AEtrium-4 Double Deck Installation Guide

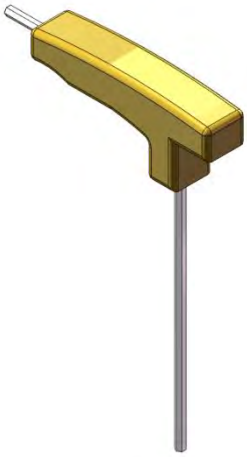
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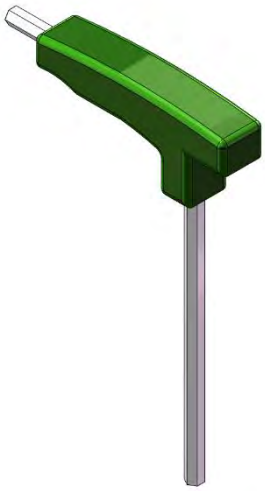
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Getting Prepared

You will need the following tools.



3mm hex wrench



5mm hex wrench



13mm socket wrench

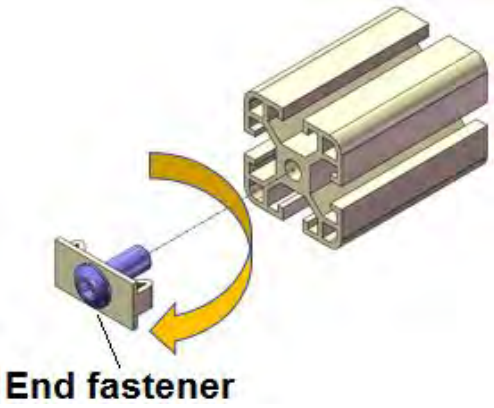


Philip screwdriver

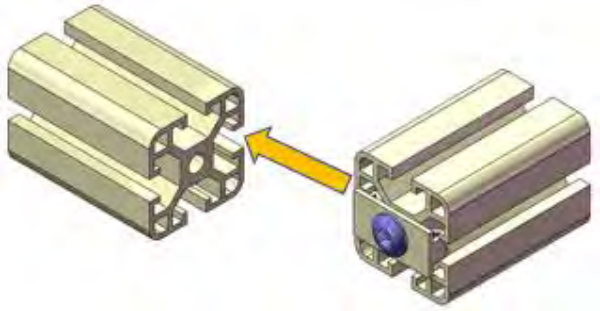


13mm wrench

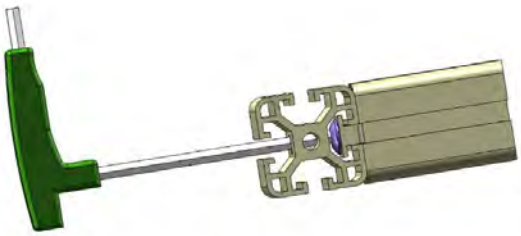
Assembly Tip #1- End Fastener

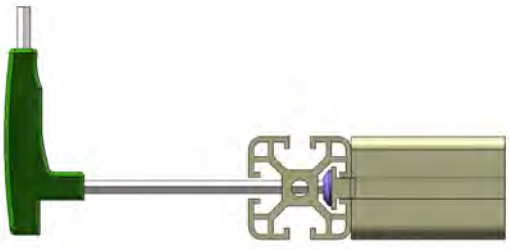


- Install end fastener onto the end of 8020 frame. DO NOT screw end fastener all the way down. Note: This is usually pre-installed at factory.



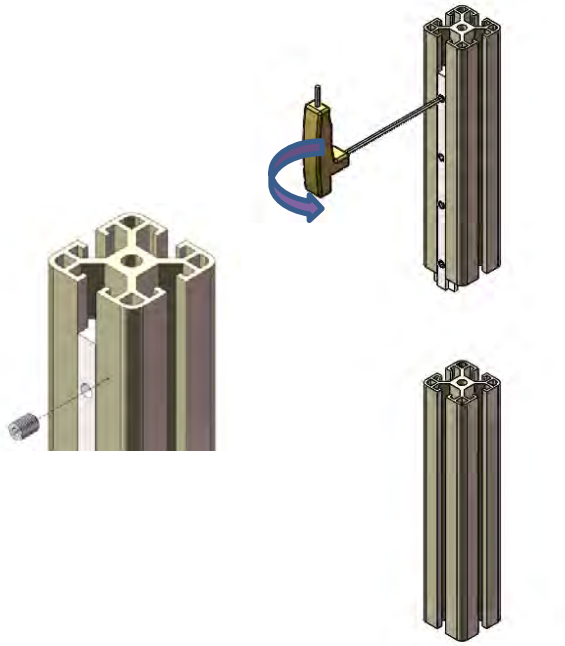
- Slide the pre-installed end fastener into the T-slot of second 8020 frame. Loosen fastener if it is too tight to slide in.



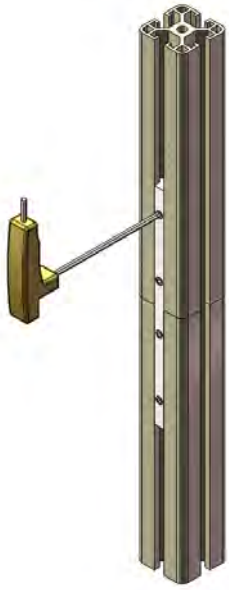


- Slide down and align fastener with pre-drilled hole on second frame.
- Use 5mm hex wrench to tighten fastener clockwise through pre-drilled hole.

Assembly Tip #2- Mating Bar

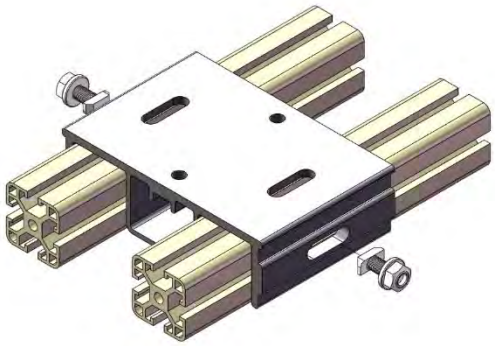


- Use 3mm hex wrench to loosen all 4 setscrews counterclockwise. DO NOT take any setscrew out.



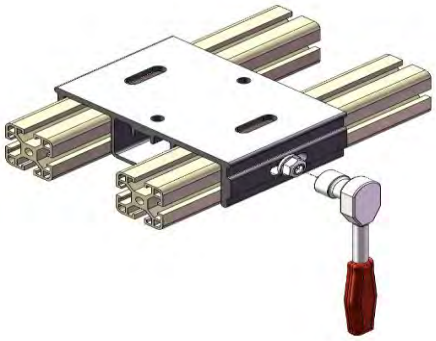
- Slide the mating bar into T-slot of second frame so that the center of the mating bar is over the break between the two pieces of 8020.
- Use the 3mm hex wrench to tighten all setscrews clockwise.

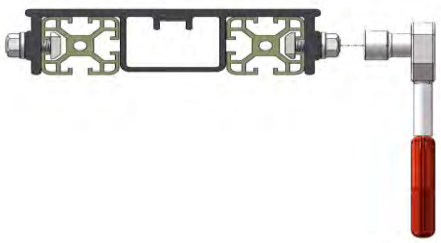
Assembly Tip #3- Spacer



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





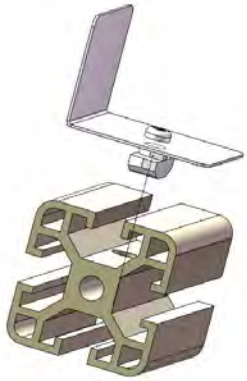


- Use M8 T-bolts and nuts to secure spacer onto the frame.

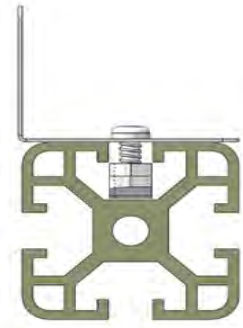
Assembly Tip #4- T-bolt and Phillips Screws



- Use phillips screwdriver to attach 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.

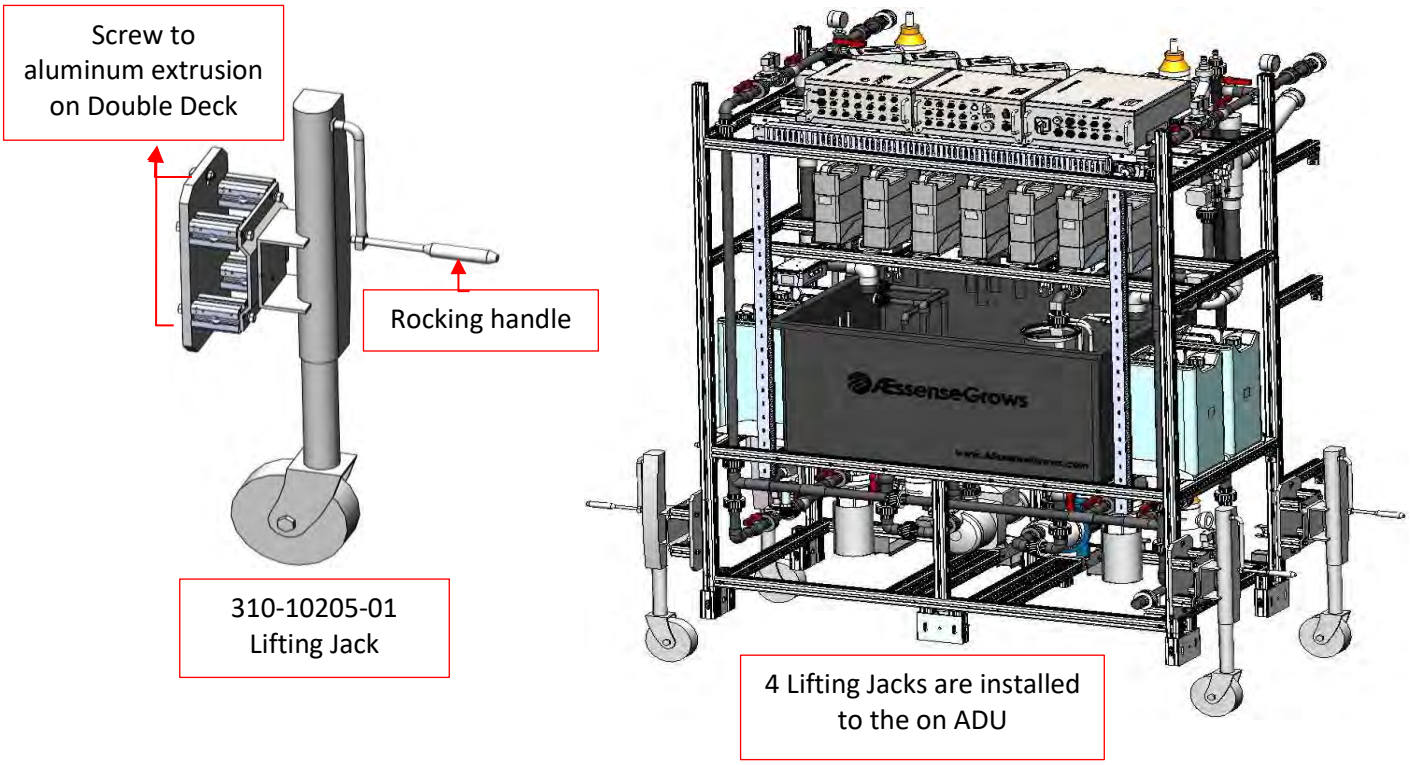
1. The AEtrium-4 Double Deck

The AEtrium-4 Double Deck is composed of two major parts, the AEtrium Dosing Unit (ADU) and the growth Space.

Note: It's advised that all of the unpacking activities to be carried out in the growing room if the heights of grow room doors are less than 9 feet.

2. Optional Installation Tool

AEtrium-4 Double Deck is large sized and heavy planting equipment, a forklift is highly recommended to be used during installation or transportation from one place to another. In case there's no forklift available on site, you can order the Optional Installation Tool Kit (310-10205-01 Lifting Jack) from AEssense, refer to ***Pic. 1***. This tool kit will help to move the assembled ADU or grow decks to the carriage or to the other place if needed.



