line up assembled Daughter tubs in a row at final location. Prepare for integrating with matriarch.

System Installation

1. Matriarch Unpacking & Parts List



- Unpack shipping package by cutting both green straps and removing the plastic cover.

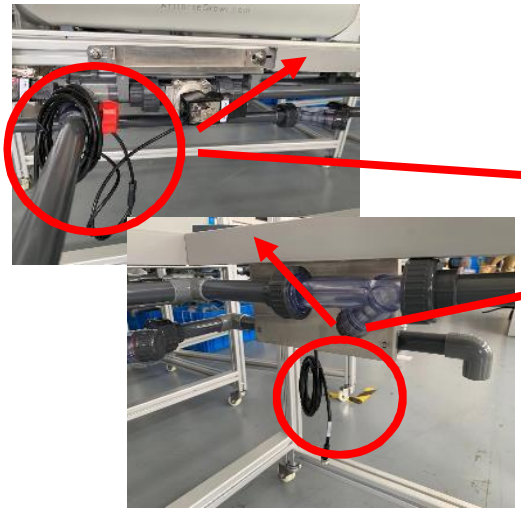


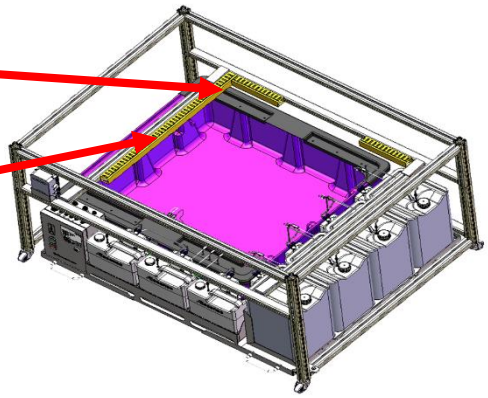
- Remove latch pin on both sides and take pre-assembled matriarch tub and AEtrium Dosing Base (ADB) off pallet.

CAUTION!

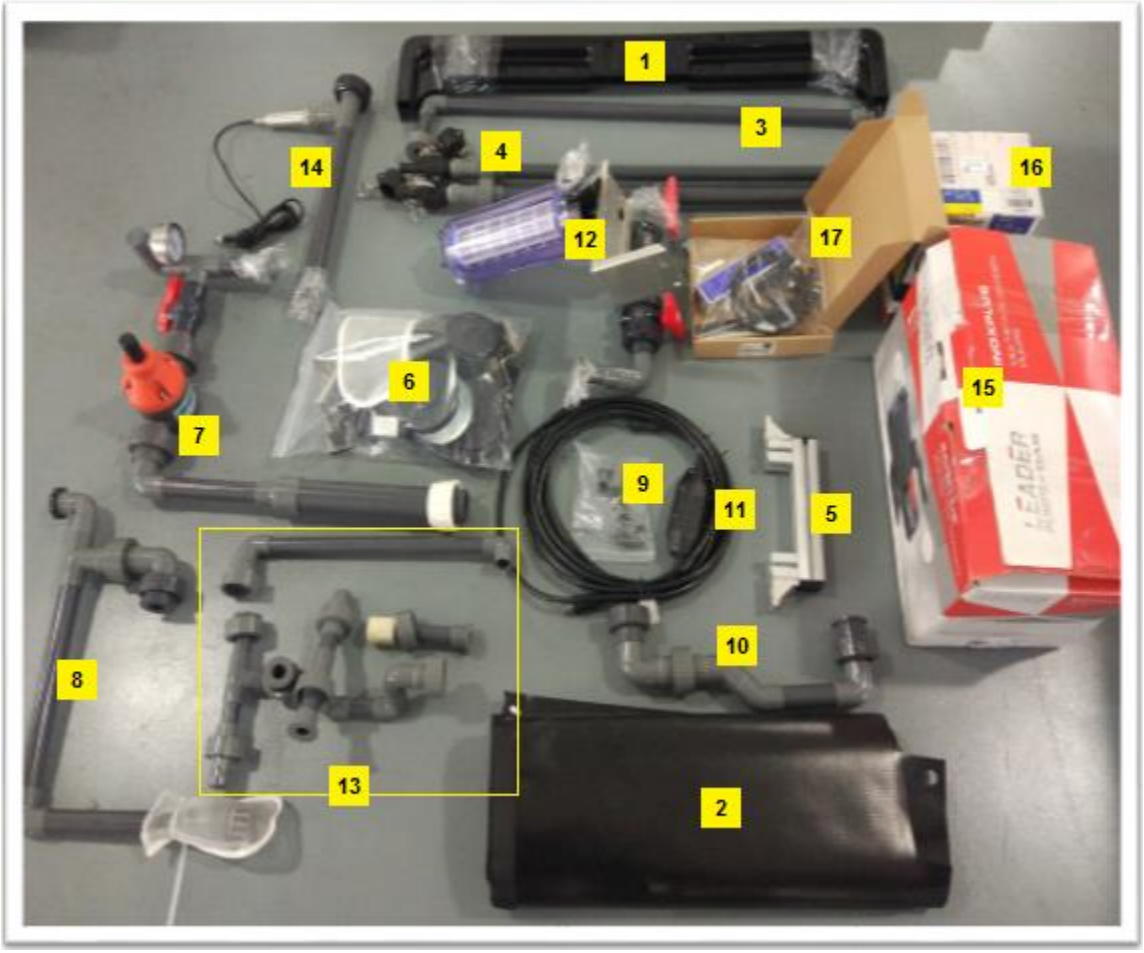
Be careful not to damage any valve or cable while removing tub.
AEtrium Dosing Base (ADB) is heavy. It requires at least two people to lift it.

Attention: Tuck the cables from the solenoid valves into the cable channel under the Matriarch tub.





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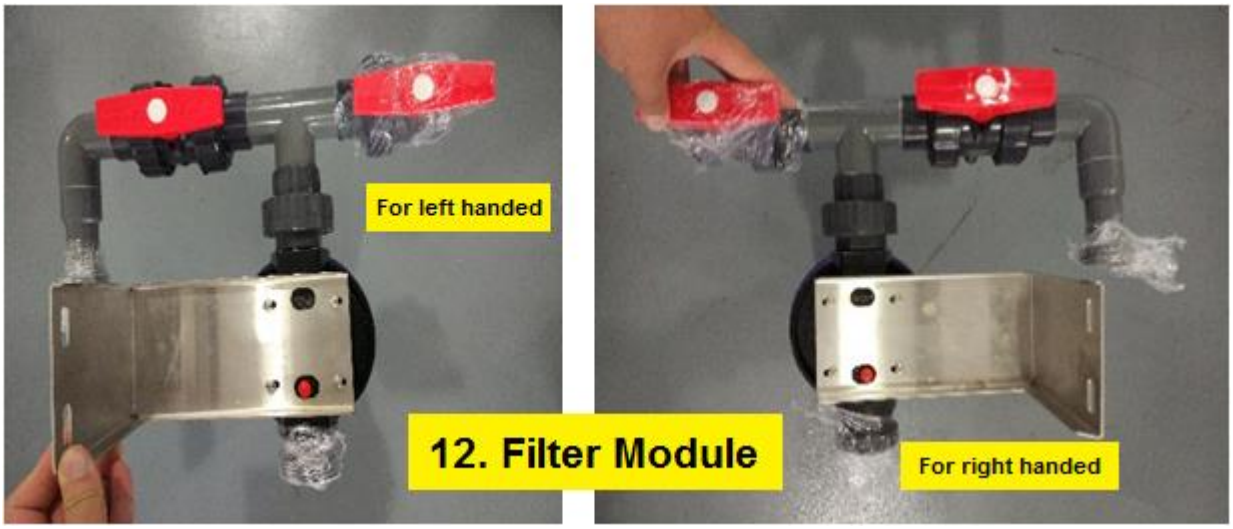


