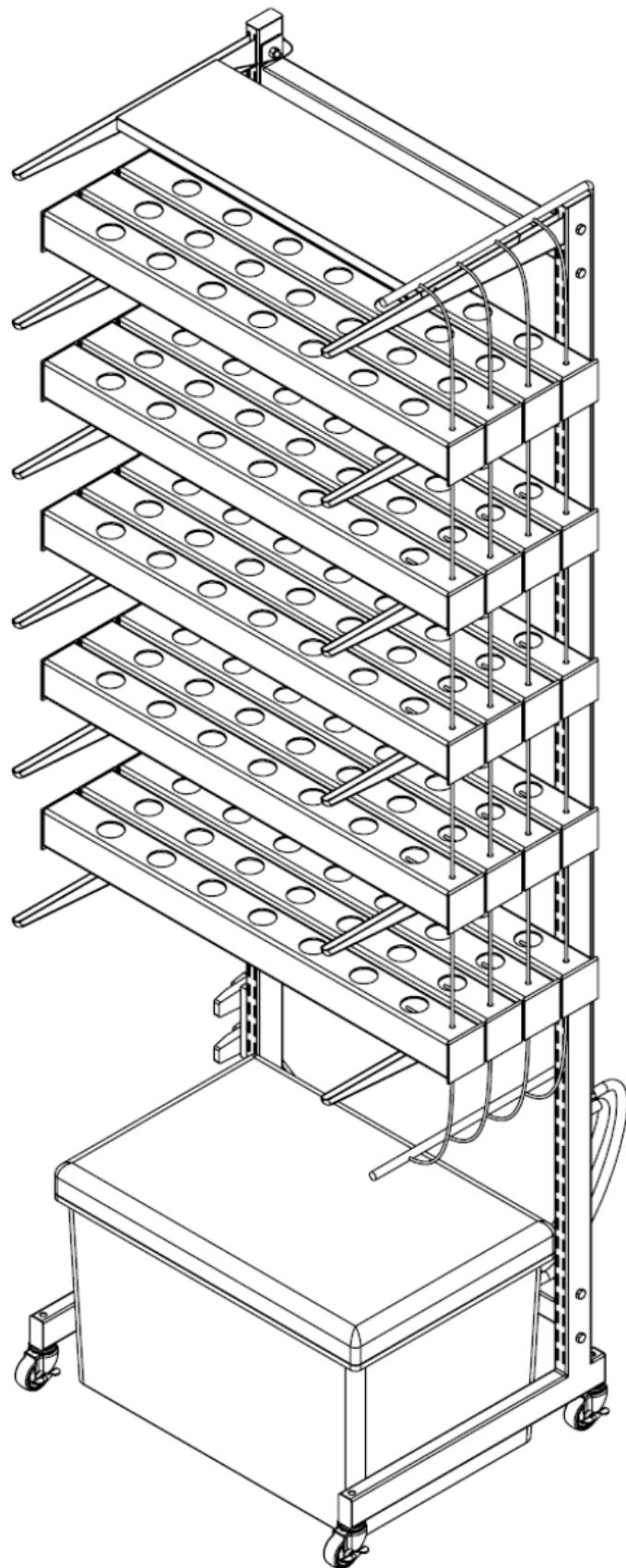

Hectar
Release V0.9

Hectar Ltd

Jan 30, 2022

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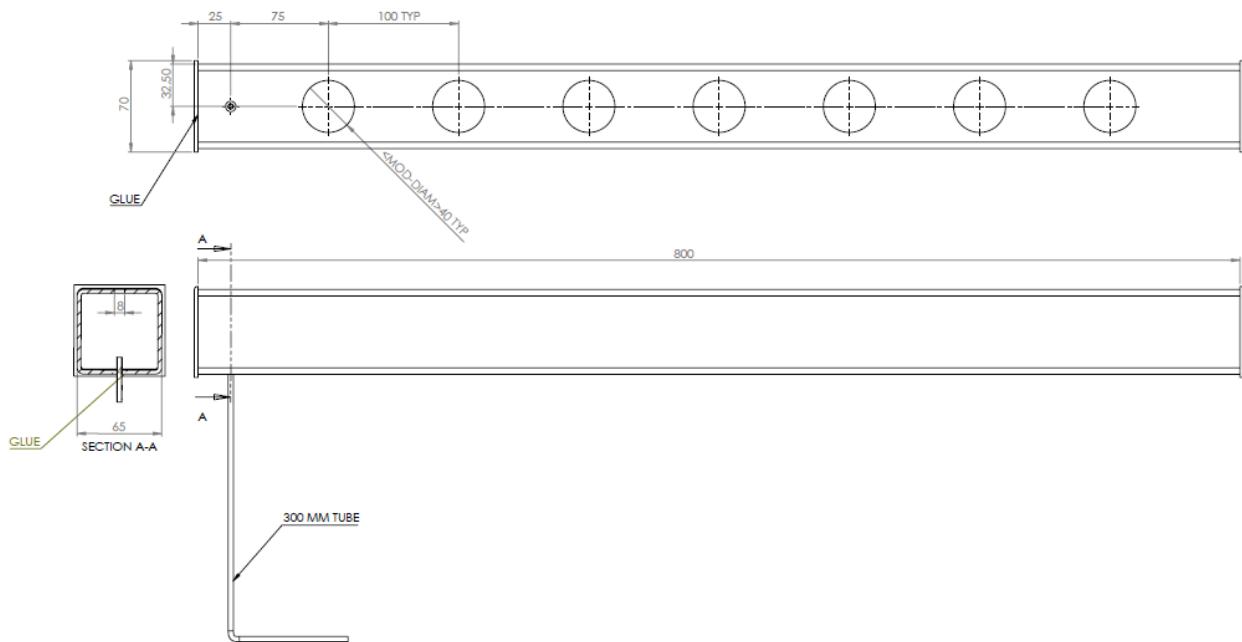
**CHAPTER
ONE**

HECTAR V0.90 FREESTANDING MANUFACTURING MANUAL

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1.1 Growbars

× 20



1.1.1 Materials

- FloPlast 65mm Square Line Downpipe 2.5m × 7
- Sealant+adhesive, white × 2
- DIAM 4mm Hose × 1
- 70mm PVCu Plastic Strip × 2.8 meters

1.1.2 Tools / Settings

- Hacksaw, fine
- Sealant Applicator gun
- Mitre box
- Electric drill
- Holesaw, 50mm
- Drillbit, 4mm, 8mm