Pic. 1

3. Overview of the AE4 Double Deck Packaging

- ADU(X1), Refer to ***Pic.2***
- Growth Tubs, Refer to ***Pic.3***
  - 8 pallets for 16 tubs
  - 8 pallets for 20 tubs
  - 12 pallets for 24 tubs
- Wooden box (X1), Refer to ***Pic.4***
- Carton box (X4), Refer to ***Pic.5***



Pic.2



Pic.3



Pic.4



Pic.5

4. Installing the Growth Tubs

4.1 Unpacking

- Remove the plastic cover and cut the banding

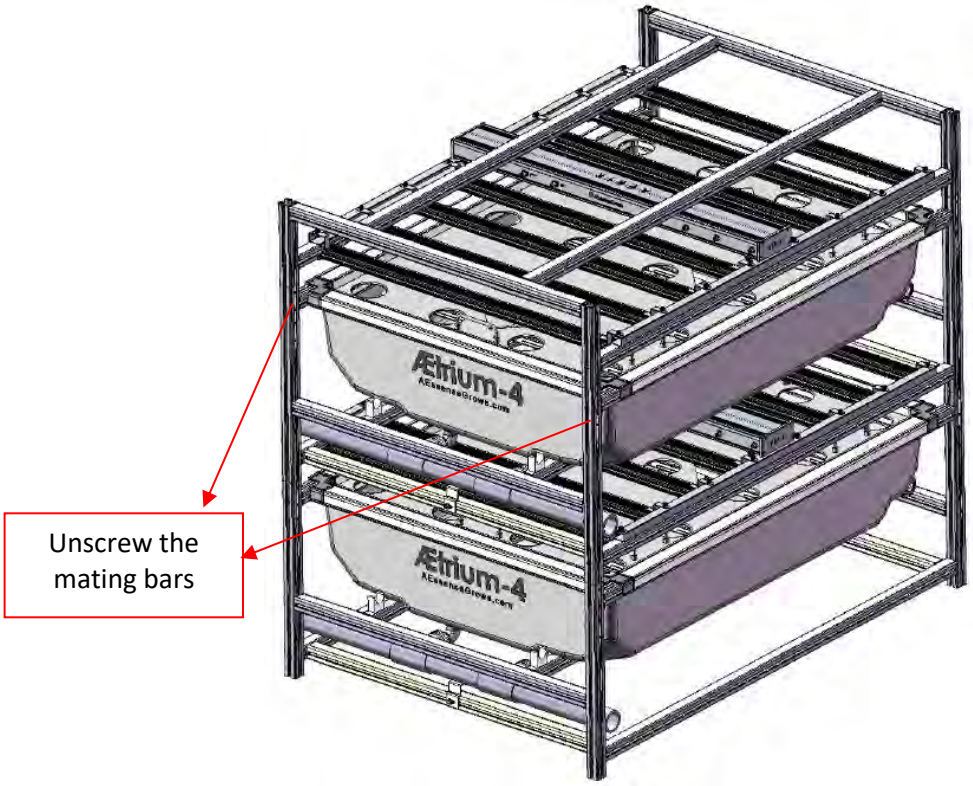


Pic.6

- Take out 8 pieces of aluminum 8020 extrusion (1,025mm each) from the pallet (4 at one side and another 4 at opposite side), each aluminum extrusion self-carries a mating bar, refer to ***Pic. 6***
- Lift the growth tubs off of the pallet with a forklift.

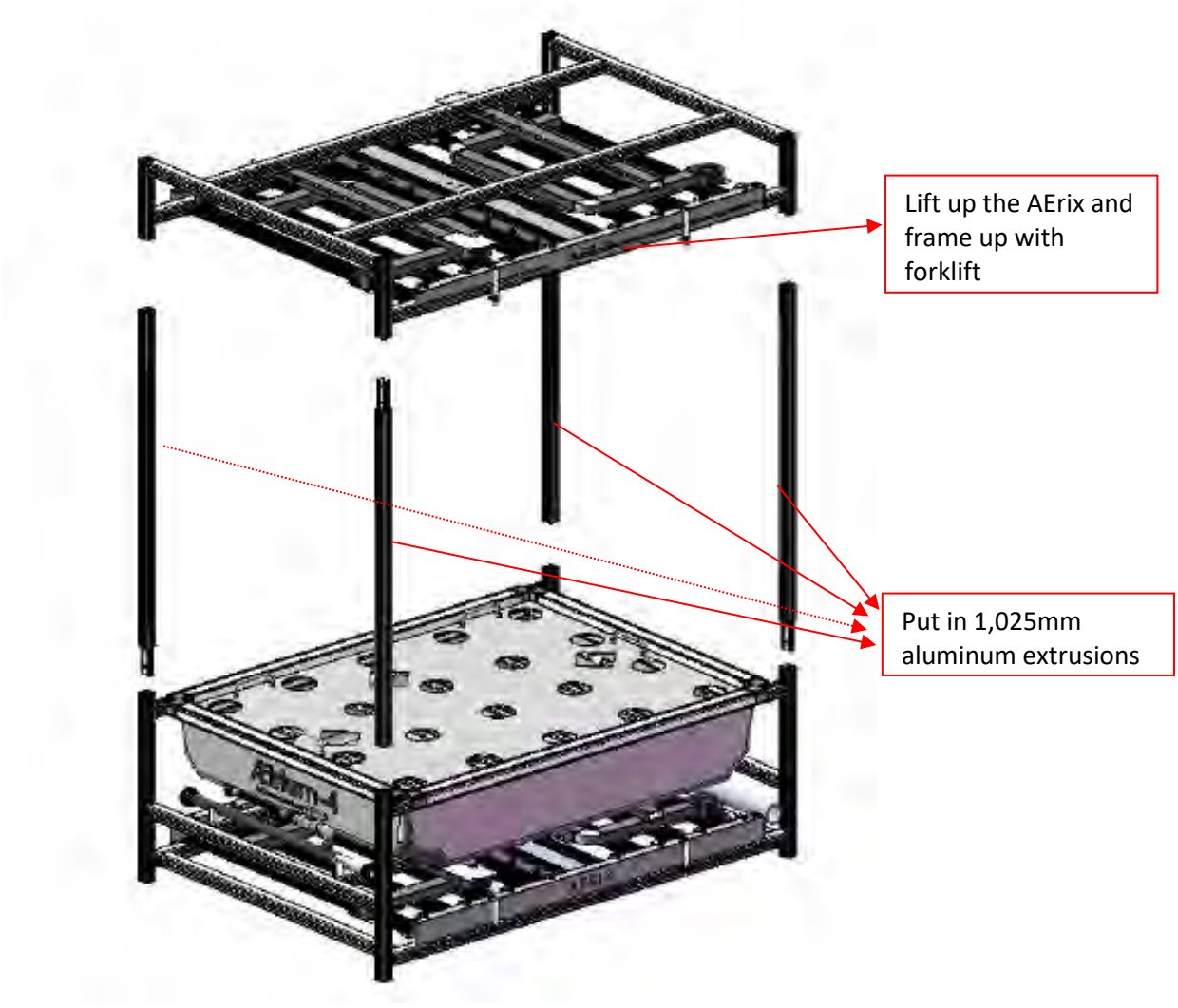
4.2.1 Install The Upper Growth Tub

- Unscrew 2 mating bars on each vertical T-slot and slide the mating bars down, Refer to ***Pic. 7***



Pic.7

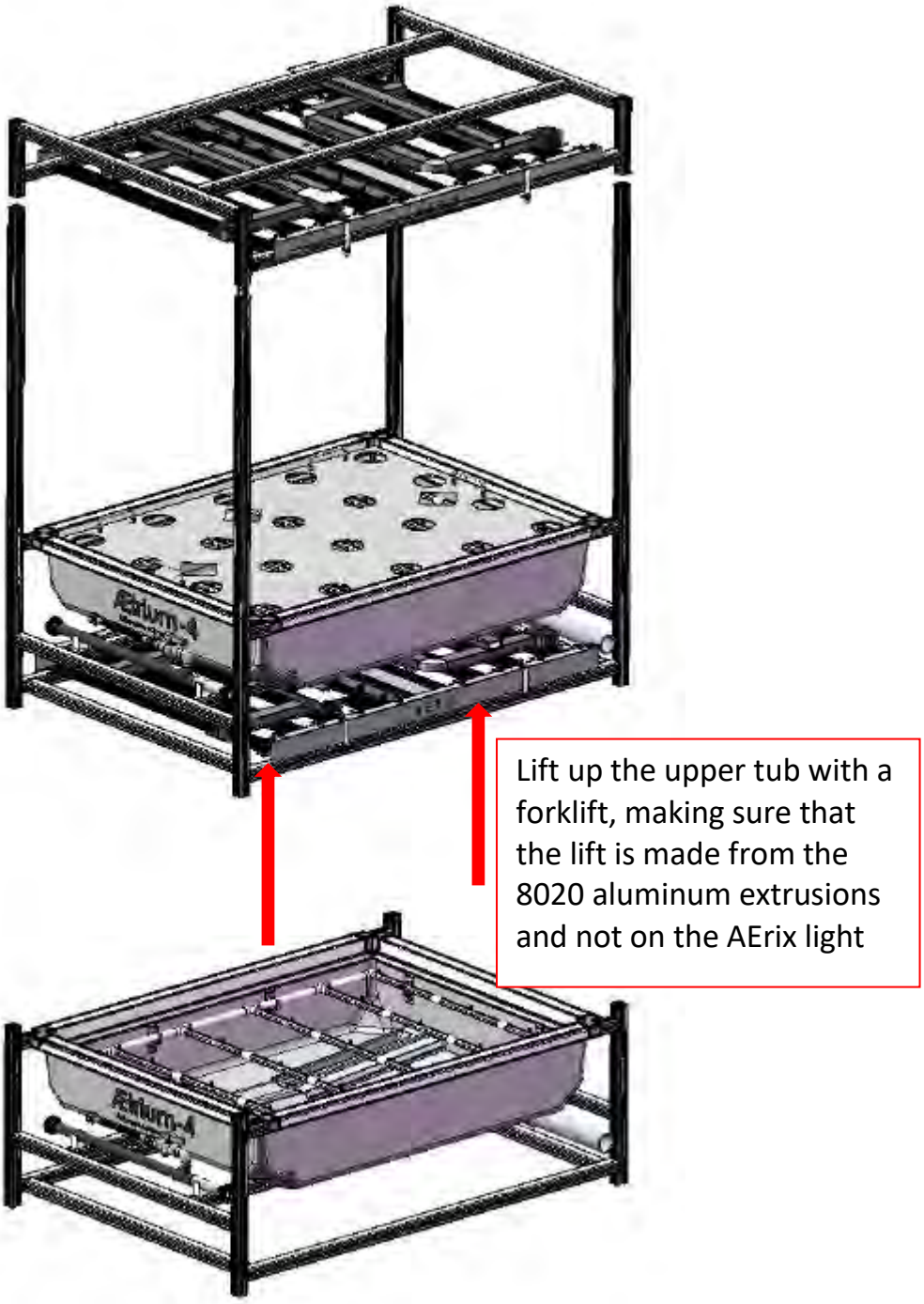
- Lift up the AErix light and aluminum frame with forklift, Refer to ***Pic. 8***
- Put in four 1,025mm aluminum extrusions respectively, Refer to ***Pic. 8***
- Slide the mating bars up and down to the connection points, and tighten the set screws



Pic.8

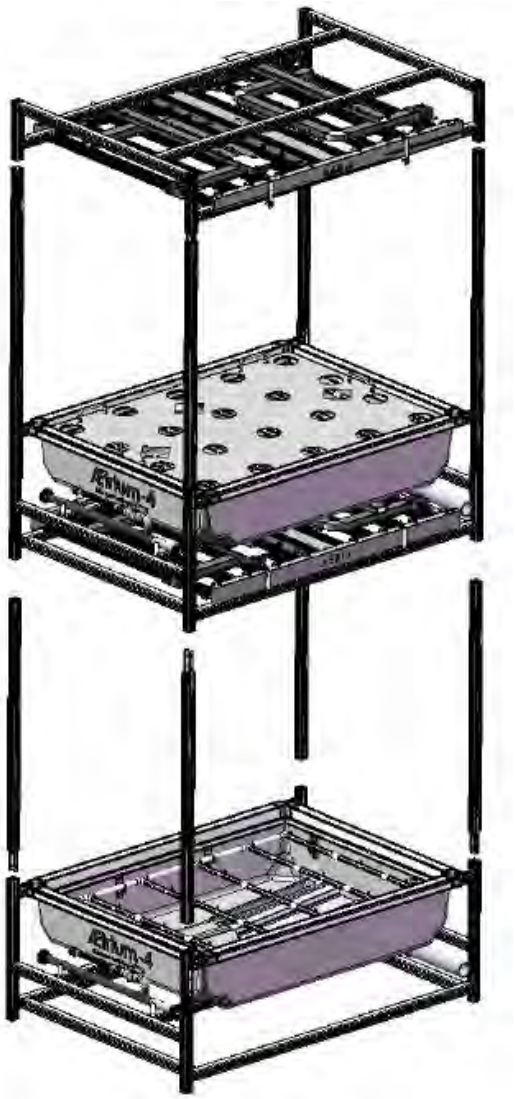
4.2.2 Install the Lower Growth Tub

- Lift up the assembled upper deck with forklift, refer to Pic.9
- Repeat the installation work



Pic.9

- After Pic.8 and Pic.9 installation, a complete set of double deck grow deck is as Pic.10