No.	Description	Quantity
1	Splash guard	2
2	Skirt	1
3	Pipe, water autofill	1
4	Pipe, auto-drain up	2
	Pipe, 3/4“coupler for auto-drain	2
5	Pump support	1
6	Accessories (9 items in the bag, see next page)	1
7	Safety valve	1
8	Pipe, from reservoir to pump	1
9	Pipe clip	4
10	Pipe, discharge port of pump	1
	Pipe, inlet port of pump	1
11	Power cords	1
12	Filter module (right or left handed, see next page)	1
13	Pipes	1
14	Pipe, from pump to grow tub	1
	Water pressure sensor	1
15	Irrigation pump (INOXPLUS/ECOPLUS 230 or 250)	1
16	Drain pump	1
17	Water temperature sensor	1
	EC sensor	1
	Water level sensor	1
	pH sensor	1

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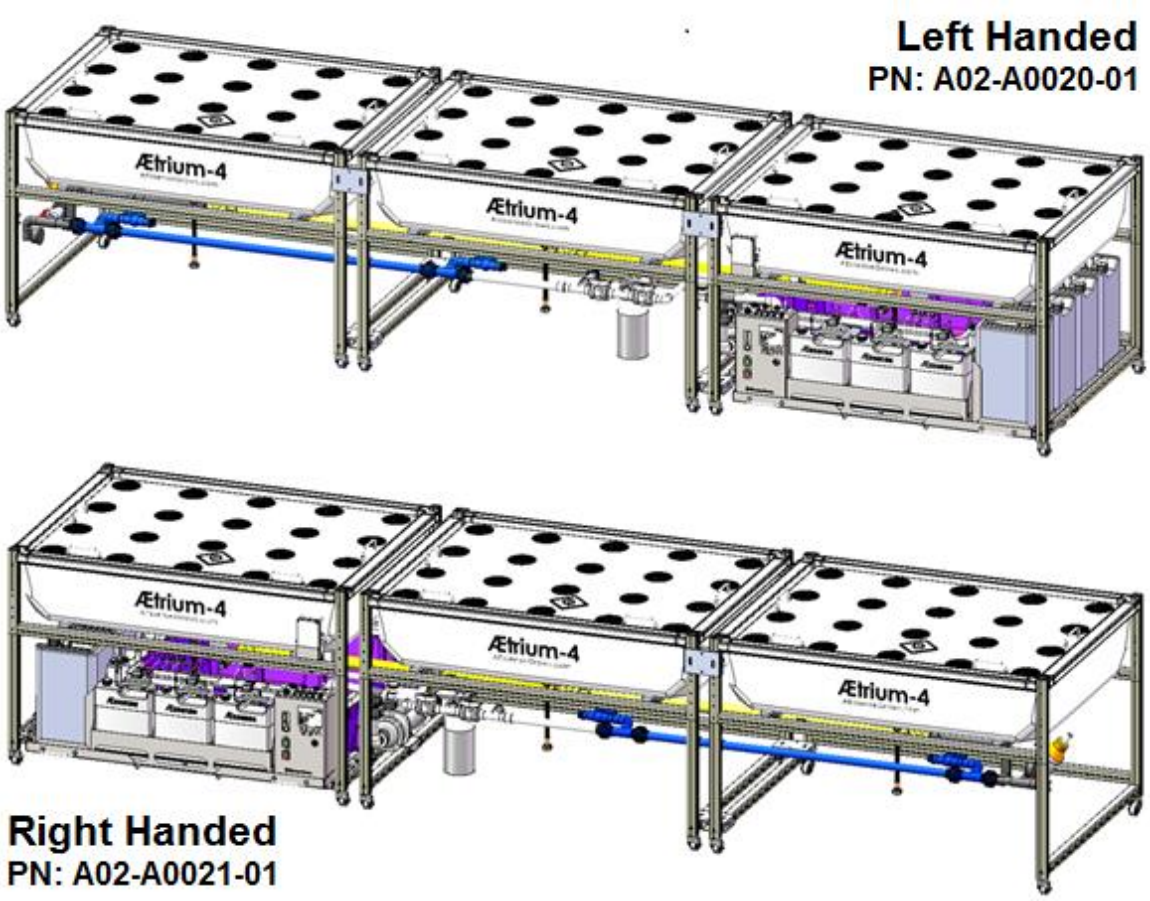
Item	Description
6.1	Filter cover x1
6.2	ADB Stopper x2
6.3	3.75” hole cover x20
6.4	End cover for aluminum frame x4
6.5	Hanger for return pipe x1
6.6	Square hole cover x1
6.7	Sock filter x2
6.8	Support for pressure pipe x2
6.9	Screw x11

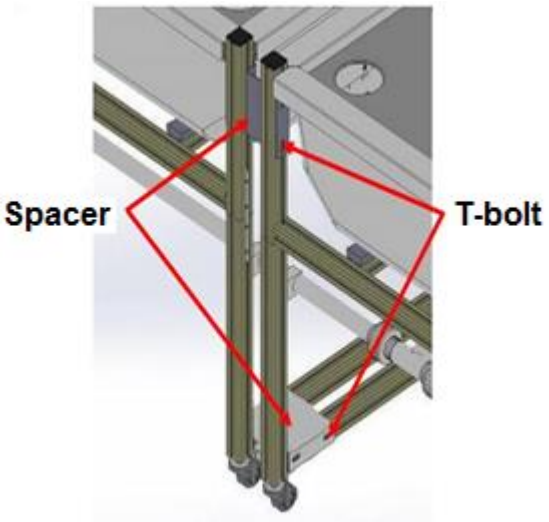


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2. Assembly

2.1 Connect Matriarch and Daughters



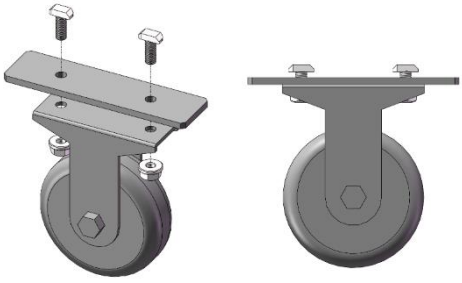


- Line up matriarch and daughter tubs at final location. Make sure that the correct matriarch is used (see matriarch PN in picture above)
- Install 2 spacers on vertical frame (one each for front and back side) between every two tubs. If the system came with unidirectional wheels, please go to section "Wheel Installation". If not, Install 2 more spacers on horizontal frame. DO NOT lock spacers with T-bolts and nuts at this time.

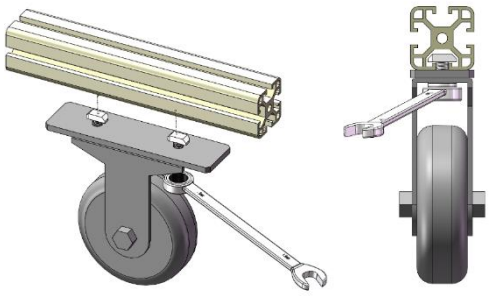
Note: Power Distribution Unit (PDU) is always close to the first daughter.

2.2 Wheel Installation (Optional)

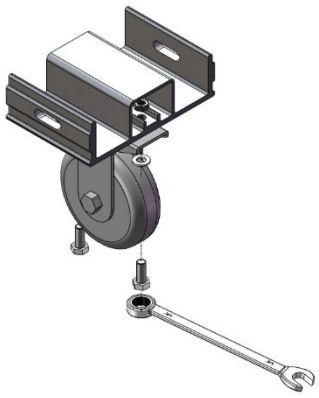




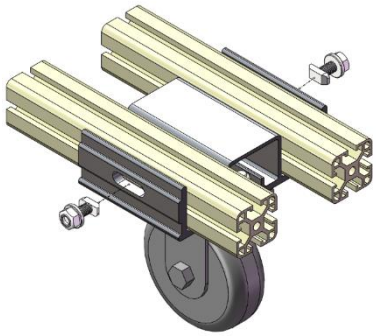
Å First, assemble 4 side wheel modules for front end and rear end of row by combining the wheel and plate with T-bolts. DO NOT tighten the T-bolts.



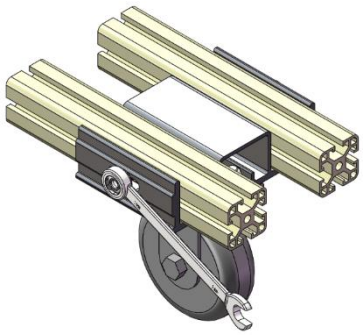
Å Put the side wheel module into the T-slot of side frame of the row and use wrench to fasten T-bolts.