1.1.3 Method

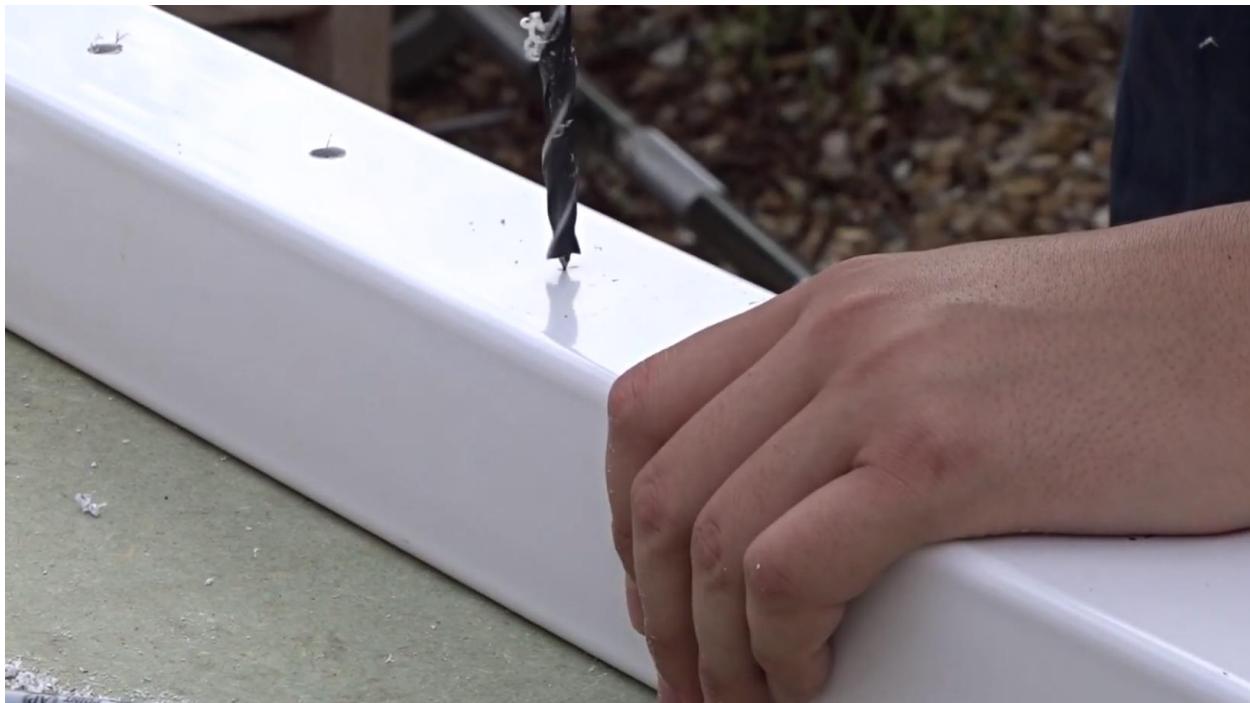


1. Cut to size growbar(80cm sections).
2. Cut to size hose (30cm sections).

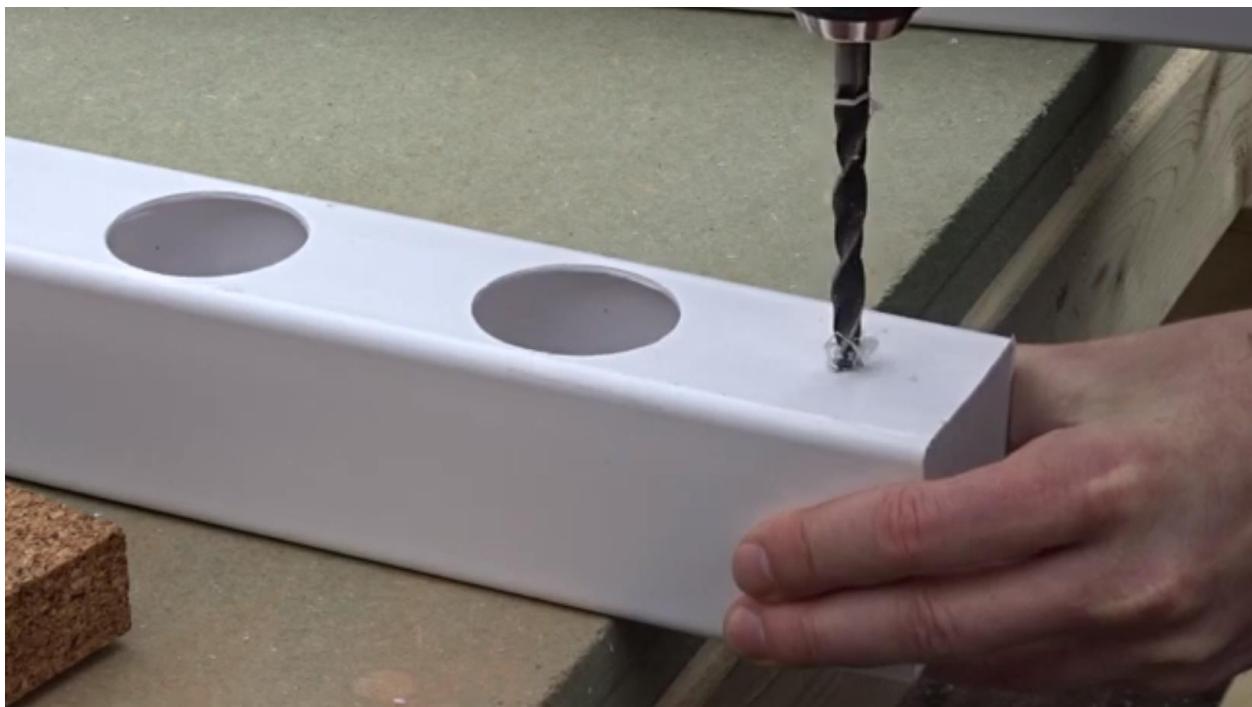


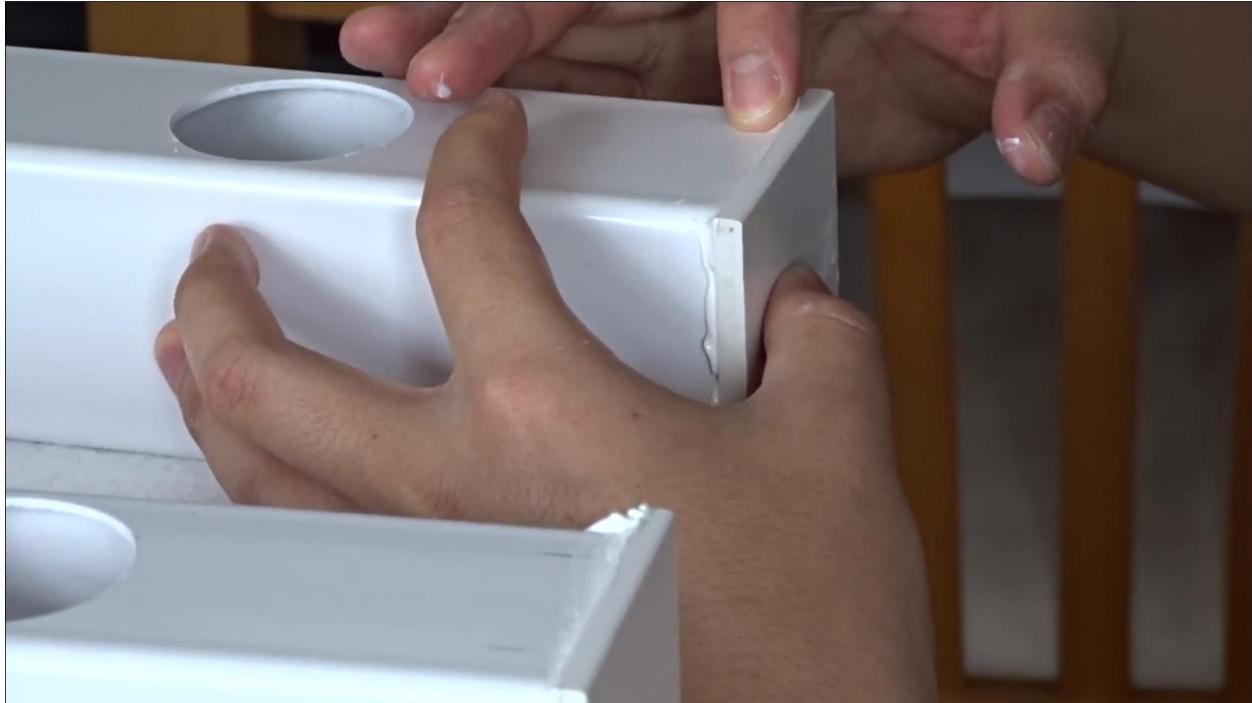


3. Cut to size end caps (70mm squares).
4. Draw hole cutting points (every 10cms on growbar, 7 holes per growbar).



5. Predrill with 8mm drill bit.
6. Drill plant holes with a hole saw.





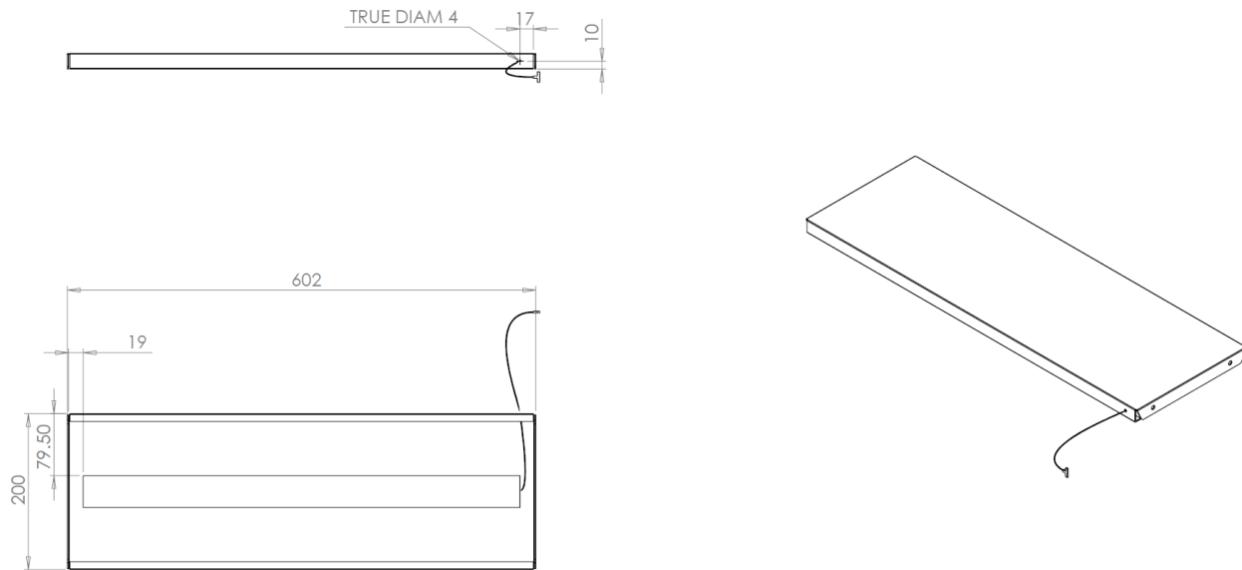
7. Drill tube holes on one side of the growbar (8mm on top, 4mm on bottom).
8. Glue on end caps.



9. Glue in tubes.
10. Let dry for 24 hours.
11. Test for leaks.
12. In case of leaks, smear more glue over the leaking area

1.2 Light shelves

× 6



1.2.1 Materials

- 6 × Twin Slot shelf 600x200mm
- 5 × 2ft horticultural LED module
- 1 box × 1AWG20-22 wire, black & red
- 1 × Heat resistant, double-sided tape
- Cable T connectors