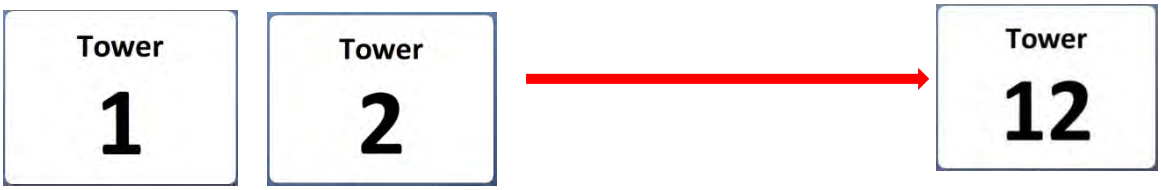


Pic.10

- Repeat the work of installation for more grow tubs

Note:

- Please follow the installation sequence from the upper tub to the lower tubs
- Please install each set one by one, don't mix the upper or lower decks.
- Each deck is pasted with individual labels (Tower1, Tower2, Tower3……..), according to the tub numbers you purchased, the last label can be Tower8(for 16 tubs), Tower 10(for 20 tubs), Tower 12(for 24 tubs), refer to ***Pic.11***

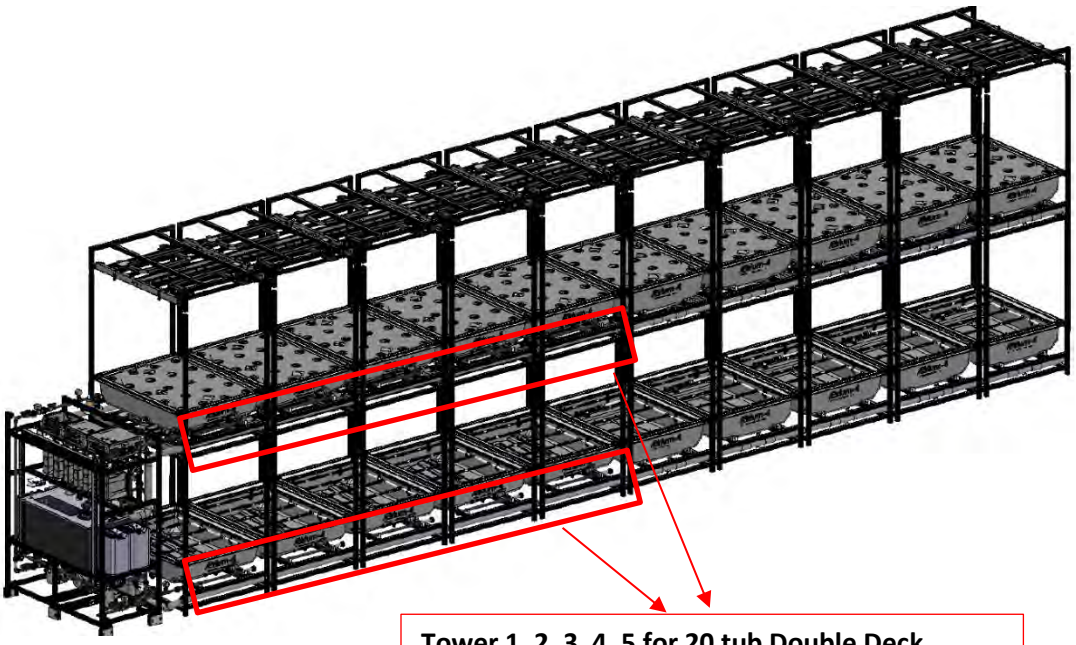


Pic.11

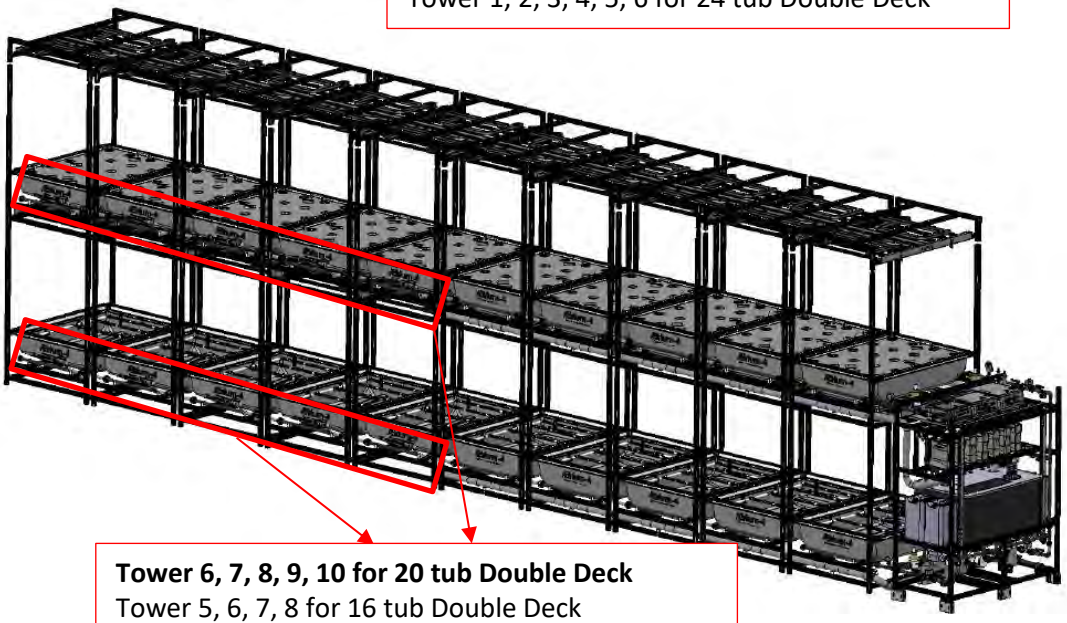
5. Move the Growth Modules to the Carriage

Move the assembled growth modules to the moving carriage one by one with forklift, please start from the last tower. For example, for 20 tub AEtrium-4 Double Deck, please move Tower 10 to the carriage, then tower 9, with this backward sequence, the last one to carriage is tower 1, tower 1 is always the 1st tower next to ADU. Refer to ***Pic.12***.

Please pay attention to the direction and "Tower" labels which are stuck to the tubs of upper and lower deck. The drain lines and water supply lines will alternate from one side of the AEtrium-4 Double Deck to the other side. Do not assemble the AEtrium-4 Double Deck with all of the water supply on one side and all of the drain lines on the other side. This is incorrect. Please pay attention to the "Tower" labels for correct assembly.



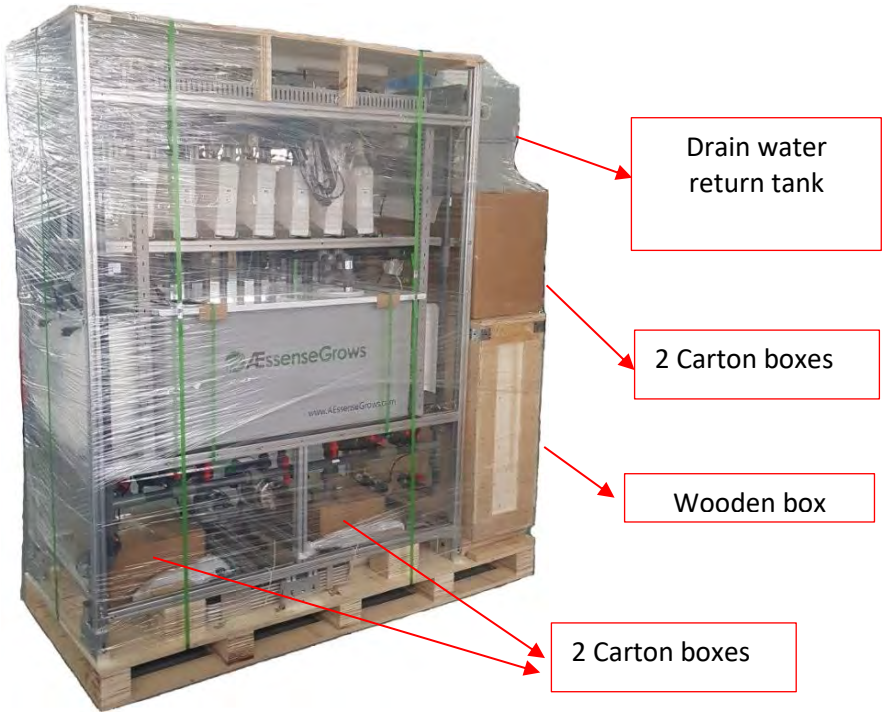
Tower 1, 2, 3, 4, 5 for 20 tub Double Deck
Tower 1, 2, 3, 4 for 16 tub Double Deck
Tower 1, 2, 3, 4, 5, 6 for 24 tub Double Deck



Tower 6, 7, 8, 9, 10 for 20 tub Double Deck
Tower 5, 6, 7, 8 for 16 tub Double Deck
Tower 7, 8, 9, 10, 11, 12 for 24 tub Double Deck

Pic.12

6. Connect the Grow Tub Towers Together



- Find the carton boxes (3 small ones and 1 bigger one) from the ADU pallet and open smaller ones, refer to ***Pic. 13***

- Find spacers (To be installed in between the deck sets) from small carton boxes, refer to ***Pic.14***



Pic.14

  - X 42 for 16 tub Double Deck
  - X 54 for 20 tub Double Deck
  - X 66 for 24 tub Double Deck

- Find spacers (To be installed on the first deck set and the end of last deck sets) from small carton boxes, refer to ***Pic.15***



Pic.15

  - X 4 for 16/20/24 tub Double Deck

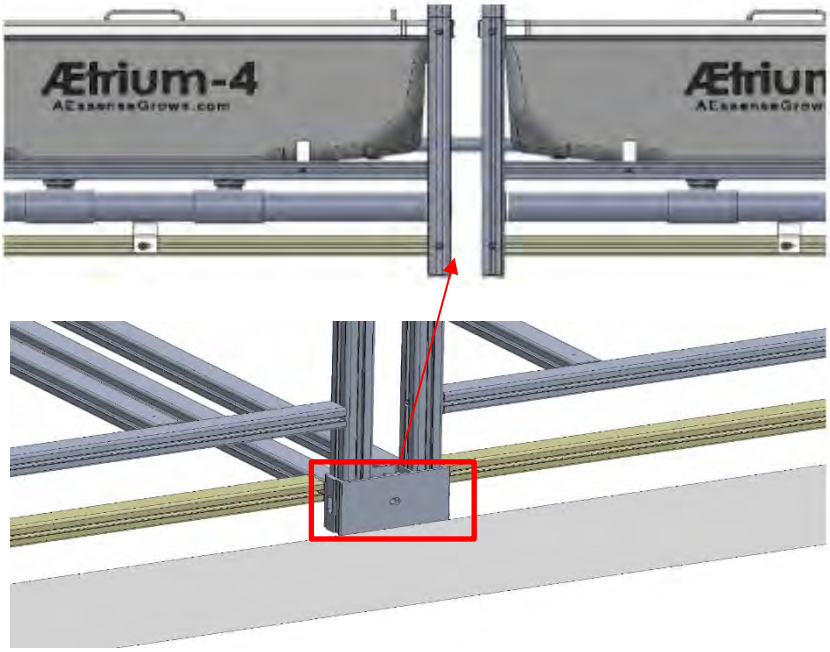
- Find M8 T-bolts and nuts, flat O-rings and M10*25 bolts from small carton boxes, refer to ***Pic. 16***



Pic.16

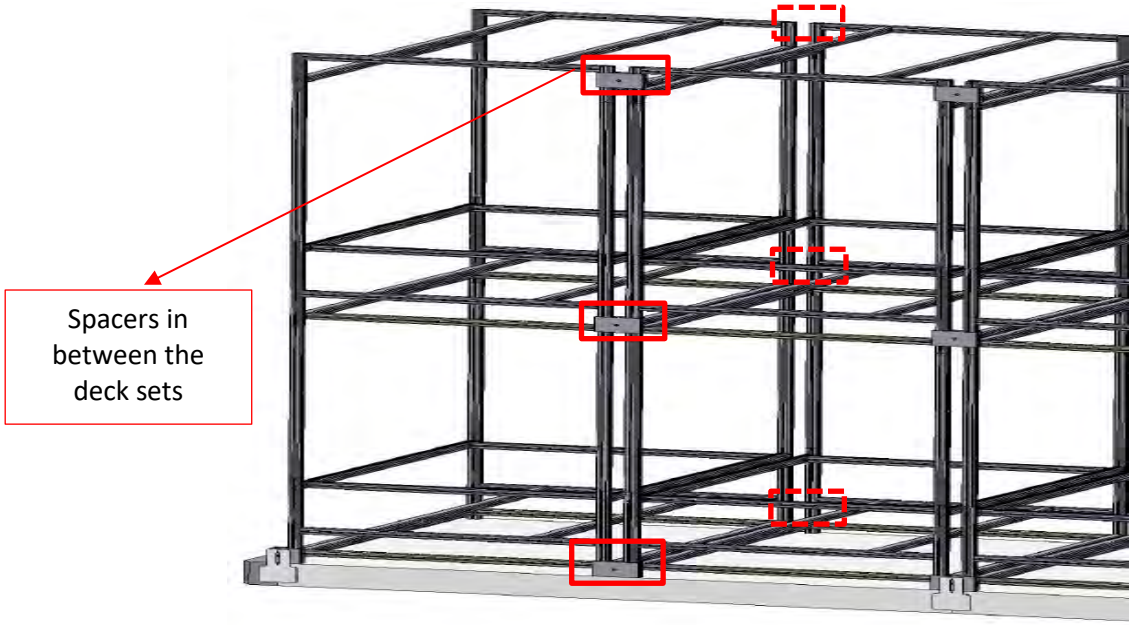
6.1 Install the spacers in between grow tub towers