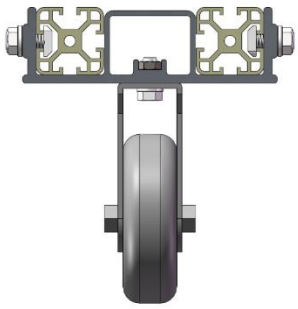


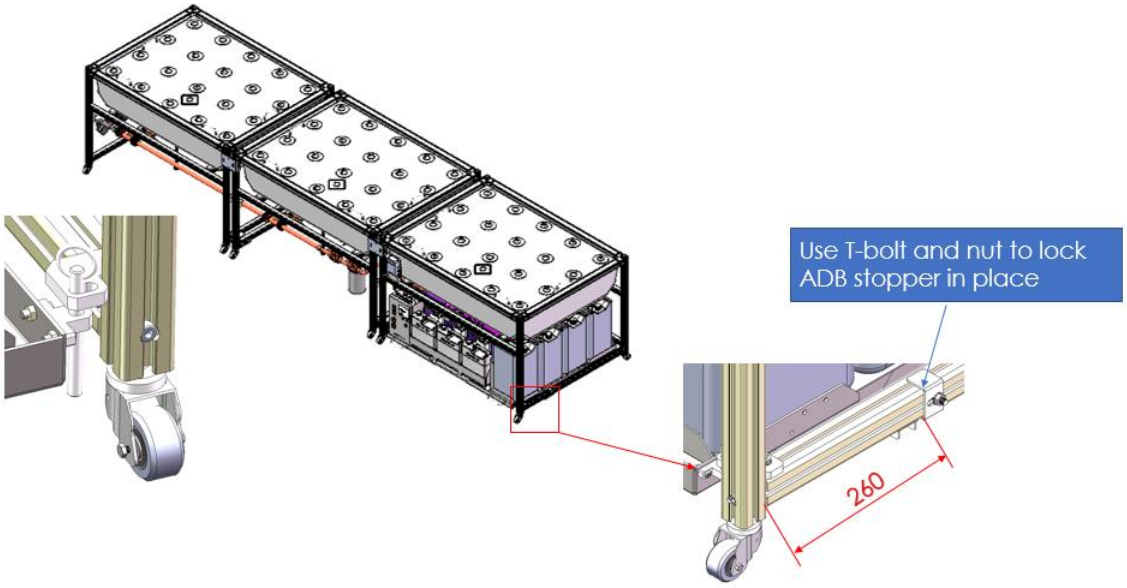
- Next, assemble all middle wheel modules by combining the wheel and spacer with T-bolts.
- Use wrench to fasten screws.



- Install the middle wheel module between two tubs with T-bolts. DO NOT lock spacers with T-bolts and nuts at this time.
- Repeat installation among all tubs.
- Fasten the T-bolts when the whole row finished the wheel installation.

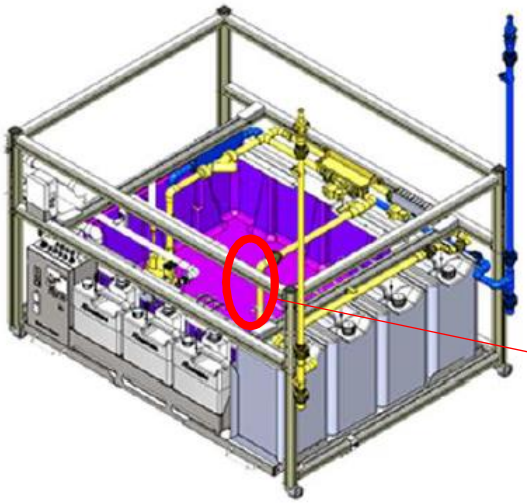




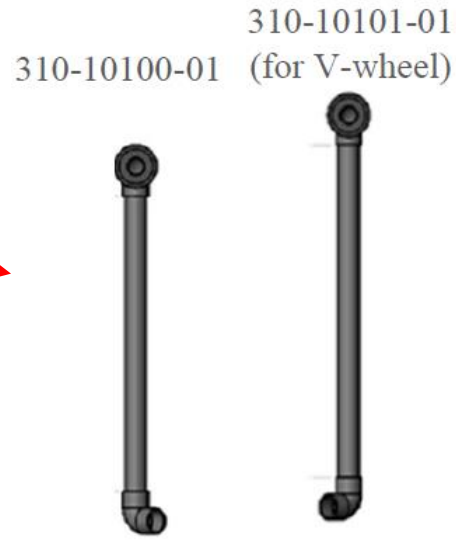


Additional Wheel Accessory Kit

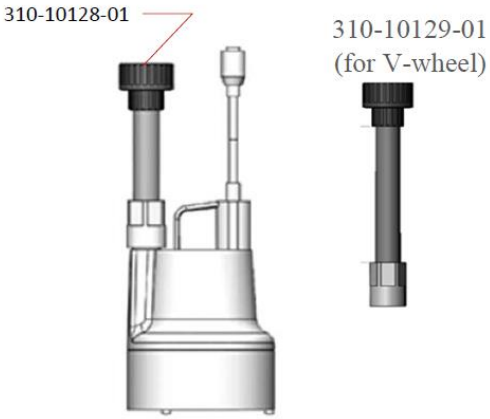
Left-Handed (without Tub)



Notice:
for V-wheel or other wheel option:
Å Part 310-10100-01 should be replaced by 310-10101-01 packed in V-wheel accessory kit.



BurCam Pump Module
310-10128-01 should be replaced by 310-10129-01 when V-wheel applied



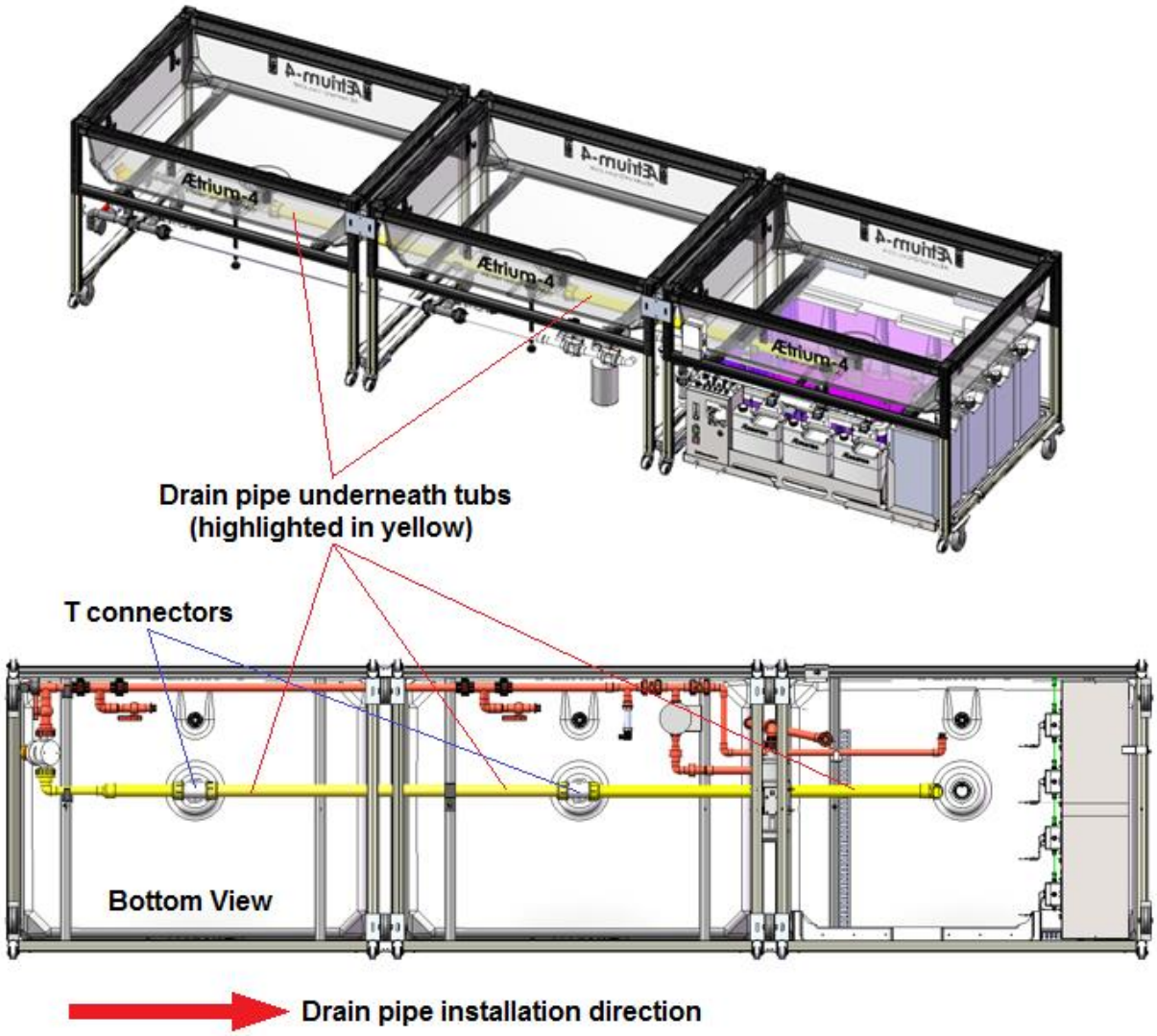
BPO-100 Pump Module
310-10093-01 should be replaced by 310-10094-01 when V-wheel applied