1.2.2 Tools / Settings

- Electric drill
- Metal drill bit, 4mm
- Wire stripper

1.2.3 Method



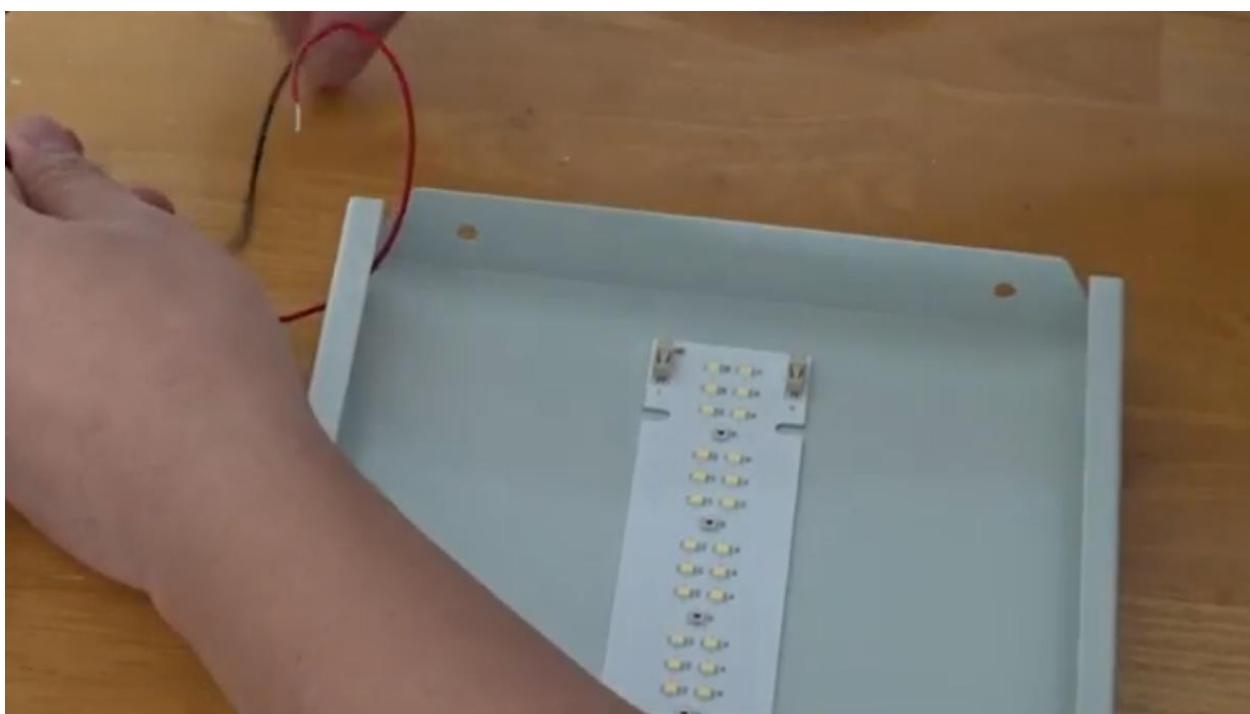
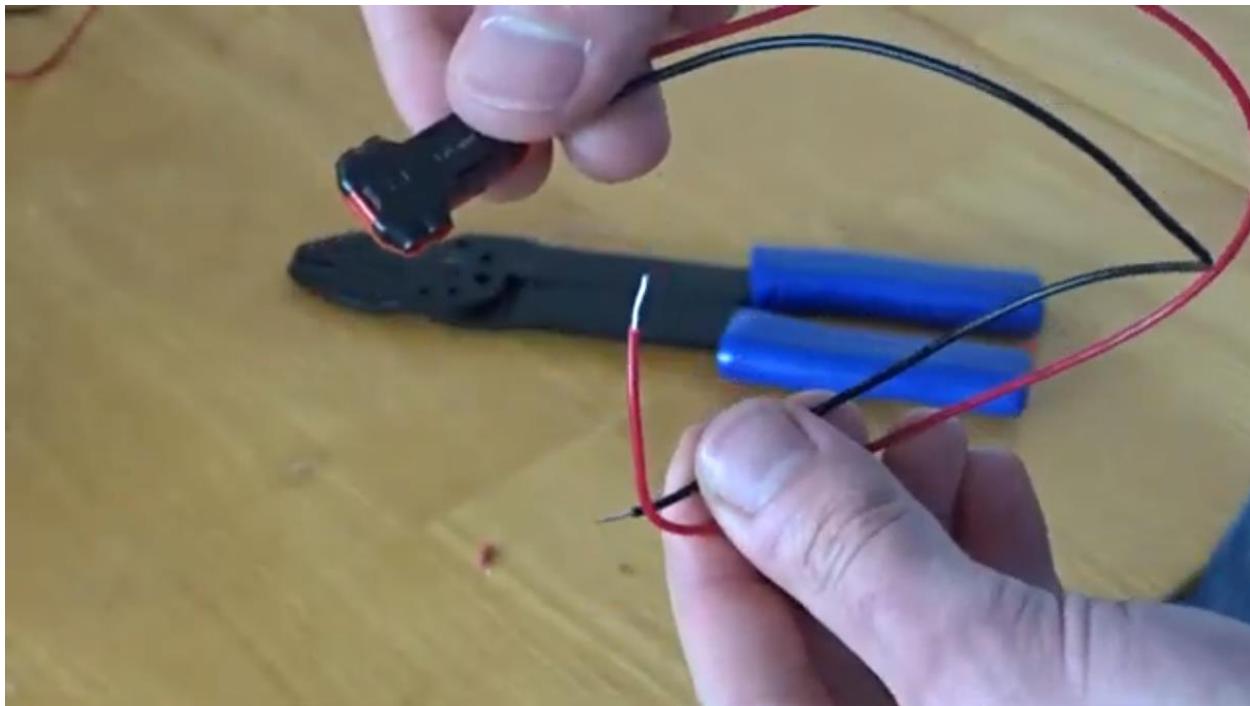
1. Drill holes in the shelf side so that the hole is on the back left when the shelf is installed. The water system will be on the right side of the shelf, the electric system on the left. Therefore all holes for cables need to be on the left side.
2. Use double-sided tape to glue the LED strip into place.