- Push the spacer in between the tub frames, and apply one M8 T-bolt and nut to each side of the spacer and tighten the T-bolt. Refer to ***Pic.17***



Pic.17

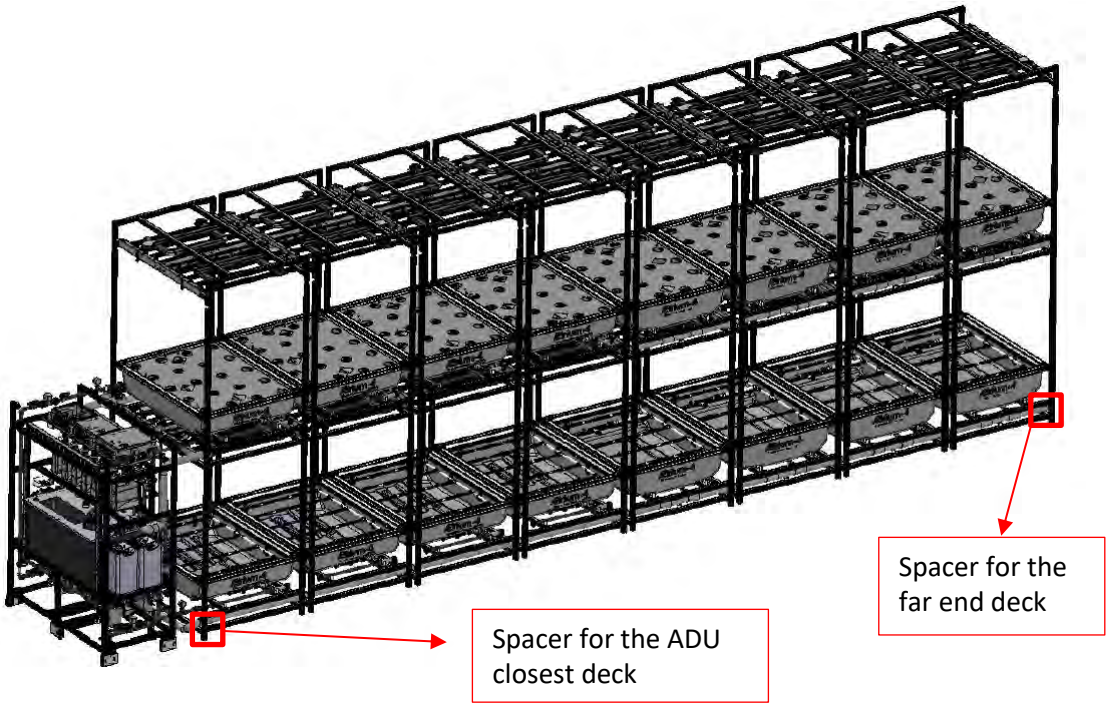
- Repeat the space installation step, install 3 spacers in between the grow tub towers on one side, as well as the opposite, refer to ***Pic.18***



Pic. 18

6.2 Install Spacers on the Farthest Tower and Tower Closet to the ADU

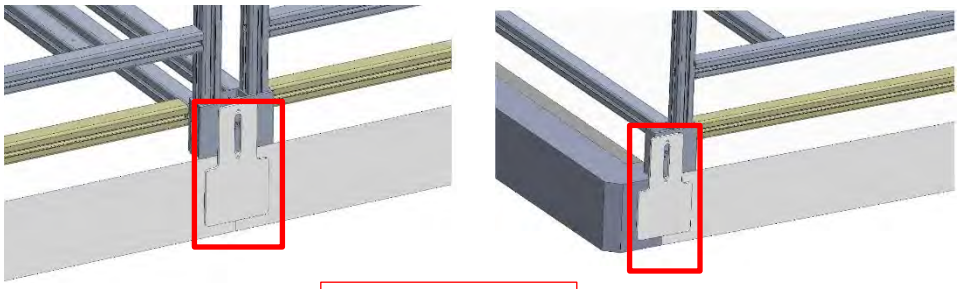
- Get 4 spacers ready, refer to ***Pic.15***
- Push the spacer to the vertical aluminum extrusion
- Apply one T-bolt and nut to the side of the spacer and fasten the T-bolt, refer to ***Pic.19***, repeat the other three end corners.



Pic.19

6.3 Lock AEtrium-4 Double Deck Spacer to Carriage Spacer

- Lock the spacers to carriage with flat O-rings and M10*25 bolts, refer to *Pic.20*, O-rings and bolts are from *Pic.16*



Pic.20

6.4 Install Pressure Pipe (Water In Pipe) And Coupling (Water Out Pipe)

- Open the big carton box to find the following, please refer to ***Pic. 21***

Water in Pressure Pipe

- X 20 for 16 tub Double Deck
- X 26 for 20 tub Double Deck
- X 32 for 24 tub Double Deck

Coupling

- X 20 for 16 tub Double Deck
- X 26 for 20 tub Double Deck
- X 32 for 24 tub Double Deck

Hose Clamp

- X 40 for 16 tub Double Deck
- X 52 for 20 tub Double Deck
- X 64 for 24 tub Double Deck



Water in Pressure Pipe



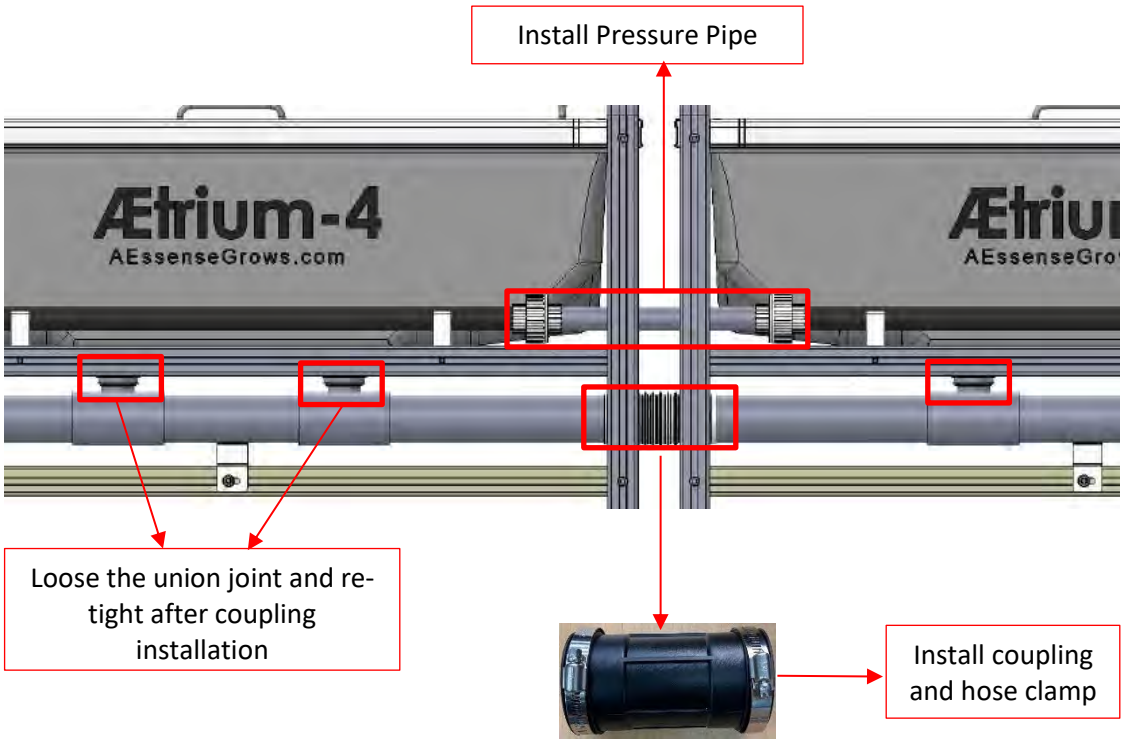
Coupling



Hose Clamp

Pic.21

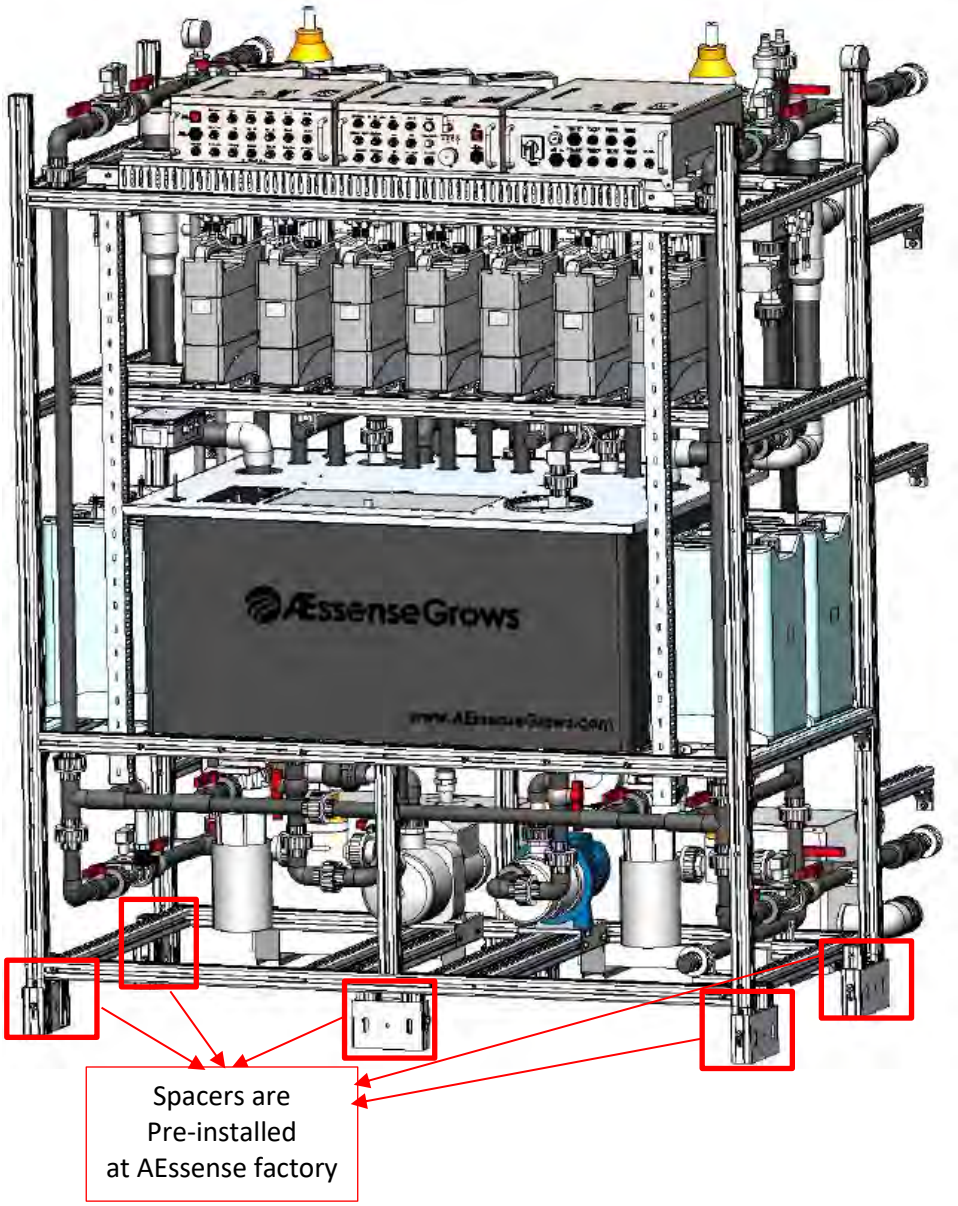
- Install the water supply pipe and coupling
  - Install the water supply pipe: Put the water supply pipe in between the two tubs and tighten both ends respectively, refer to ***Pic.22***
  - Install the drain line coupling, refer to **Pic.22**
    - ✓ Loosen the union joint in between the drain line and the grow tub
    - ✓ Connecting the drain line with the black rubber coupling and hose clamps (
    - ✓ Re-tight the union joint in between the drain lines and the grow tub