Pipe, from reservoir to pump
Should be replaced by 310-06004-01when unidirectional wheel installed.
Should be replaced by 310-06005-01 when V-wheel installed.



2.3 Drain pipe installation



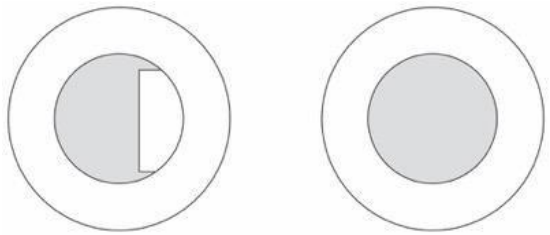
Install T connector for all daughters (matriarch tub does not have T connector).

After all T connectors installed, start installing return pipes from the last daughter back to Matriarch one by one.

Note: The safety valve will be installed on the last daughter tub. At this time, only install return pipes towards Matriarch and leave the other end of T-Joint fitting of the last daughter open.

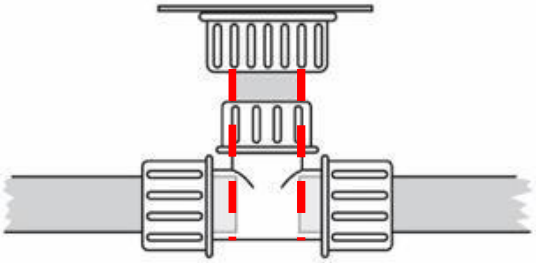


- First, install all return pipes between daughters.
- Put O-rings and white joint coupling onto both ends of drain pipe.
- Insert the return pipe between both tub "T" connectors.
- Repeat two steps above till the daughter next to matriarch

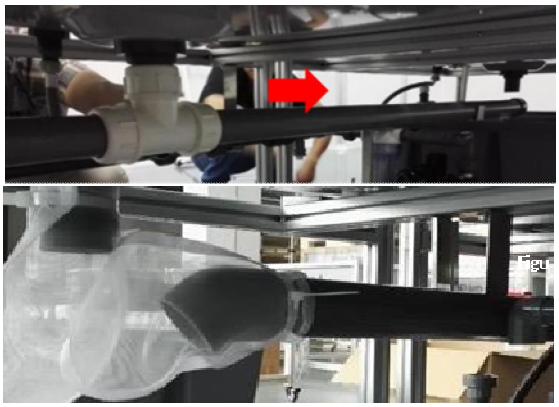


Incorrect
(pipe is visible)

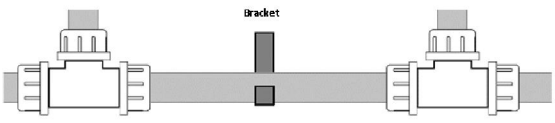
Correct
(pipe is not visible)



Note: The ends of pipes should NOT be visible when looking through the drain hole of the tub. If the end of pipe is visible, loosen the slip joint coupling and back out the pipe so that it is no longer visible when you look into the drain. Then re-tighten the slip joint coupling.



- Then install return pipe between matriarch and the first daughter.
- Insert the matriarch return pipe and slide the O-ring to the black line.
- Screw on the white slip joint coupling. When tightening, make sure all pipes are in a straight line.