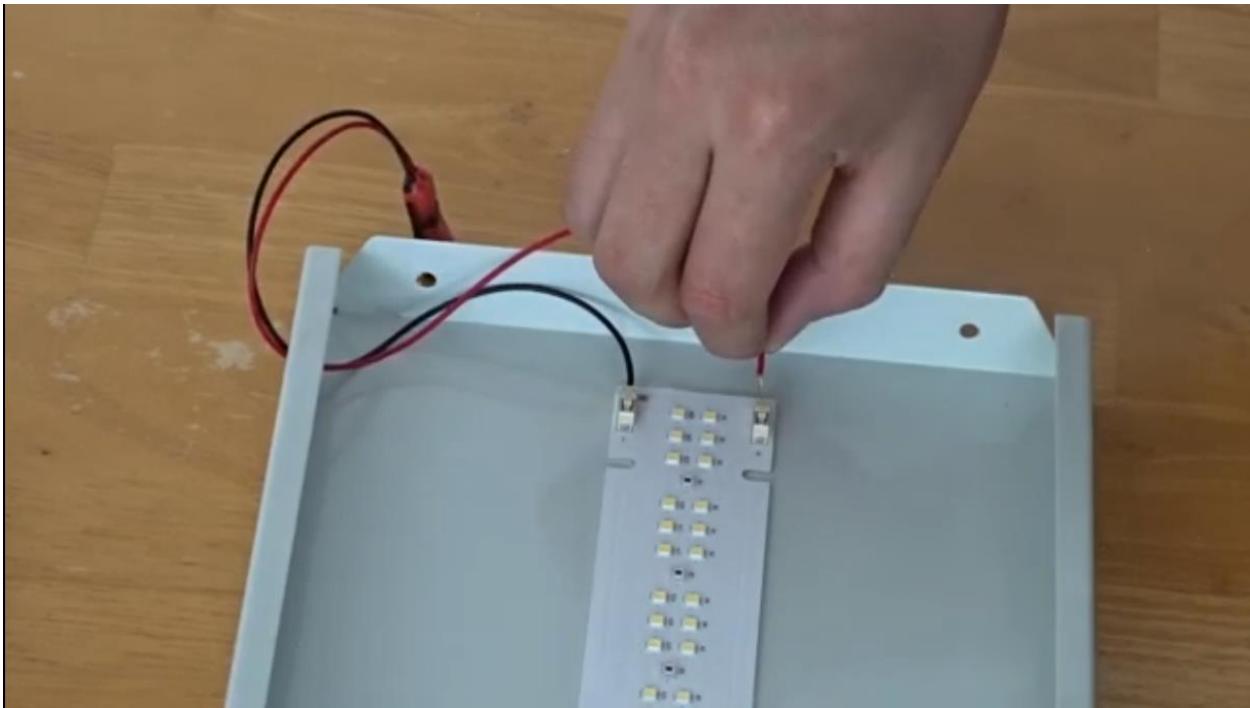


3. Cut cables to length. (30cm black, 26cm red)
4. Attach T connector to one side of the cable.





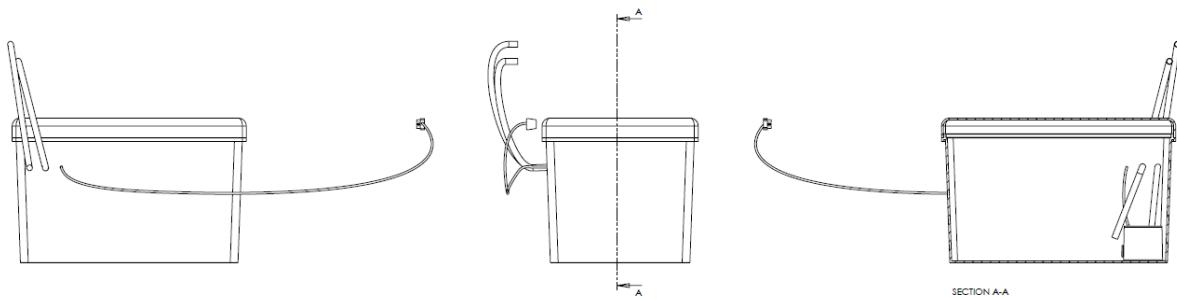
5. Strip wires 8mm on the other side of each cable
6. Feed wires through the hole drilled before



7. Push into the connector on LED PCB
8. Done

1.3 Nutrient Tank

× 1



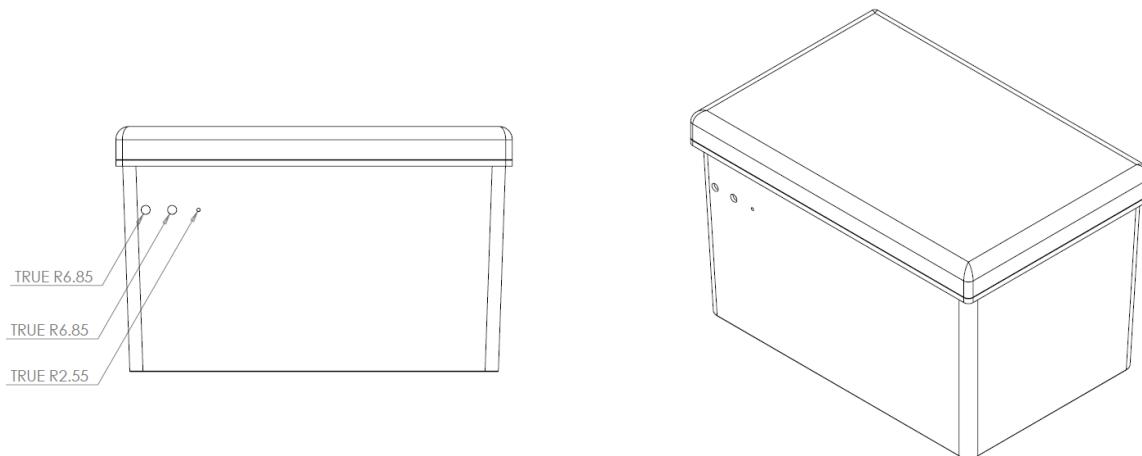
1.3.1 Materials

- 1x 60l water tank
- 1x Submersible pump, minimum lift: 2.5m
- 3x Quick connectors male
- 1x Quick connector female
- 2x Tank connectors $\frac{1}{2}$ inch BSP, Inner diameter 21.5mm
- 1x Elbow connector for 21.5mm PVC Tubing
- PVC pipe 21.5mm

1.3.2 Tools / Settings

- Electric Drill
- Hole saw 22mm
- metal/plastic saw

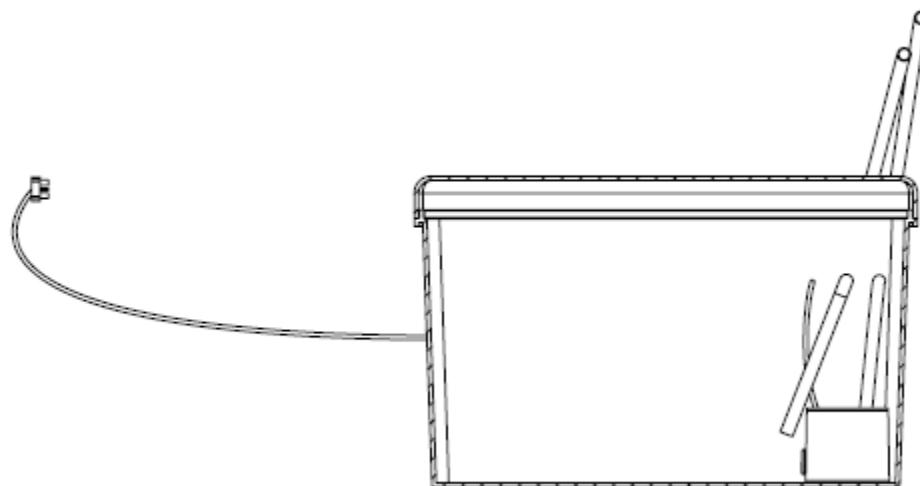
1.3.3 Method



1. Drill 2 big holes for water in & output and 1 small hole for the electric cable of the pump in the back of the water tank
2. Cut off the nut of the tank connector to be left with a threaded pipe and 2 nuts.