Pic.22

7. ADU Installation

- Unpack the ADU, refer to ***Pic. 23***, please note the 8020 spacer bars that are pre-installed to the back of the ADU

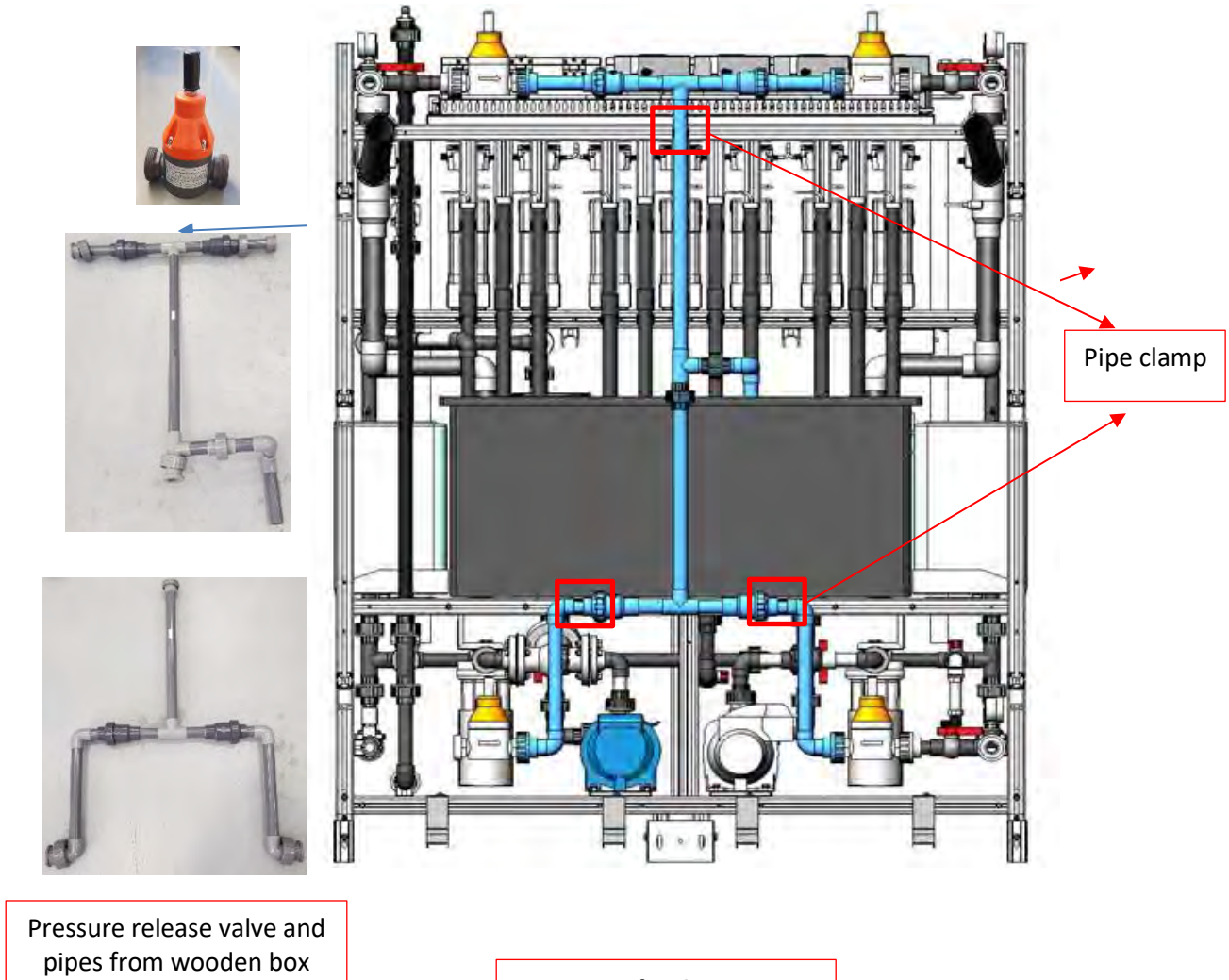


Pic.23

7.1 Install the ADU Pipes

- Install the piping clamps before pipe installation

- Find three pipe clamps, each is at the opposite side of actual installation location, refer to *Pic.24*
- Unscrew the clamps and move them from the inner side of the 8020 to outer side so that they can be used to attach the pipes.



Pic. 24
Rear View Of ADU

➢ Install the solenoid piping

- To prevent damage caused by shipment, the two water input/feed solenoids are disconnected from piping and tied to aluminum extrusion, refer to ***Pic.25***

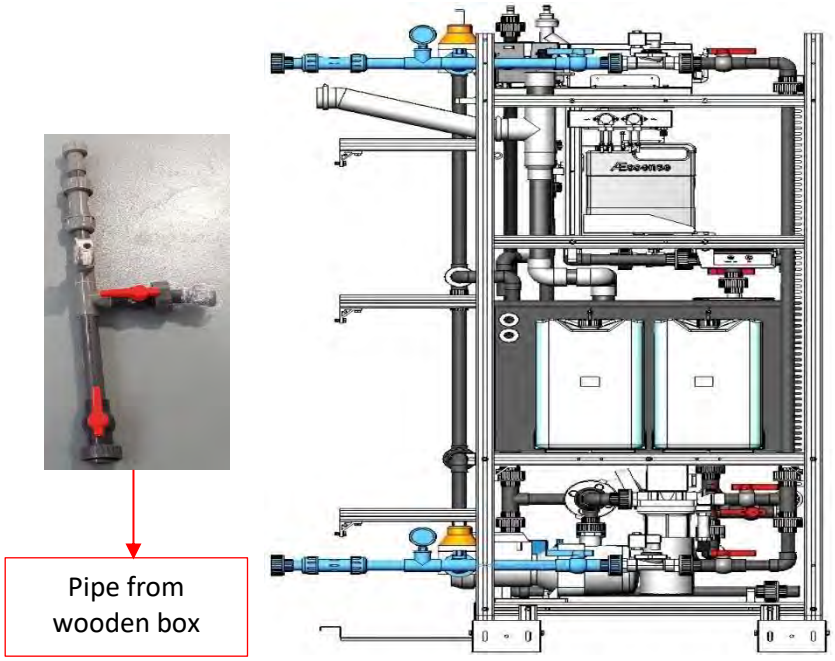
- Cut the tie wraps and install the solenoid to the pipe

Note: The blue tapes pasted to the solenoid connector as well as the other pipe unions are to prevent O-ring from missing, please check if the O-rings are in place when removing the blue tape prior to installation.



Pic.25

- Install water-input pipes(X4)

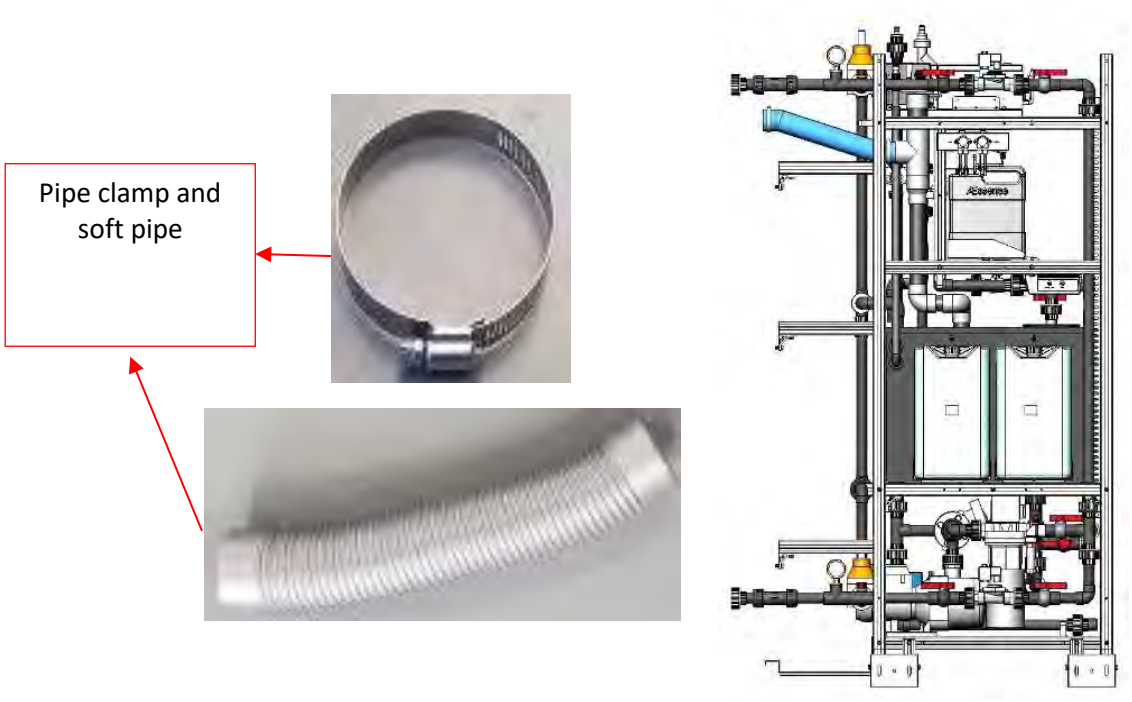


Pic. 26
Side View Of ADU

Find the pipes from the wooden box, refer to ***Pic. 26*** and ***Pic.24***, and assemble them as highlighted in blue

- Install the drain pipes

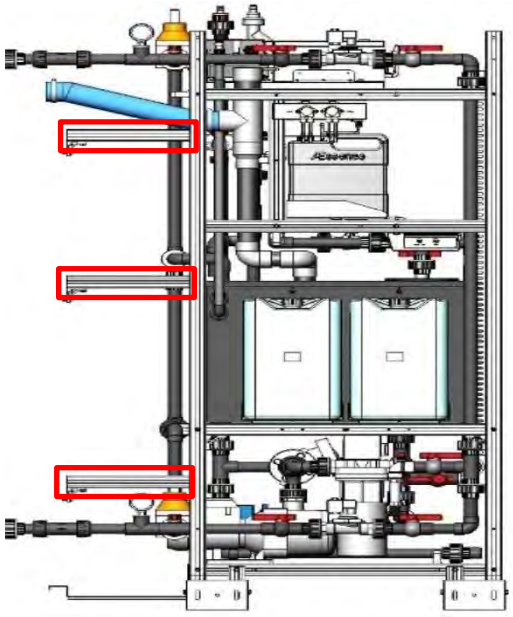
  - Find the soft pipes(X2) and pipe clamps(X4) from the wooden box, refer to ***Pic.27***
  - Insert the hard pipes (on ADU and the first upper deck) to each side of soft pipe, and tighten the connection with the pipe clamps (Refer to the blue part of ***Pic.27***)