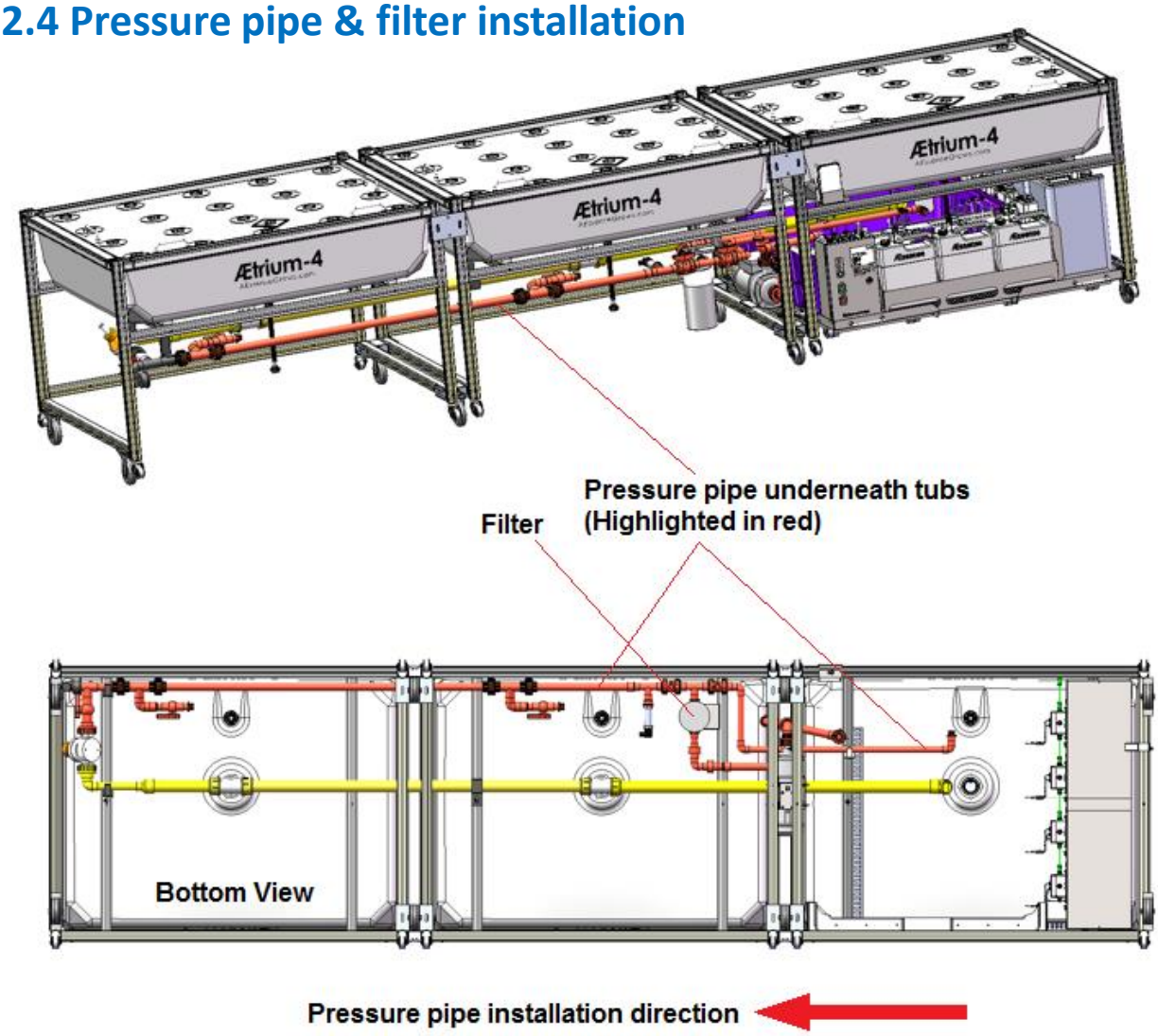


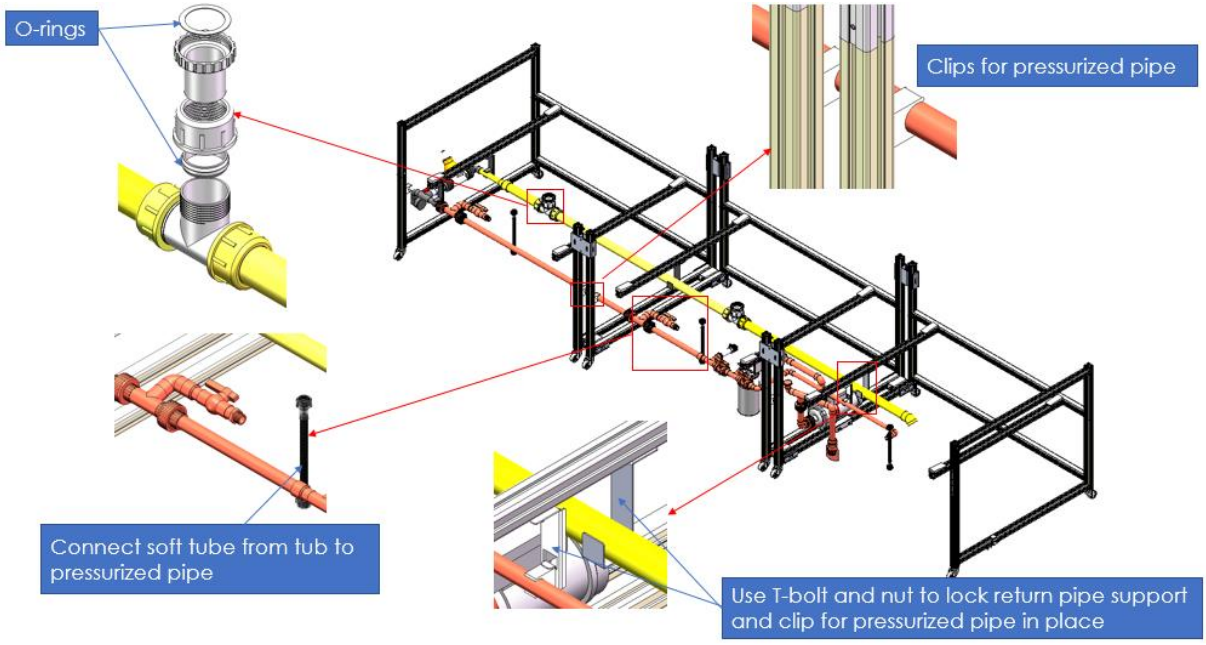
- Loosely install the pipe hangers to the aluminum frame underneath tubs. The pipes should be level.

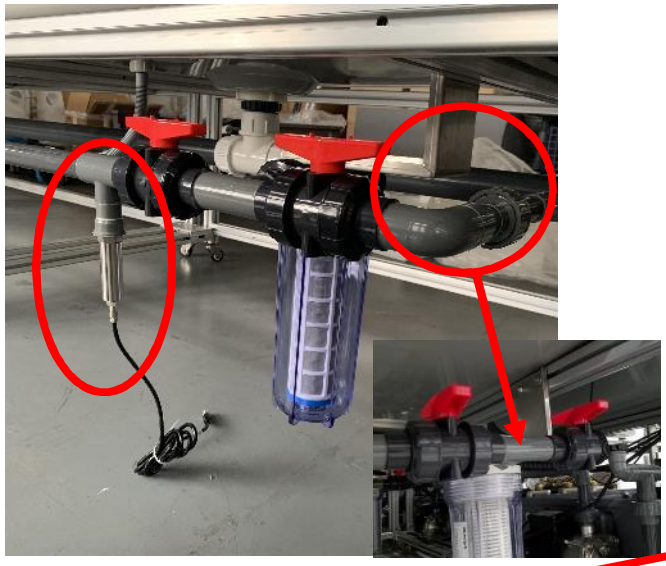


- Tighten the hangers to secure straight piping.

2.4 Pressure pipe & filter installation







- Loosely install the filter module on the frame underneath the first daughter.
- Tighten the two bolts that hold the filter to the frame when the pipe connections are secured in place.

Important: Please make sure that the water pressure sensor is vertical.

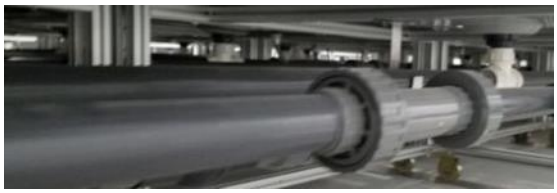
Note: Please DO NOT tighten the screw until all pressure pipes are installed.





- Connecting the daughter tub pressure pipes.

Note: Install the pressure pipes, starting from the primary filter, across the daughters to the end of pressure release valve at the last daughter.
Please DO NOT tighten the screw until all pressure pipes are connected correctly.



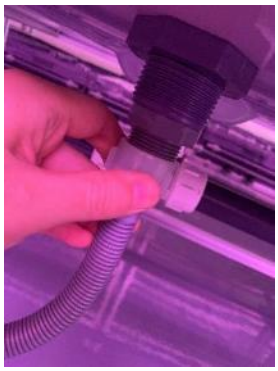
Caution: Check that the O-ring at the end of the pressure pipe is present and properly seated in place.





- Attach the end of the pressure pipe to the pressure pipe of the Primary Filter.
- "Push" the pressure pipe into the clips which were pre-installed in daughter's legs (adjust the location of clips if necessary).



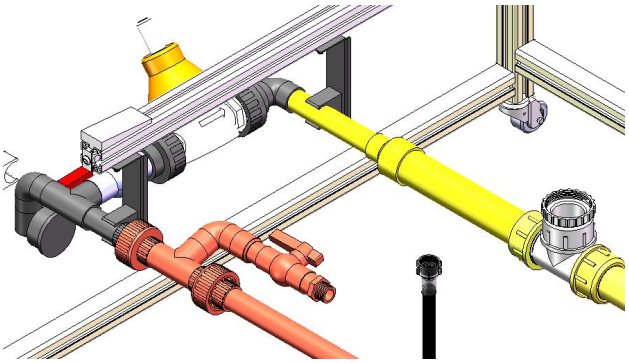


- Connect the inlet of the tub to the main pressure piping through flexible hose.
- Attach the hose to both fittings and hand-tighten.

Do not use a wrench or other tool!

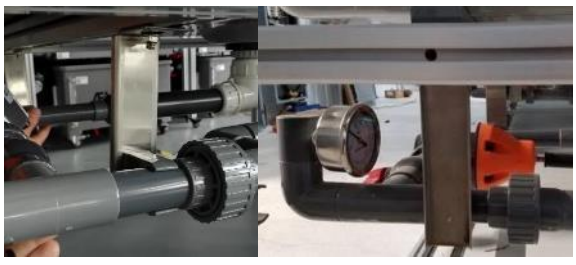


- Repeat steps for the remaining Daughter Tubs

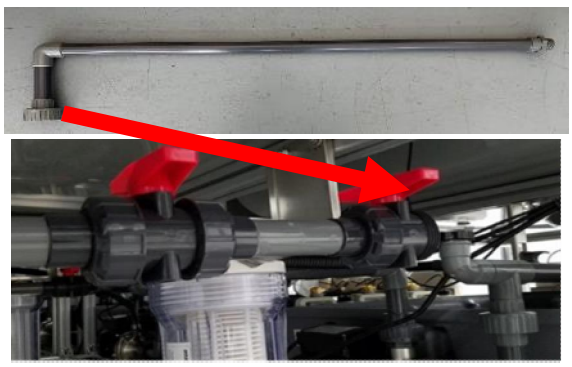




- Install the safety valve module between pressure pipe and return pipe at the last daughter, and then push the pipe to the clip on the pipe hanger.
- Tighten all connectors.