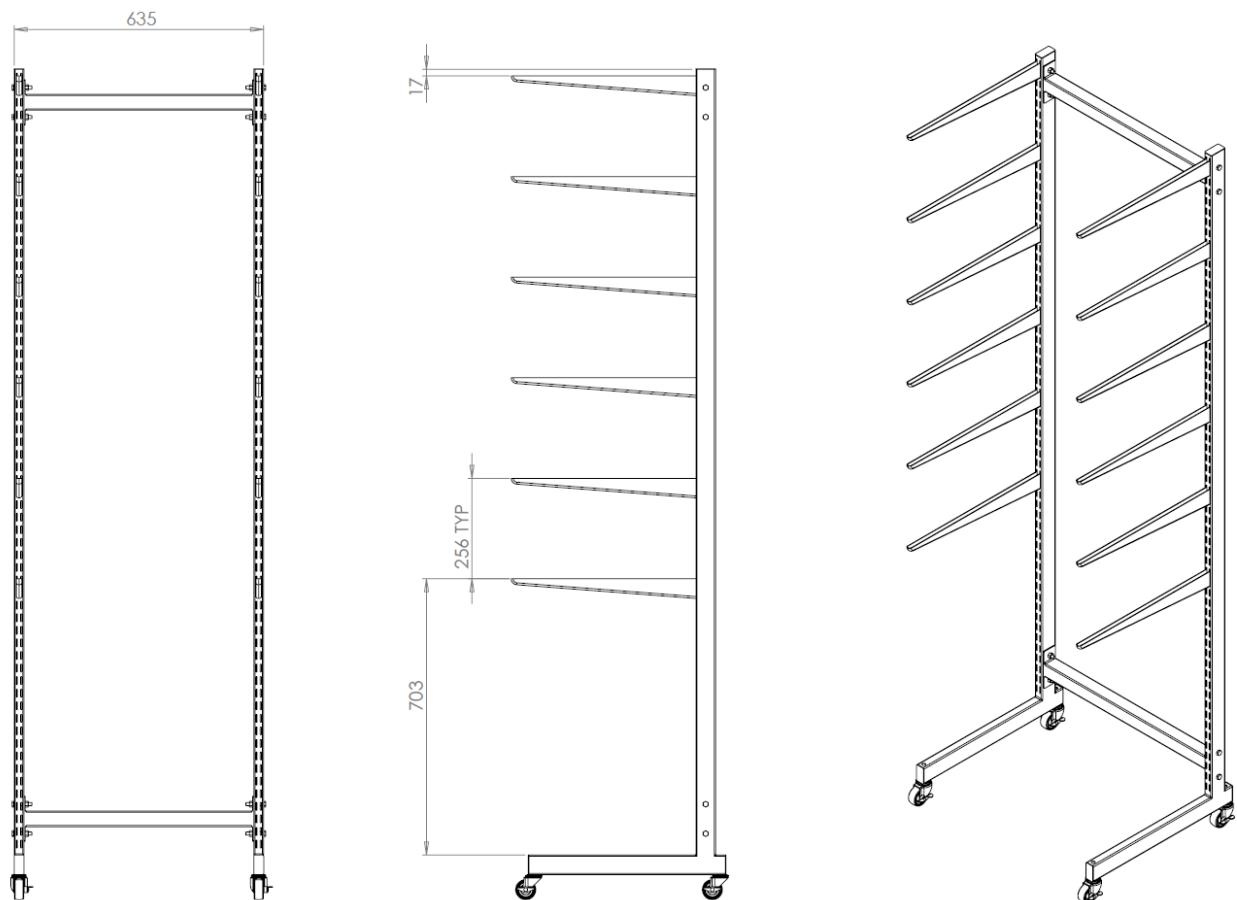
3. Feed the threaded pipe through the previously cut holes and secure it on both sides with a nut.
4. Attach the quick connectors to the end of the pipe



5. Place the submersible pump into the water tank.
6. Cut to size silicone tubing.
7. Connect the pump to the water output quick connector with silicone tubing
8. Connect the water input quick connector to a piece of PVC Tubing, Elbow, PVC Tubing and lead it back into the nutrient tank.
9. Unscrew the plug from the submersible pump's electric cable and feed the wire through the small hole drilled in step 1 into the water tank. Please follow the instruction from this video to rewire the plug. <https://www.youtube.com/watch?v=jqfsUGhAX9k>
10. Test all pipe connections for water tightness.
11. Done.

1.4 Shelving - Freestanding

× 1



1.4.1 Materials

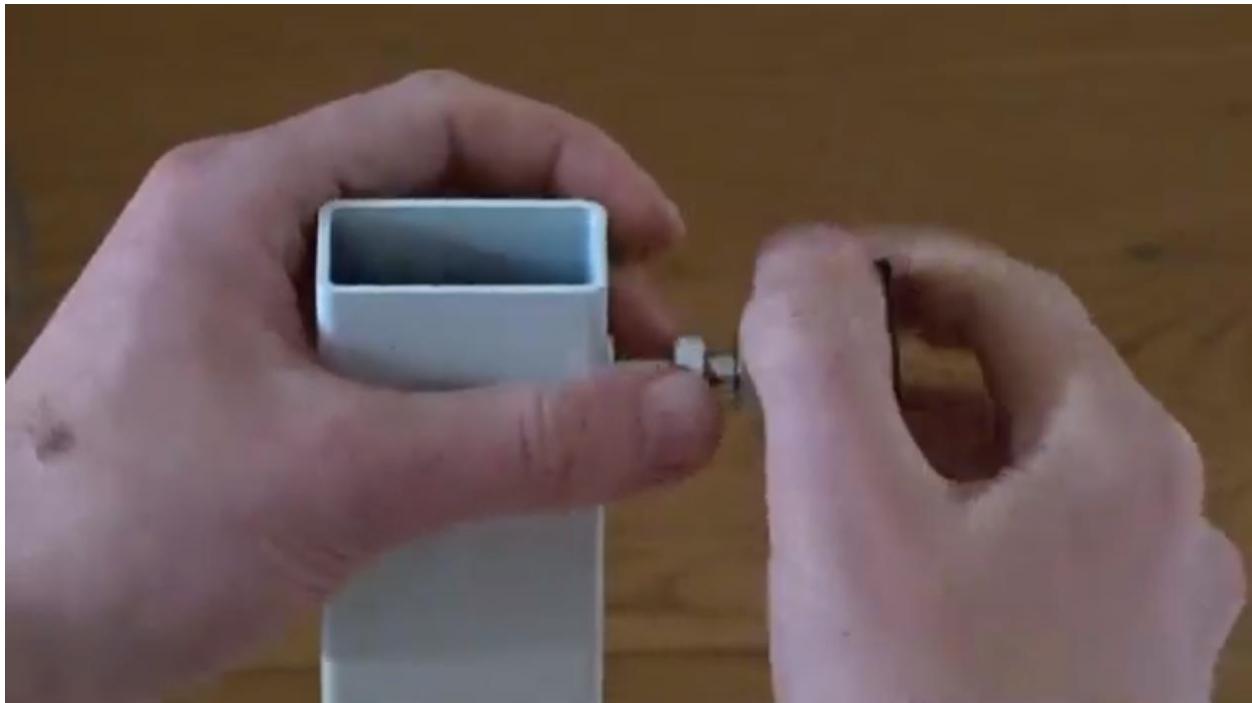
- 2x T Slot Upright Freestanding
- 2x Tie Bar 600mm
- 8x M12 Nuts and Bolts
- 4x adjustable feet with M8 thread
- 4x Castor Wheels with M8 thread (alternative to adjustable feet)
- 10x U Bracket
- 5x Light Shelf
- 1x Shelf without light
- 20x Grow Bar