Pic. 27

- Install the Aluminum extrusion（X6） in between ADU and decks, refer to *Pic.28*

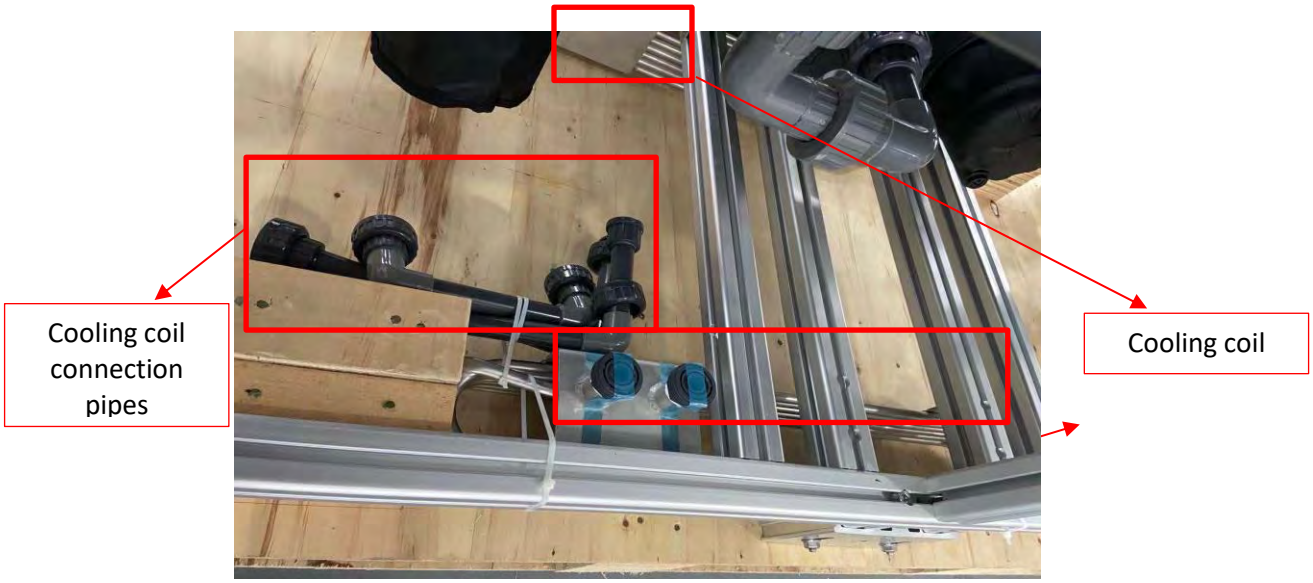




Pic. 28

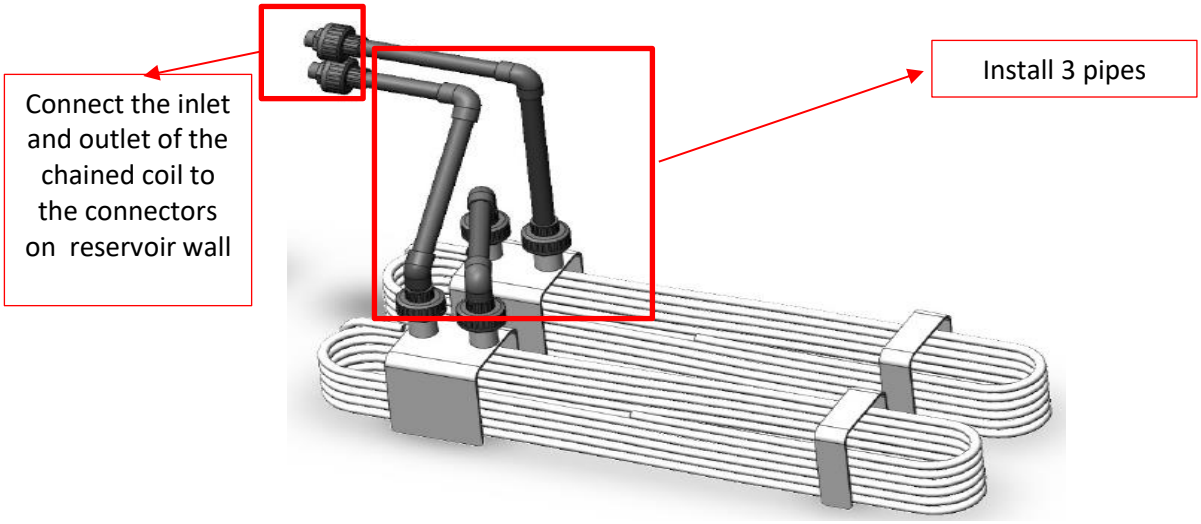
- Install the Cooling Coil

  - Find the cooling coil(X2) and cooling coil connection pipe (3 pieces) from ADU pallet, refer to ***Pic.29***



Pic. 29

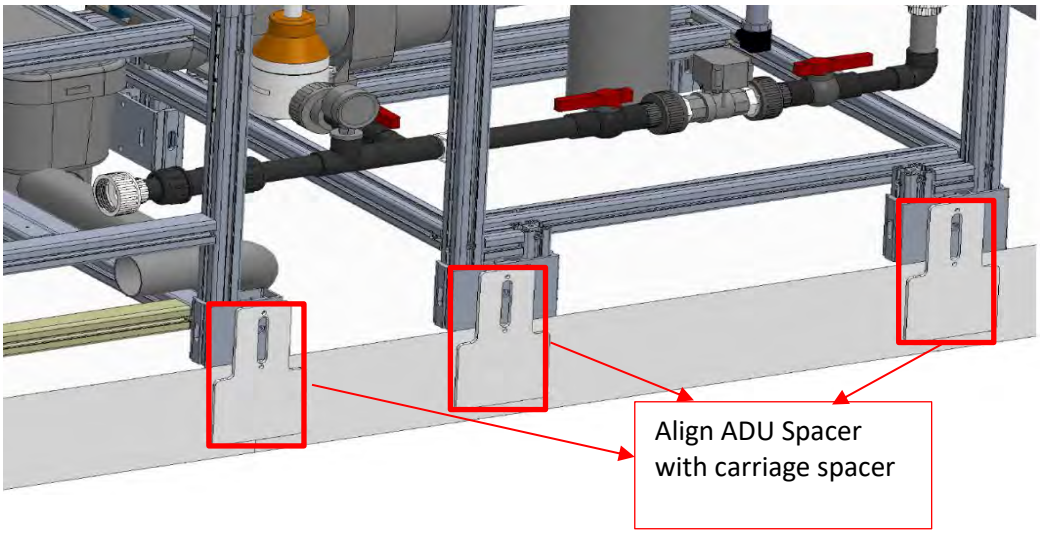
- Install these 3 pipes and chain the two cooling coils in serial, refer to ***Pic.30***
- Connect the inlet and outlet of the chained cooling coil to the white connectors on the reservoir wall (Left side), refer to ***Pic. 30***



Pic. 30

8. Move the ADU to Carriage

- Use forklift and move the ADU to the carriage



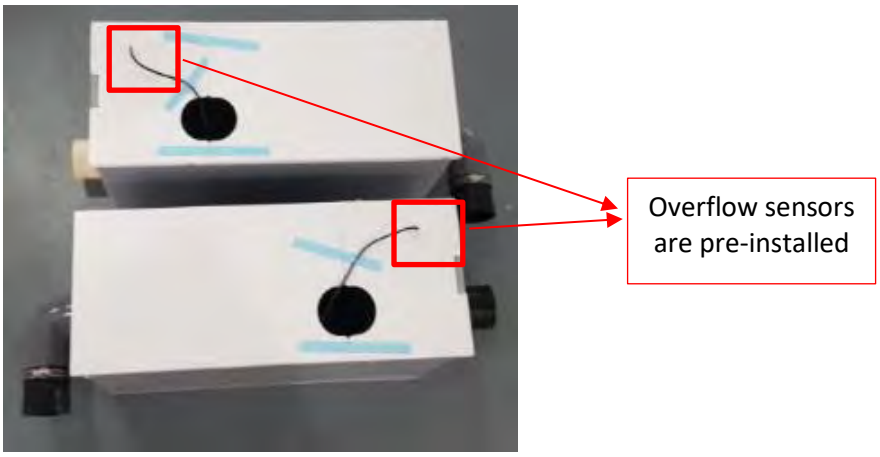
Pic. 31

- Align the spacers of ADU with the spacers of the carriage, refer to Pic.31
- Screw the bolts up tightly, please use the bolt and Flat O-ring of Pic.16

9. Install the Drain Water Return Module

9.1 Install the Drain Water Return Tanks

- Find the drain water return tanks (X2) in the ADU Package, refer to ***Pic.32***, the overflow sensors are pre-installed to the water tank.



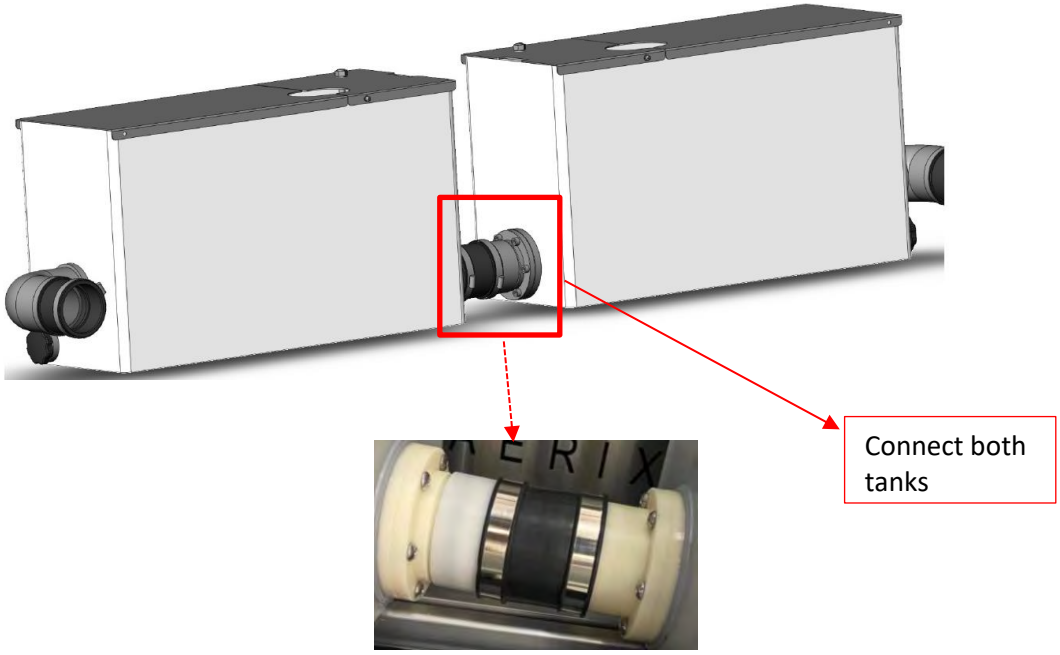
Pic. 32

- Unscrew the tank cover on cover side and put the screws aside for later on use , find the elbow from the tank and push it into the white connector, repeat for the other tank, refer to ***Pic. 33***



Pic. 33

- Find a pack of hose clamps (X7) from wooden box and pick one to clamp the black rubber coupling to connect both tanks, refer to ***Pic.34***



Pic. 34

9.2 The overflow sensor (X2)

The overflow sensors are pre-installed to the cover, please be careful when handling the tank covers.

9.3 Return water pumps(X2)

- Take two pump carton boxes from the wooden box, open the carton boxes and take out two return water pumps and pipe joints, refer to ***Pic.35***
- Put the Green return water pump into the return water tank, make sure the pipe joints and the pump cables can get through the hole on the cover, refer to ***Pic.35***



Return Pump and Pipe joint



Install the Pipe Joint to Pump

Pic. 35

- Put the covers back to the water tanks and screw tightly

9.4 Install the bracket of the water return pump

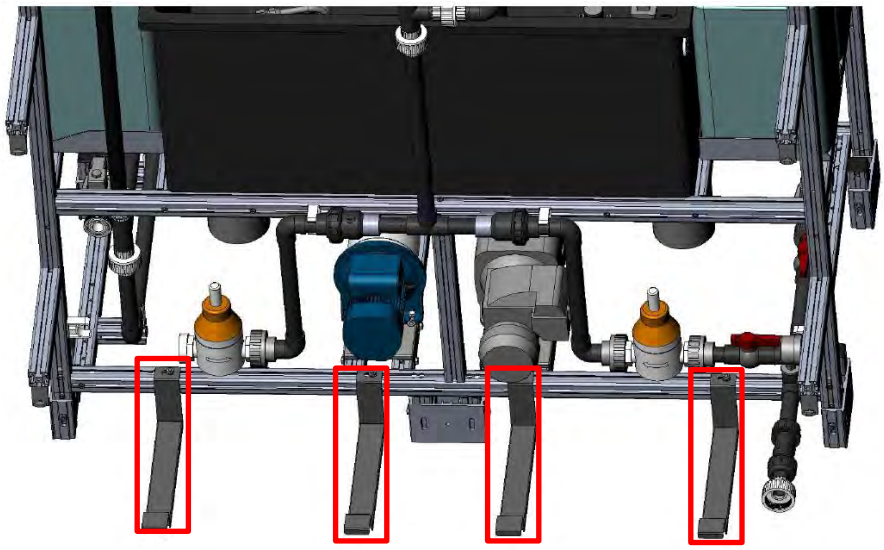
- Find the bracket(X4) and T-bolts from the wooden box, refer to ***Pic.36***
- Put the brackets between the ADU and the first decker's aluminum extrusion bar, apply T-bolts and tighten the brackets, refer to ***Pic.36***