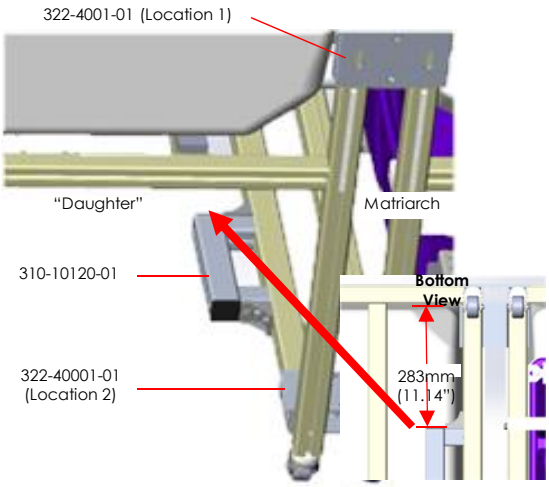


- The safety valve is used to adjust the water pressure delivered to spray nozzles.
- Recommend pressure: 6-9psi.
- Recommend to close the red manual valve completely when 9 daughter tubs are connected



- Attach the matriarch pressure pipe to the valve on the primary filter, and then attach the pressure hose to the pressure pipe and the pressure pass-through on the matriarch tub.

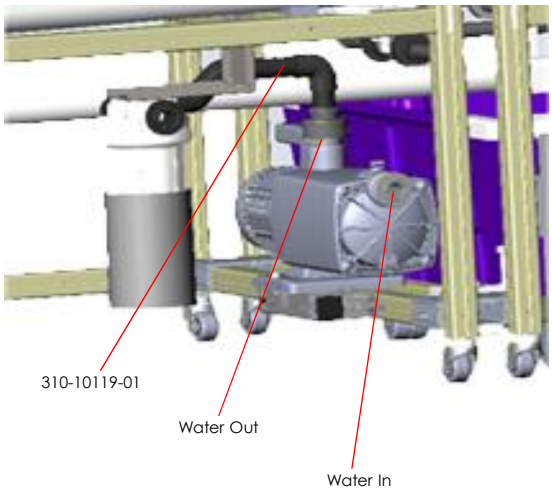
2.5 Pump installation



- Install the pump support (310-10120-01).
- Put irrigation pump onto the pump support.



- Loosely install the T-bolts for the pump.
- Install the pipe of pump outlet and filter inlet. (310-10119-01)



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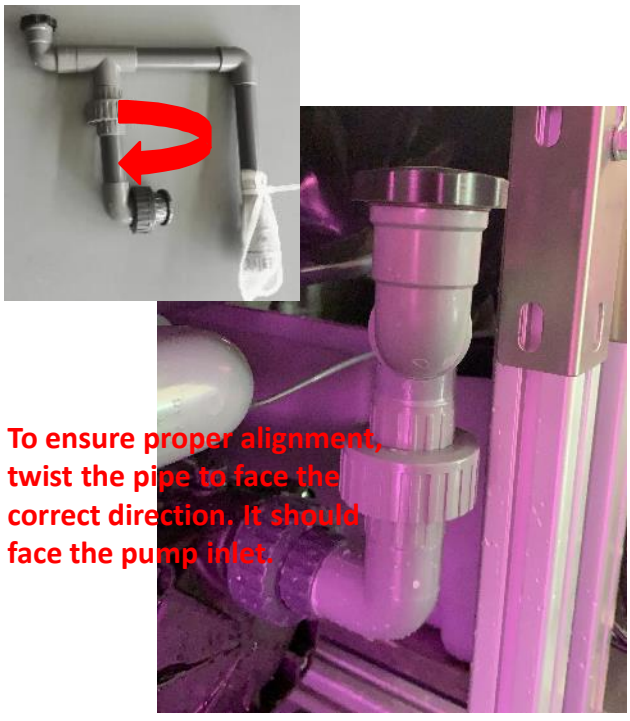
2.6 Autofill and auto-drain installation



- Pull ADB (AEtrium Dosing Base) underneath matriarch out.



- Take out the drain/stir and related pipes from ADB.
- Install the pipe for the drain pump. (Don't miss the O-ring.)



- Push ADB back underneath the matriarch.
- Install the pump inlet pipe.

Important: Check that the O-ring at the end of the pump pipe is present and properly seated in its slot.

Notice:
- Use part 310-06004-01 when unidirectional wheels are installed.
- Use part 310-06005-01 when V-Wheels are installed.

To ensure proper alignment, twist the pipe to face the correct direction. It should face the pump inlet.



Mix Pump

Circulation Pipe

Å Install the circulation pipe.
Å Connect the mix pump pipe to the pipe on the Matriarch.

Attention: Mix pump and circulation pipe's location is different when the row is right-handed. Please check yourself according to the pipes on the Matriarch.



Pipe assembly (U Shape) is for water refill and L shape is for drain.



Å Install inlet and drain pipes.

Either Water refill and drain can be connected to ceiling pipe or floor pipe, just adjust the plug to the right pipe end.

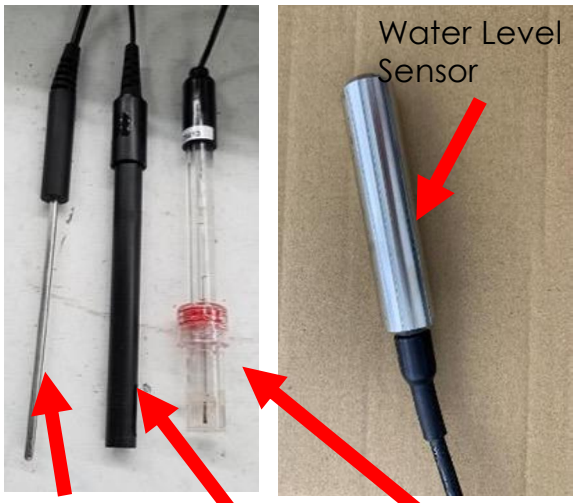
Note: Please make sure the pipe be inner curved toward to the ADB.

Attention: Drain and inlet pipe's location is different when the row is right-handed. Please check yourself according to the pipes on the Matriarch.

2.7 Water sensors installation

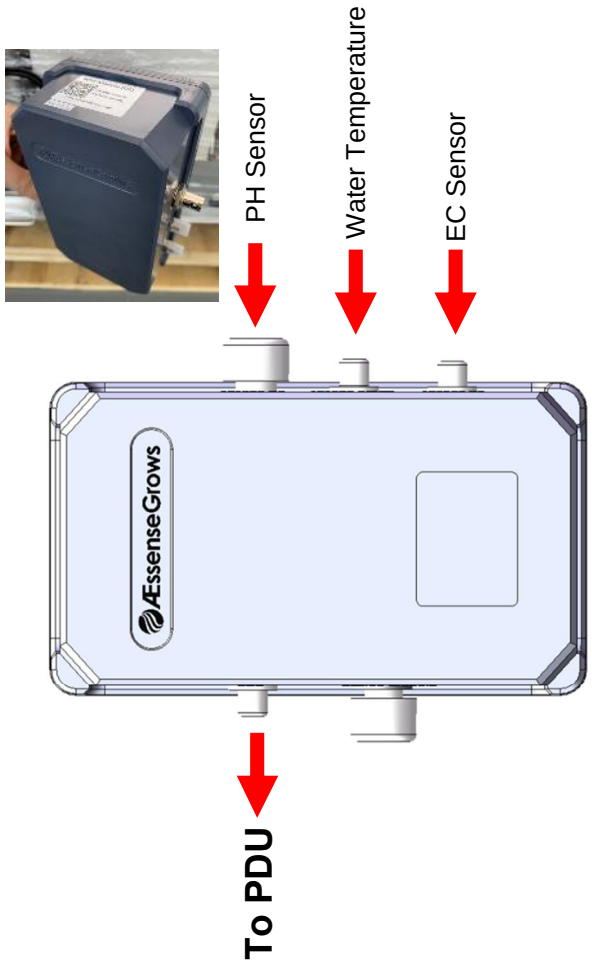
Å Install the water sensors.

Install all the sensors carefully, making sure to plug them into the correct ports and aligned correctly.