1.4.2 Tools

- 12mm spanner
- 14mm spanner

1.4.3 Method

1. Make sure you have sufficient space to set up your shelving. Setting up the Shelf is more manageable with 2 people but can be done alone if necessary.





2. Connect adjustable feet or castor wheels to the bottom of the twin slot profiles.
3. Connect the Twin Slot Profiles with Tie Bars and the required Nuts & Bolts. If you are alone, we recommend conducting step 2 on the ground.
4. Tip the unit over and connect feet or castor wheels to the threaded holes in the bottom
5. Set the unit up again.

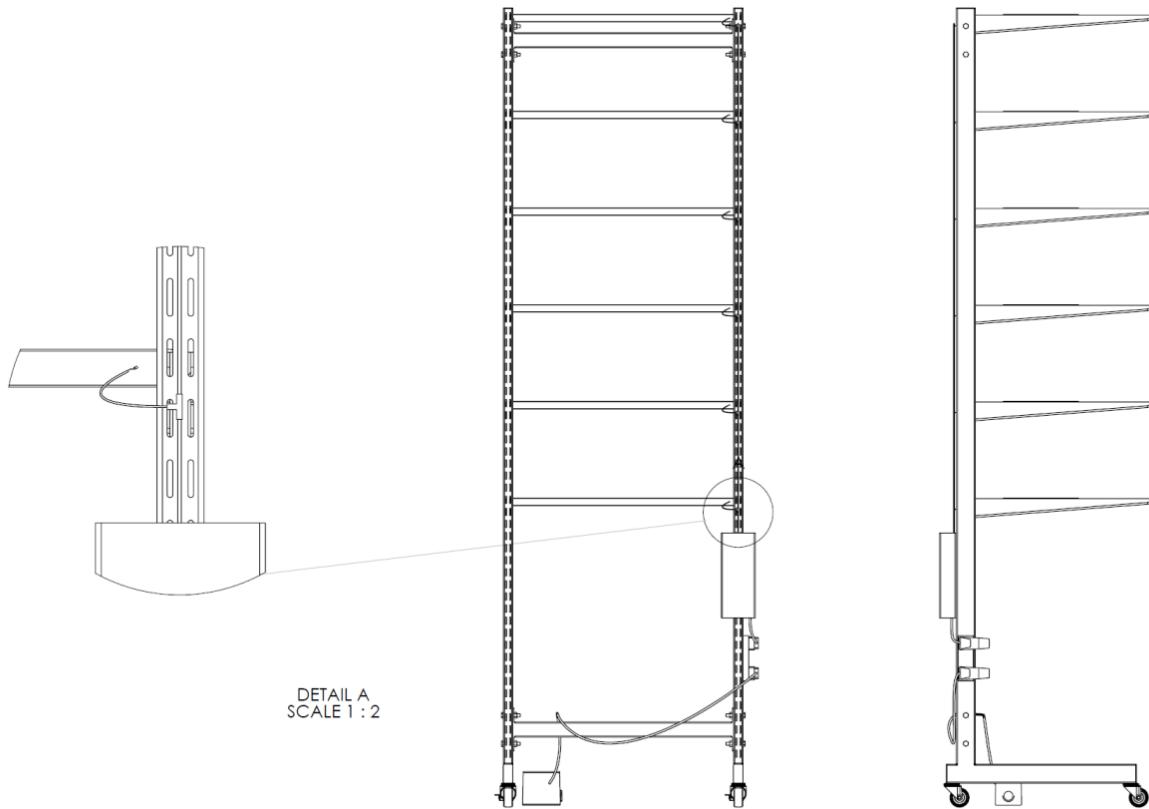


6. Now, simply slot in the U Brackets, leaving 6 holes in between each bracket.



7. Put the light shelves on top of the U Brackets so they can slide to the front and back. The cables of the light shelf should come out towards the back left of the unit.
8. Done

1.5 Wiring



1.5.1 Materials

- Cable Ties
- Multi-Plug
- Meanwell HLG300 Power Supply
- Mechanical Plug Timer
- Digital Plug Timer
- 2x AWG20 Cable 110cm
- Isolation Tape