T-bolt

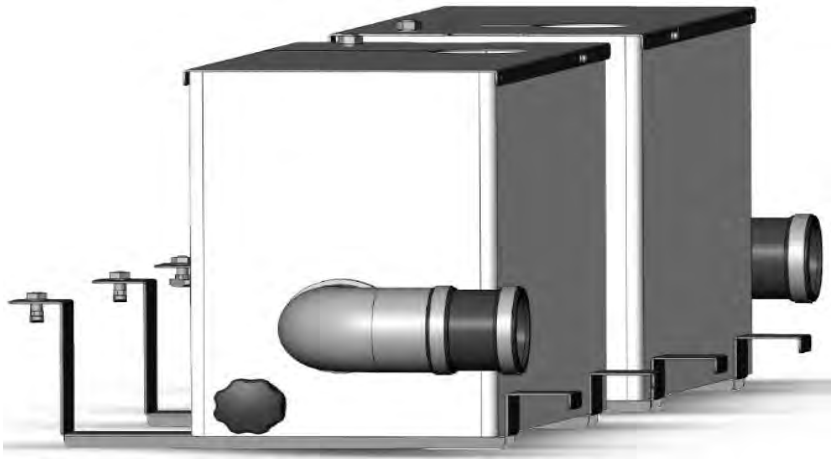


Brackets



Pic. 36

- Move the drain water tanks into the bracket, refer to ***Pic.37***

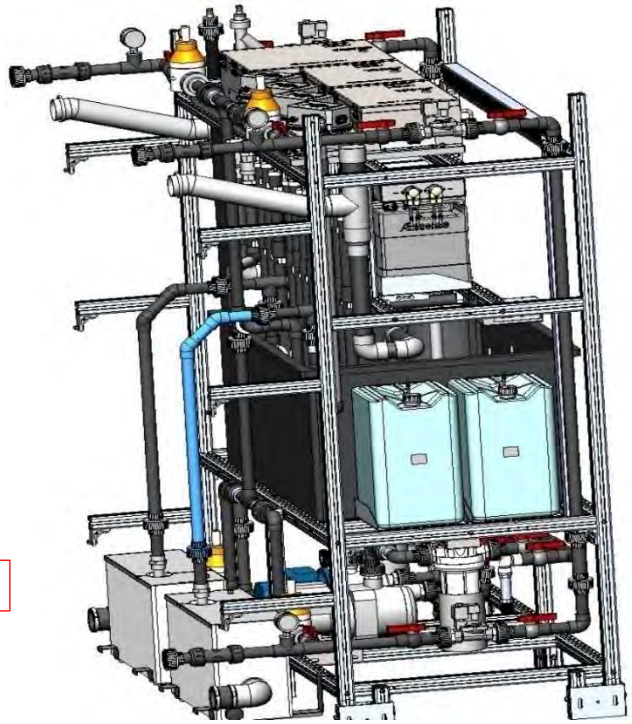


Pic. 37

- Install the pipes from the water return pump to reservoir
  - Find the pipes(X2) from the wooden box and install as highlighted in blue, refer to ***Pic. 38***



Pipe



Pic. 38

10. Cable Management

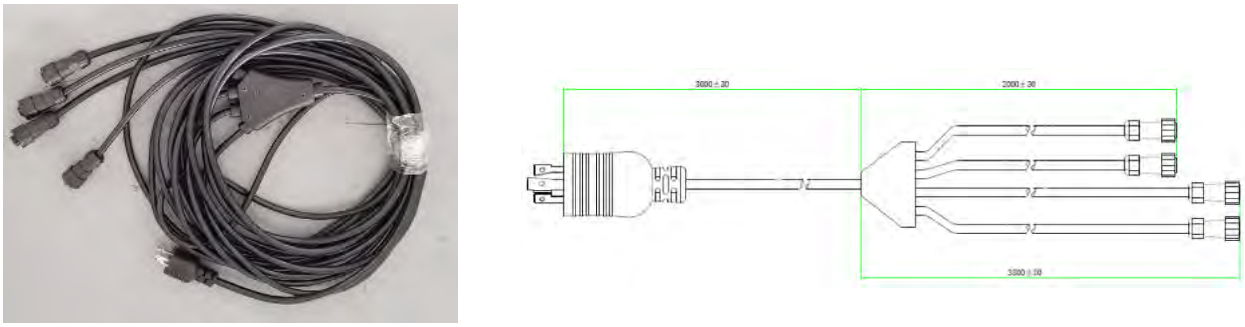
10.1 ACU, DCU and PDU Cabling

The ACU, DCU and PDU cables are pre-connected, the valve cables are pre-connected to the DCU as well

10.2 AErix Light Cabling

- Find the power cables and communication cables from the big carton box

- AErix Power Supply（341-00167-01) has 4 power drops which can connect two tower set/4 AErix light, refer to ***Pic.39***



Pic. 39

- Find AErix communication cable (341-00168-01), refer to ***Pic.40***

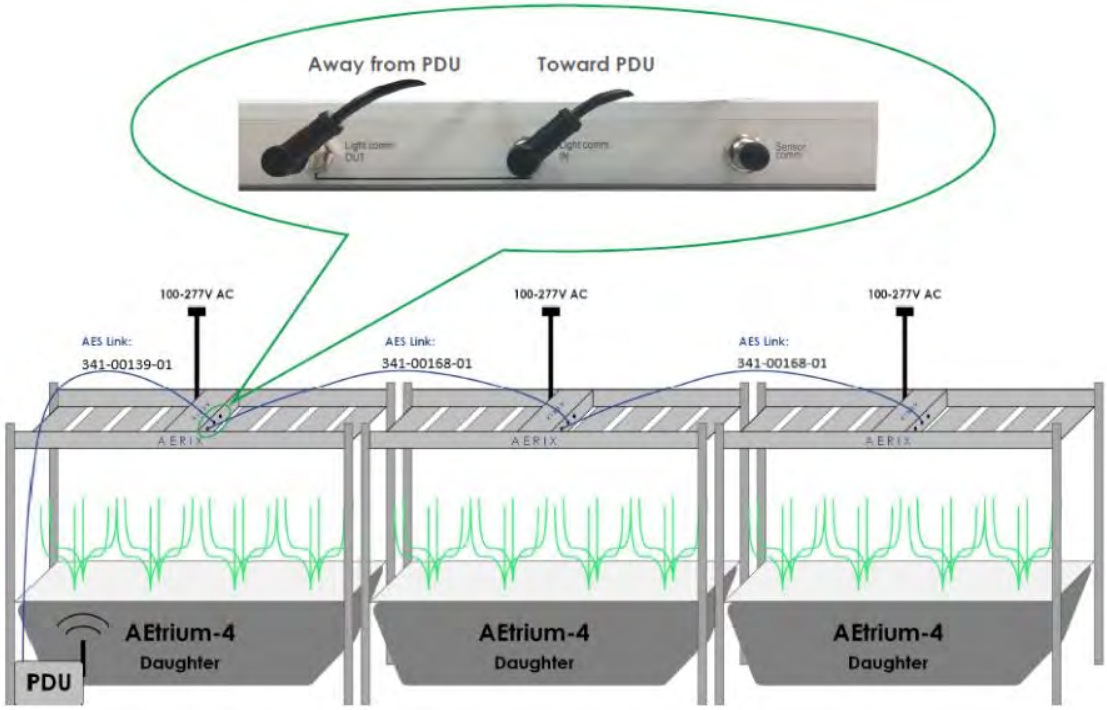
  - X 14 for 16 tubs
  - X 18 for 20 tubs
  - X 22 for 24 tubs



Pic. 40

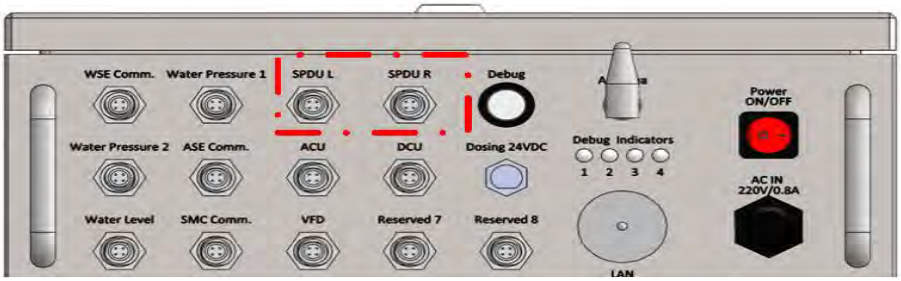
- Install the communication cables of AErix light
  - AErix lights at lower decks are all the same chain and the ones for the upper deck are another another chain.

- The first AErix of either chain is connect to PDU through communication cable 341-00139-01, one end of this cable has been pre-connected to PDU at AEssense factory, please connect the other end of this cable to “Light comm. IN” of first AErix light of each chain, please refer to ***Pic. 41***
- Communication Port On PDU, “SPDU L” links is for the chain of Lower



Pic. 41

deck AErix and “SPDU R” links is for Upper deck AErix, refer to ***Pic. 42***



Pic. 42

10.3 AErix Air Duct Cabling

- Find the cables from the big carton box, refer to ***Pic. 43***



Pic. 43

- The air ducts are located above the AErix light. Two air ducts as one set to provide air ventilation for the plants on each grow tub

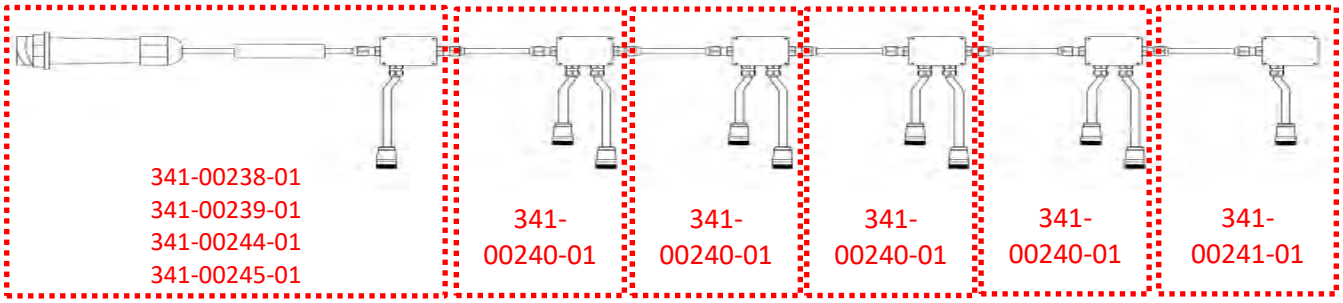
- For AEtrium-4 Double Deck, we put the lights/air ducts/tubs in 4 groups, refer to ***Pic. 44***, the same colors are classified as group

AIR	Tower1 (Upper Deck)	Tower2 (Upper Deck)	Tower3 (Upper Deck)	Tower4 (Upper Deck)	Tower5 (Upper Deck)	Tower6 (Upper Deck)	Tower7 (Upper Deck)	Tower8 (Upper Deck)	Tower9 (Upper Deck)	Tower10 (Upper Deck)
	Tower1 (Lower Deck)	Tower2 (Lower Deck)	Tower3 (Lower Deck)	Tower4 (Lower Deck)	Tower5 (Lower Deck)	Tower6 (Lower Deck)	Tower7 (Lower Deck)	Tower8 (Lower Deck)	Tower9 (Lower Deck)	Tower10 (Lower Deck)

Pic. 44

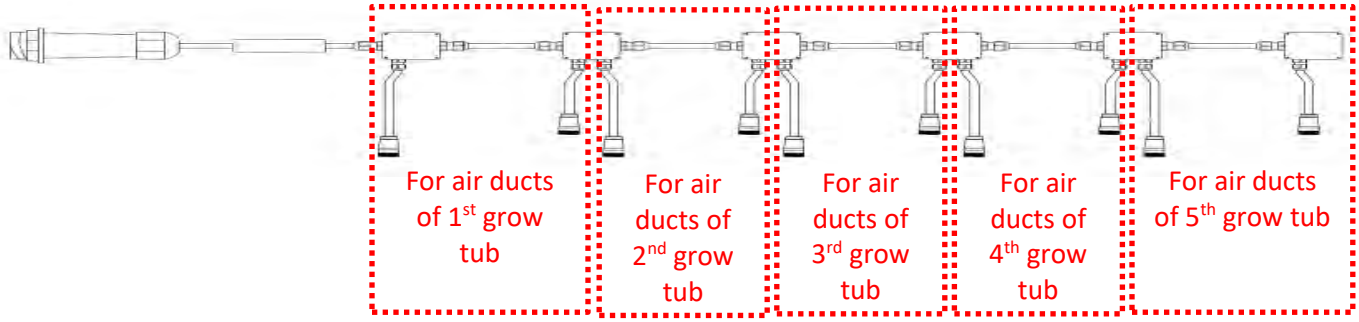
- Cabling sequence within each group (Refer to ***Pic.45***)

  - 341-00238-01, First air duct cable on Tower 1, Lower deck, one side is linked to the cable from Basic Relay Module (***Labeled as "Fan R1"***), and another side is linked to 341-00240-01
  - 341-00239-01, First air duct cable on Tower 1, Upper deck, one side is linked to the cable from Basic Relay Module (***Labeled as "Fan R2"***), and another side is linked to 341-00240-01
  - 341-00244-01, First air duct cable on Tower 6, Lower deck, one side is linked to the cable from Basic Relay Module (***Labeled as "Fan L1"***) , and another side is linked to 341-00240-01
  - 341-00245-01, First air duct cable on Tower 6, Upper deck, one side is linked to the cable from Basic Relay Module (***Labeled as "Fan L2"***), and another side is linked to 341-00240-01



Pic. 45

- Cable Connection for each group (Refer to ***Pic.46***)