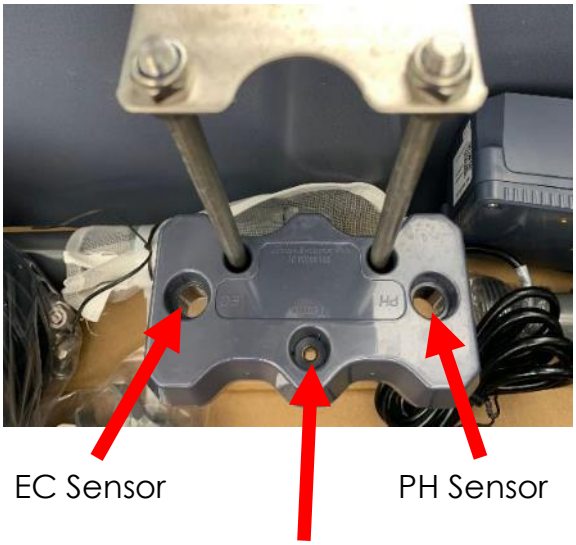


IMPORTANT!

The pH sensor is delivered with a cap on it, which contains a storage solution. Keep the sensor in this until final installation. If the sensor is left in RO (reverse-osmosis) water, the sensor will be damaged or have its useful life shortened. Also, if the sensor gets dry, it will be damaged.

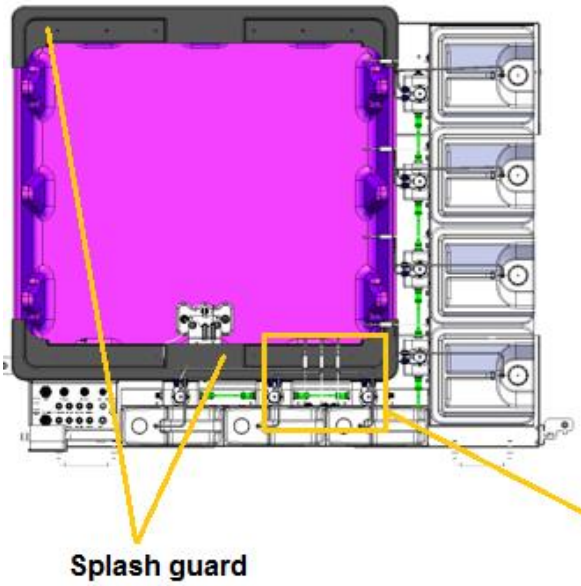


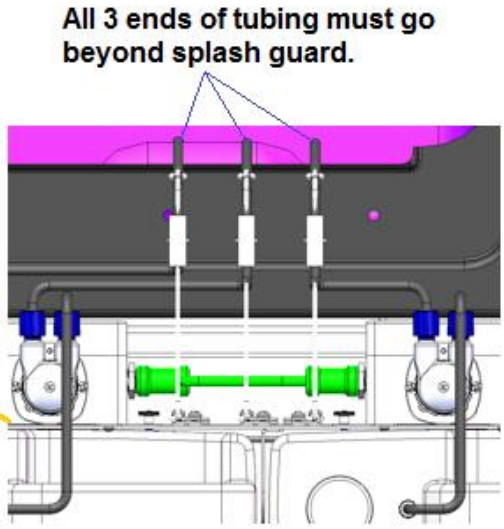
Å Connect each sensor to its corresponding port on the top and bottom of the Water Sensing Electronics (WSE) module, as shown in this picture and in the accompanying diagram. The WSE communicates the sensor information to the PDU. (Water level sensor should be connected to PDU directly.)



- After securing the connectors and checking that all have been plugged in properly, slip the covers on the cables over the ports to keep moisture out.
- Then put the sensors into the senor holder in the water reservoir.
- Place the water level sensor in the water reservoir directly.(Avoid pumps and nutrients coming in.)

2.8 Splash guard installation





Å Install splash guard.

After sensor wires are bundled, place the splash guard with a cutout in the middle onto the front side and the other one on the rear side of the reservoir. Place the front splash guard on the edge of reservoir and straddles the sensor bracket.

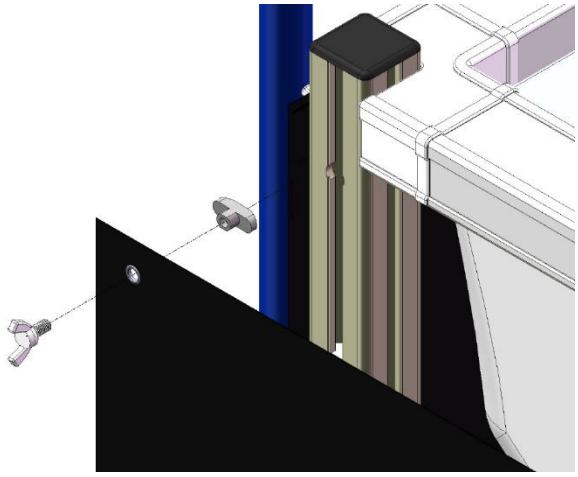


Cutout in splash guard for sensor bracket



Installed splash guard with adequate clearance from dosing hoses.

2.9 Skirt installation



Important: Before assemble the skirts, please make sure all cables are connected to the corresponding ports and also bundle well.

Put one winged bolt through the corner grommet of skirt and into the vacant hole of the mating bar.

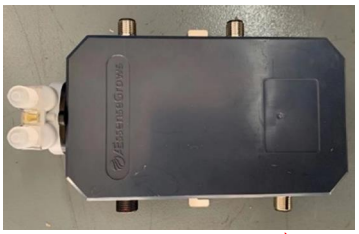
2.10 Power Distribution Unit (PDU)



Debug	For AEssense service person only
AC On/Off	Power on/off button
Lock	Must remain locked during normal operation. Only trained service people are allowed to unlock for service.
Pump Override	In case of PDU failure, pressing the pump would deliver water to plant roots continuously.



AC IN	AC power cord
Water Pressure	Water pressure sensor (PN: 341-00073-01)
AC Reserved	Reserved for AC device
Light Comm.	AES-Link light controller (Smart Relay or AErix etc.)
ASE Comm.	Air Sensing Device (PN: 300-00129-0x)
Drain Pump	Submersible pump for stir and drain
WSE Comm.	Water Sensing device (PN: 300-00044-02)
Dosing 24V DC	The first dosing module (SMC 01)
Water Level	Water level sensor
CO2 Valve	24Vdc/1A device (Basic relay or CO2 regulator etc.)
Drain Valve	Solenoid valve for auto-drain
Inlet Valve	Solenoid valve for autofill
Light Relay	24Vdc/1A device (Basic relay etc.)
IRRi. Pump	Irrigation pump



SMC 01
Cable PN: 391-00012-01

WSE Module
PN: 300-00044-02





Water Level Sensor
PN:

To 24VDC CO2 Valve, or other 24V/1A device.