Pic. 46

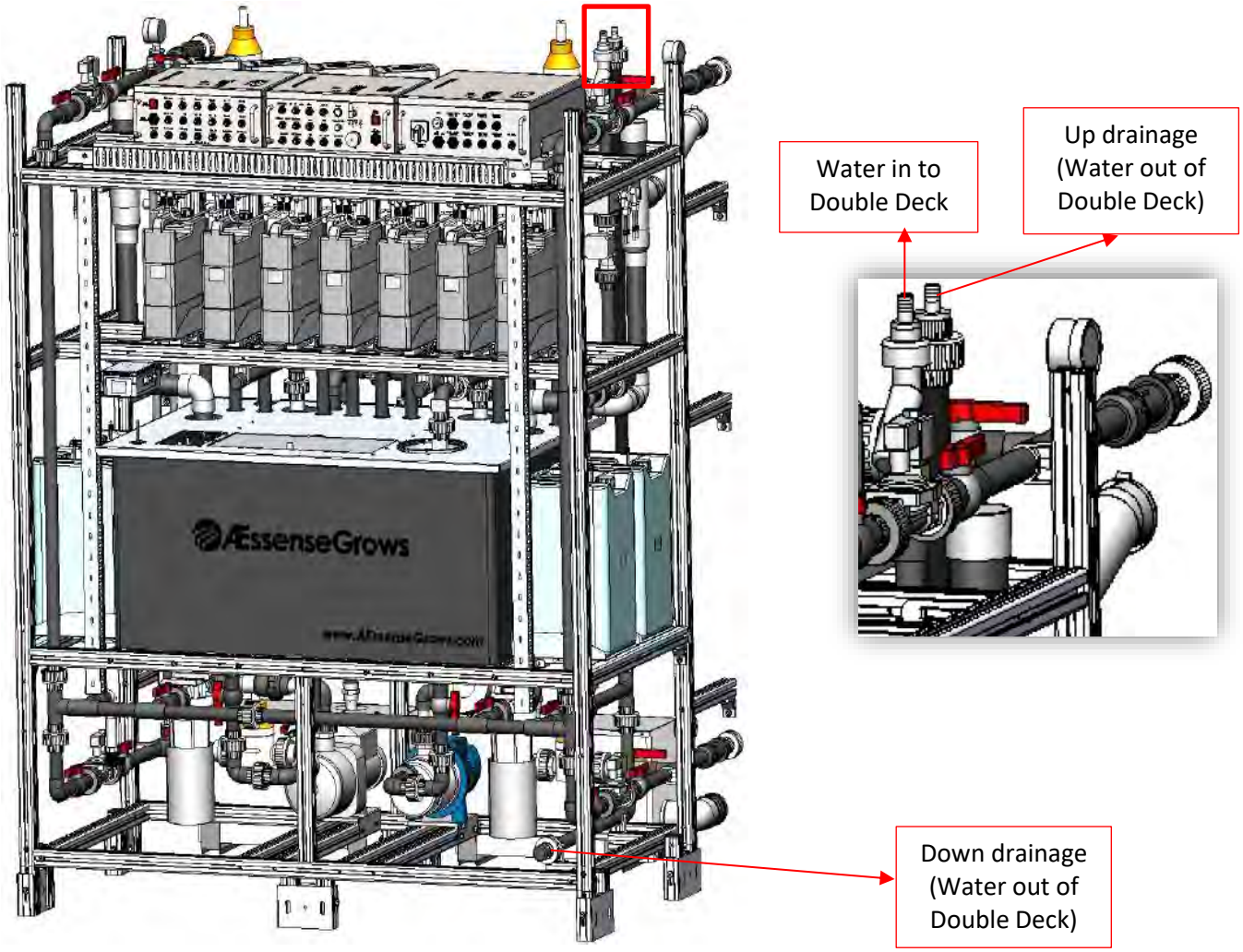
11. Testing After Installation

11.1 Connect Inlet Water To Double Deck And Outlet Water From Double Deck

Please connect inlet water to double deck and outlet water from double deck after installation work is completed, refer to ***Pic.47***

Note on drainage(Outlet water from double deck)

- We provide two drainage options, up drain and down drain, you can pick either based on the real situation.
- AEssense factory treats the up drainage as default configuration, and the Pagoda head quick connector is pre-installed to the up drain pipe, while the down drain is plugged with a cap, you can switch the pagoda head quick connector and the plug cap if down drain is preferred on site.
- Make sure to reconfigure GGM if changing to use down drain, choose the right option “Down Drain” in the pull down list of “Drainage Type”

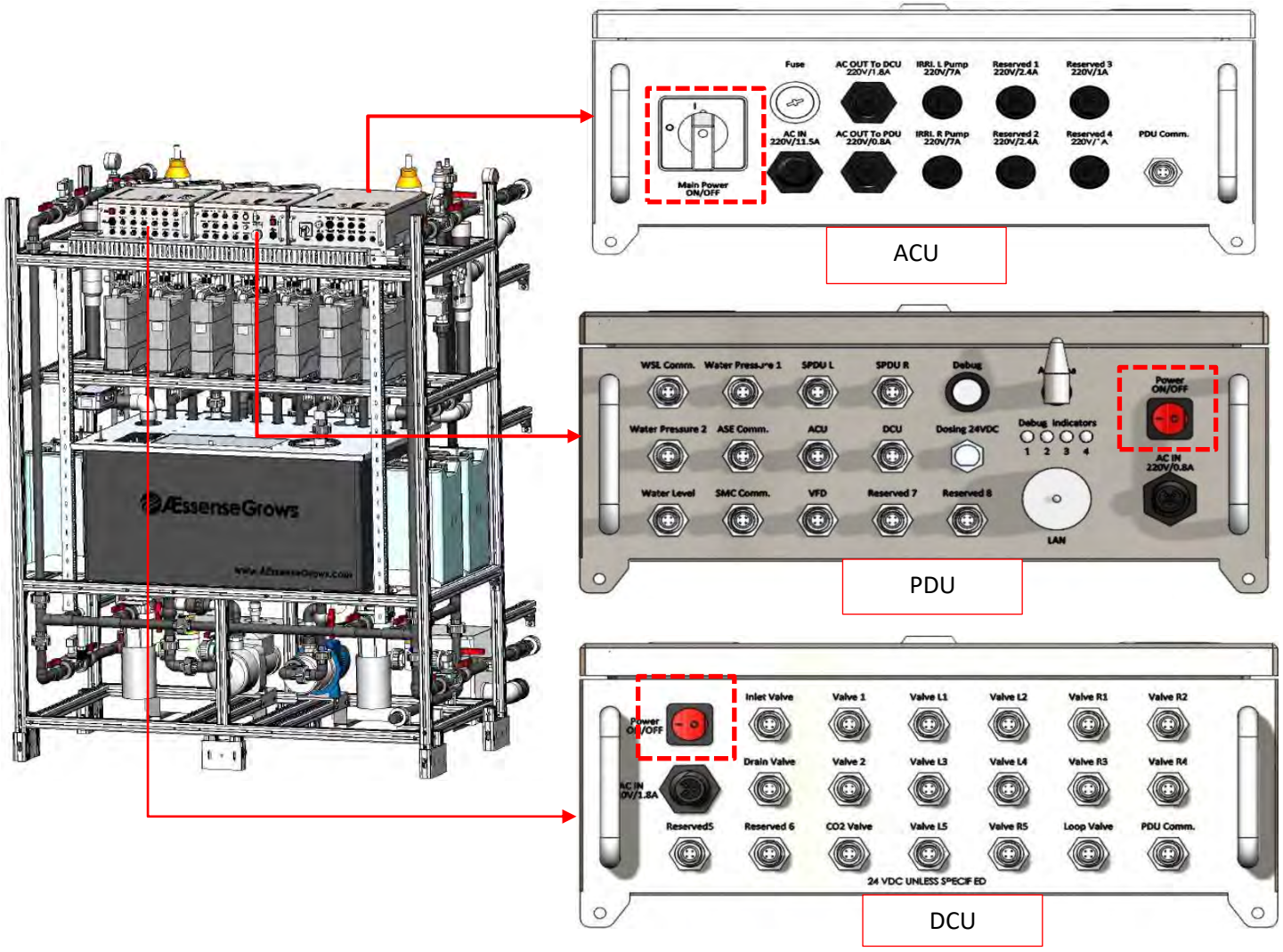


Pic. 47

11.2 Power Up Double Deck

There're three control boxes on the top of AEtrium Dosing unit, they are ACU, PDU and DCU. ACU is the main power distribution unit which provides power to PDU and DCU individually, refer to ***Pic.48***

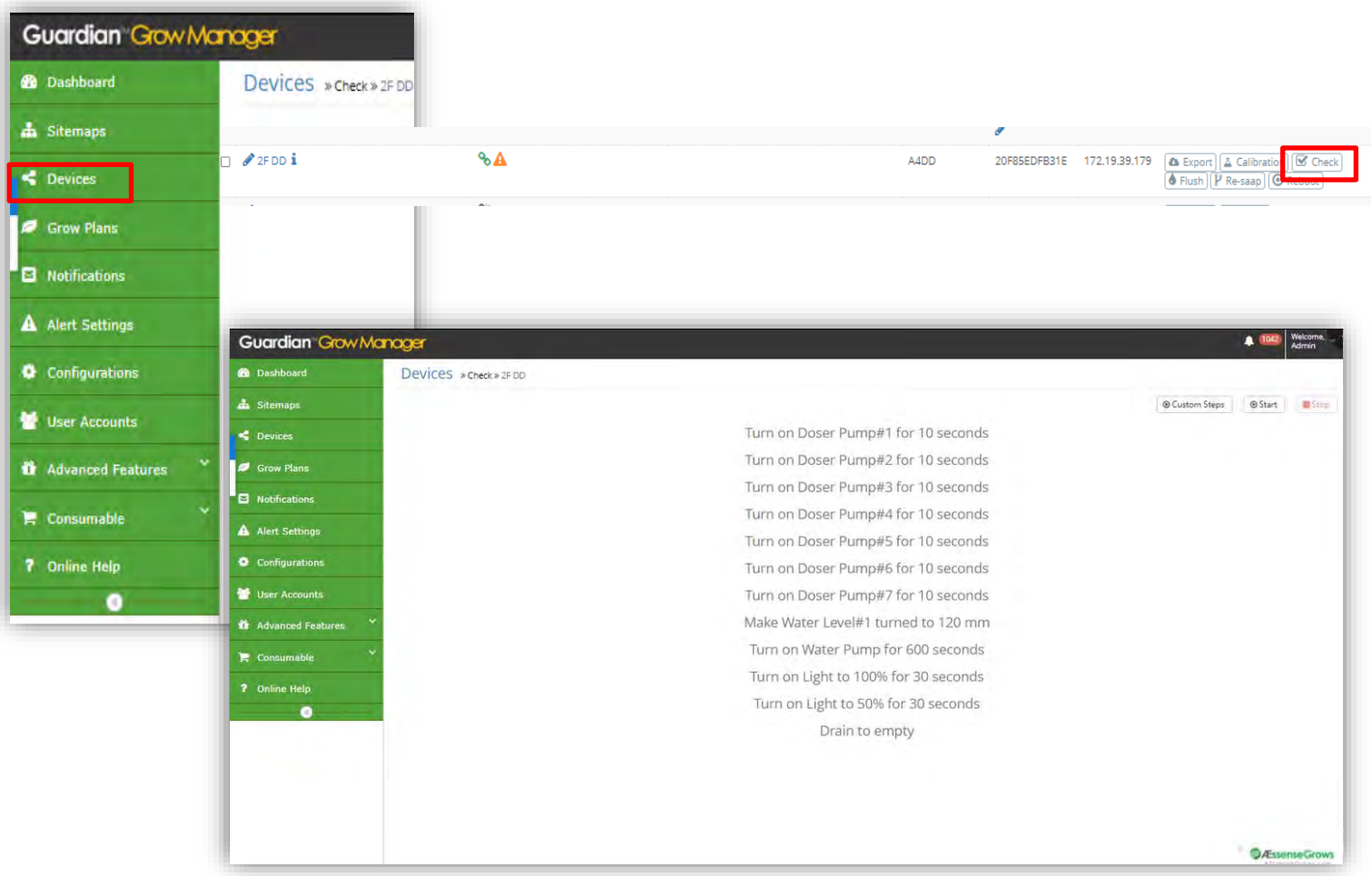
- Check if the power supply to "AC IN 220V/11.5" is properly connected
- Check if the power supply from ACU to PDU is properly connected
- Check if the power supply from ACU to DCU is properly connected
- Turn on the main power on ACU, then PDU, and DCU afterward



Pic. 48

11.3 Perform Functionality Test Before Cultivation

Open GGM after power on, click “Devices” from left menu, pick the Double Deck you want to test, click “Check”, then Double Deck will automatically fill in water to reservoir, perform testing on irrigation pump, dosing, solenoid valve, light, drain and so on, please refer to ***Pic.49***



Contact US

A 1281 Reamwood Ave.
Sunnyvale, CA 94089

P 1.800.369.8673

O 1.650.564.3058

E info@aessensegrows.com