Drain Pump
PN: 391-70011-01





Drain Valve
PN: 341-00009-01



ASD Module
PN: 300-00129-02



Inlet Valve
PN: 341-00071-01



AES-Link Device
e.g Smart Relay



24VDC/1A Device
e.g Basic Relay



Water Pressure Sensor
PN: 341-00073-01



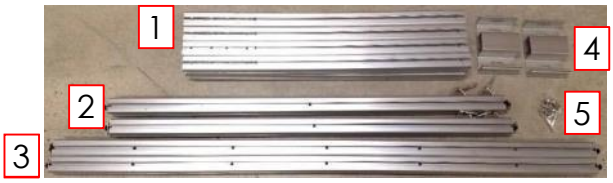
AC Power Cord
PN: 341-92239-01



Irrigation Pump
PN: 391-00012-01

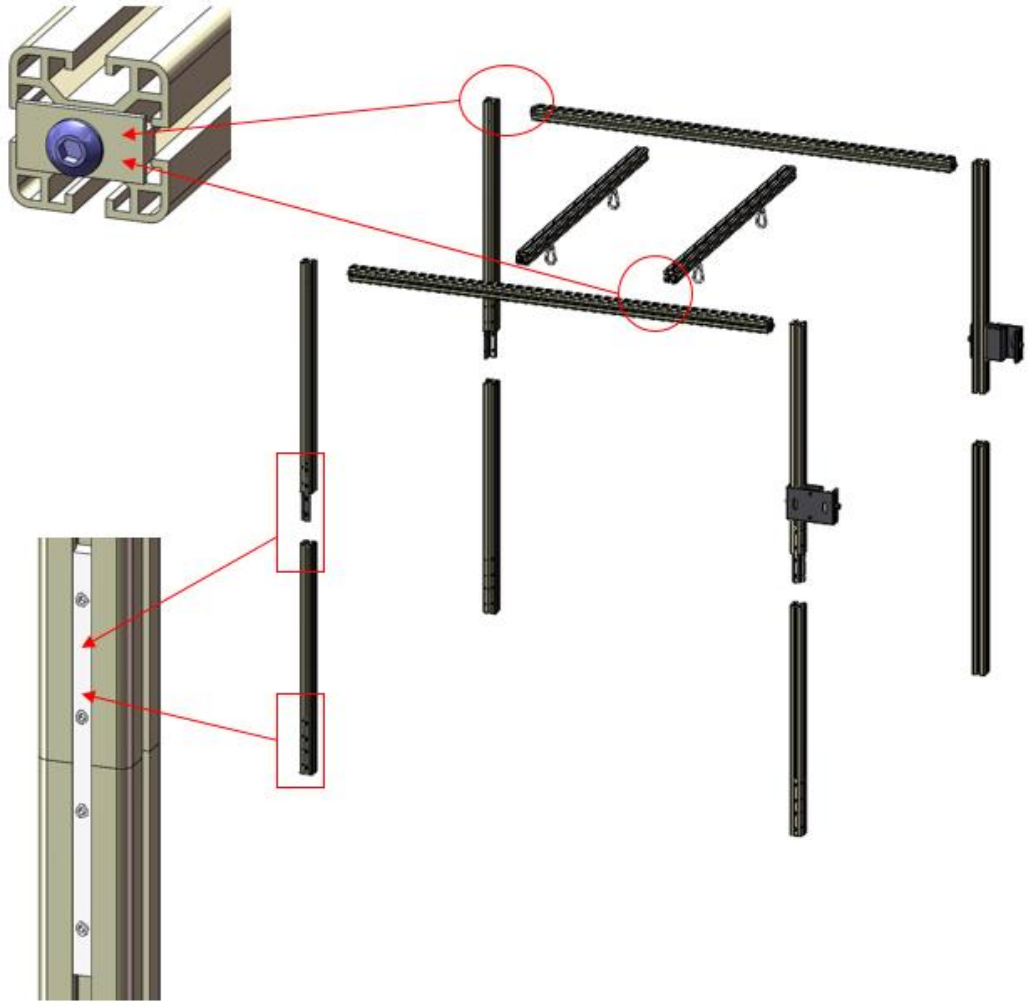
Light Gantry Installation



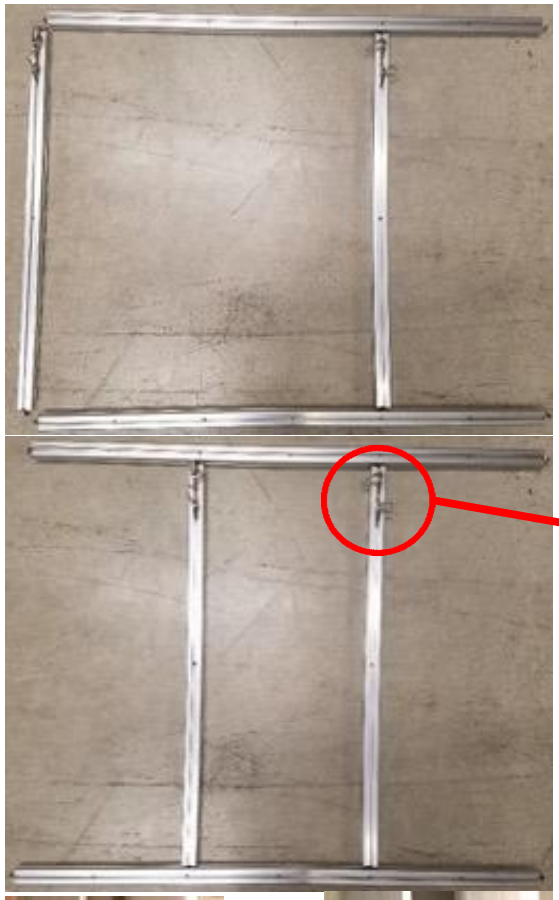


- Remove plastic wrap from light gantry package.

Item	Description
1	Upright bars
2	Light bars
3	Cross bars
4	Spacers
5	T-bolts



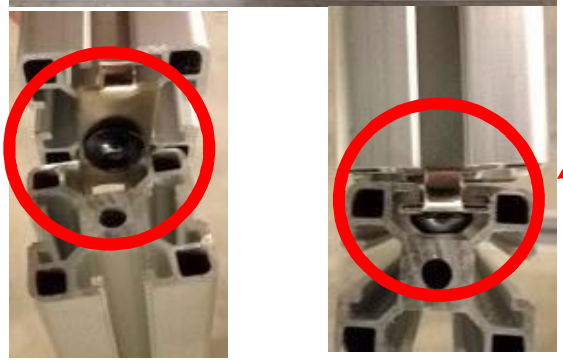
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Å Line up the mounting hardware of the Lightbars with the desired hole in the Crossbars.

Note: To accommodate different lighting options, there are five holes in the Crossbars. Determine the appropriate Lightbar position before tightening the mounting hardware.

Å Use 3mm hex wrench to lock lights hooks in the position for hanging up lights.



Line up the mounting hardware on the extruded frame



Å Using the 5mm hex wrench, tighten both sides of both Lightbars.



- Slide the Upright bars onto the mounting hardware of each corner of the assembly.



- Use the 5mm hex wrench to tighten all four upright bars.



Note: The upright bars have mating bars installed in two sides. These mating bars must be on the two outside corners of the final assembly.





- Use the 3mm hex wrench, loosen the setscrews in one of the mating bars.
- Slide the mating bar halfway out of the extruded channel. Use the 3mm hex wrench to tighten one of the setscrews to hold the mating bar in the extruded channel.
- Slide another upright leg onto the mating bar so that it is flush against the other one.
- Use the 3mm hex wrench to tighten all of the setscrews.
- Loosen the setscrews on the second mating bar on the upright bar.
- Slide it to match the first mating bar.
- Use the 3mm hex wrench to tighten all four setscrews.



Completed Light Gantry
(upside down)



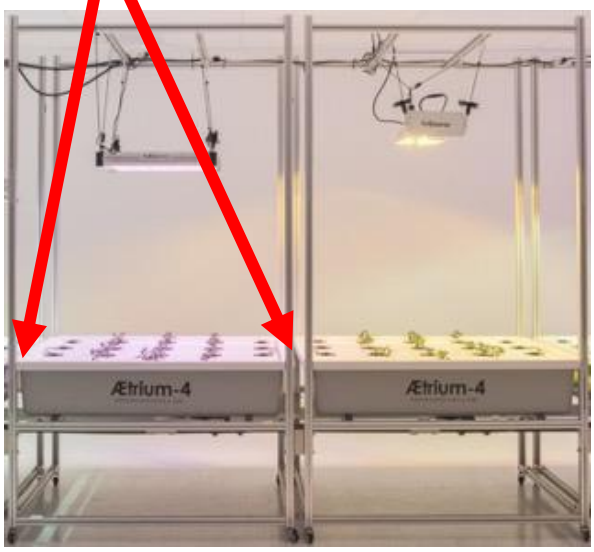
Tighten the setscrew at this location

- Use the 3mm hex wrench to loosen the setscrews on one of the mating bars on the end of upright legs.
- Slide the mating bar to just before the first setscrew.
- Use the 3mm hex wrench to tighten the last setscrew.



- Turn the Light Gantry to the upright position.
- Carefully lift the Light Gantry and place it onto the tub. Note that the extended mating bars slide into the extruded frame on the tub.

Caution: Use caution when installing the Light Gantry. It is highly recommended that the Light Gantry be lifted by at least two people.



Installed Light Gantries

- Use the 3mm hex wrench, loosen the setscrews in one of the mating bars.
- Slide the mating bar to the center of the seam of the Upright leg and the tub frame.
- Use the 3mm hex wrench, tighten all of the setscrews.
- Loosen the setscrews on the second mating bar on the Upright bar.
- Slide it to match the first mating bar.
- Use the 3mm hex wrench, tighten all four of the setscrews.