1.5.2 Tools

- Wire Stripper
- Scissors
- Pliers

1.5.3 Method



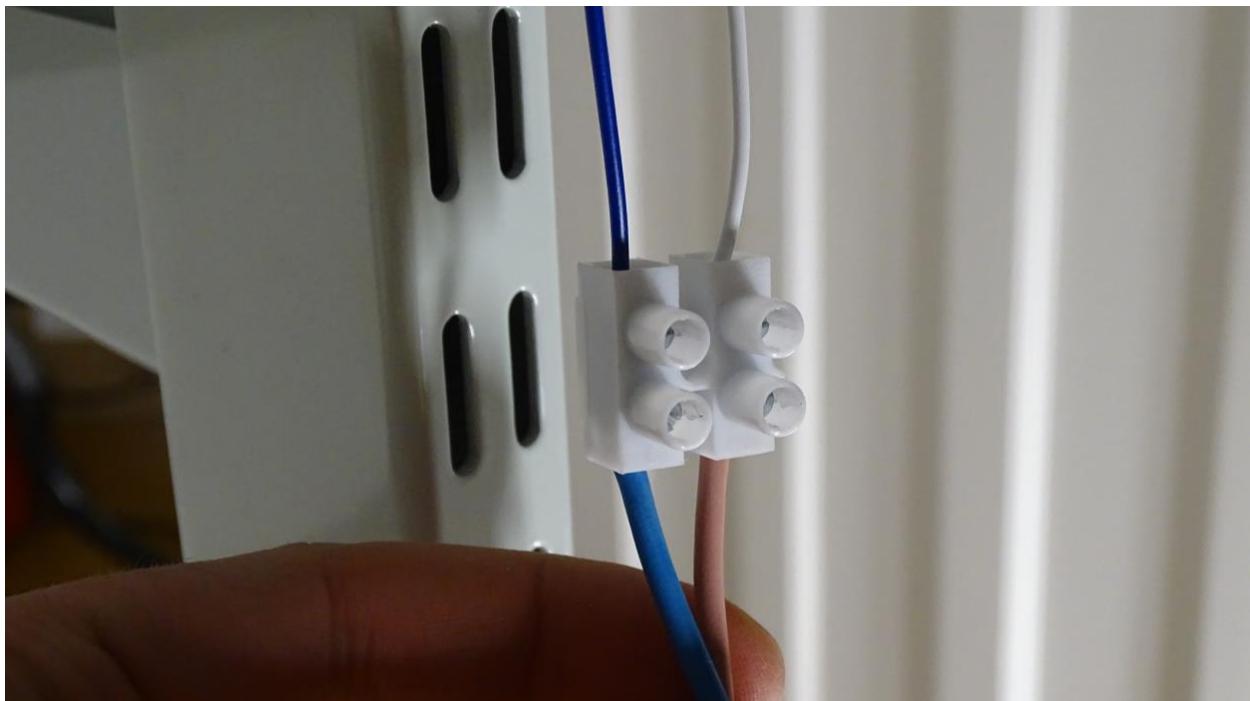
1. Use Cable Ties to attach the extension cord with a multi-plug to Twin Slot Upright's right (looking from the front). The attachment process can either be done with plugs facing outside or inside if you would like to hide the components. We usually prefer mounting it facing out so that the plugs are easier to access.



2. Attach the Meanwell Power supply to the back of the upright using cable ties. Make sure the extension cord is NOT connected to a plug socket.



3. Plug the mechanical and the digital plug timer into the socket. Lighting will use the mechanical one, and the pump will use the digital one since this requires more accurate timing than a mechanical plug timer cannot offer.

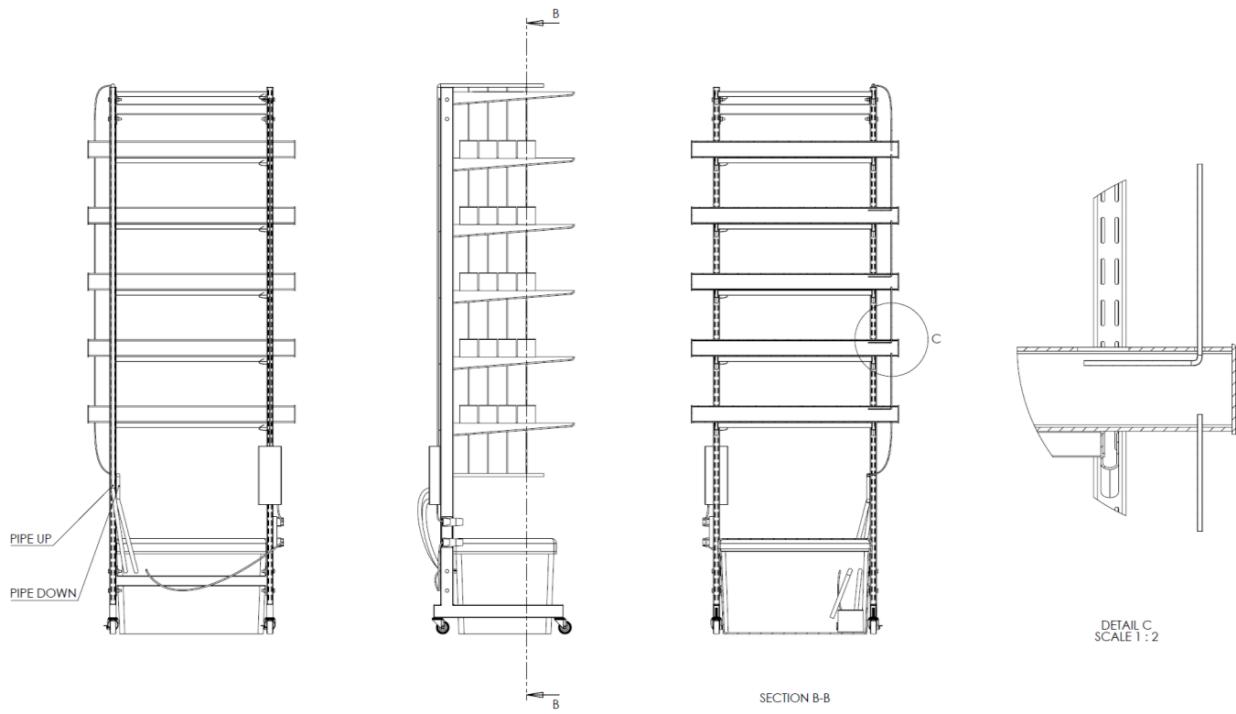


4. Cut two AWG20 cables to about 110cm length (use red for positive and black for negative)
5. Connect the left output cable of the Meanwell power supply via screw connectors to the AWG cables and mount the cables to the inside of the Twin Slot upright, all the way to the top of the unit.
6. Connect a potentiometer to the suitable output cable of the Meanwell power supply. Your hectar farm can use this to dim the lighting. (coming soon)



7. Now, connect the T connectors coming from the light shelves to the cable you just installed. Pay attention to the drawing on the back of the t-Connector. It will tell you where to connect positive and negative. The T Connector requires some force to snap into the cable, so use pliers or your wire stripper for this.
8. After connecting all t-connectors, you can plug the unit into your main plug. The lighting should appear after about 1 second if you have followed the guide correctly. If you have any trouble with this, seek help from someone with more experience.
9. Done

1.6 Plumbing



1.6.1 Materials

- 8x 13 to 4mm T-Connector
- 4x 13mm straight connector
- 2x female quick-connector
- 2x 13mm stop-ends
- 13mm hosepipe
- Cable ties

1.6.2 Tools

- Pipe cutter (alternatively scissors)
- Scissors
- Flame to heat the pipes when pushing in connectors

1.6.3 Method



1. Cut 13mm pipe to size: you will need 1x 160cm & 10x 8cm, 1x15cm

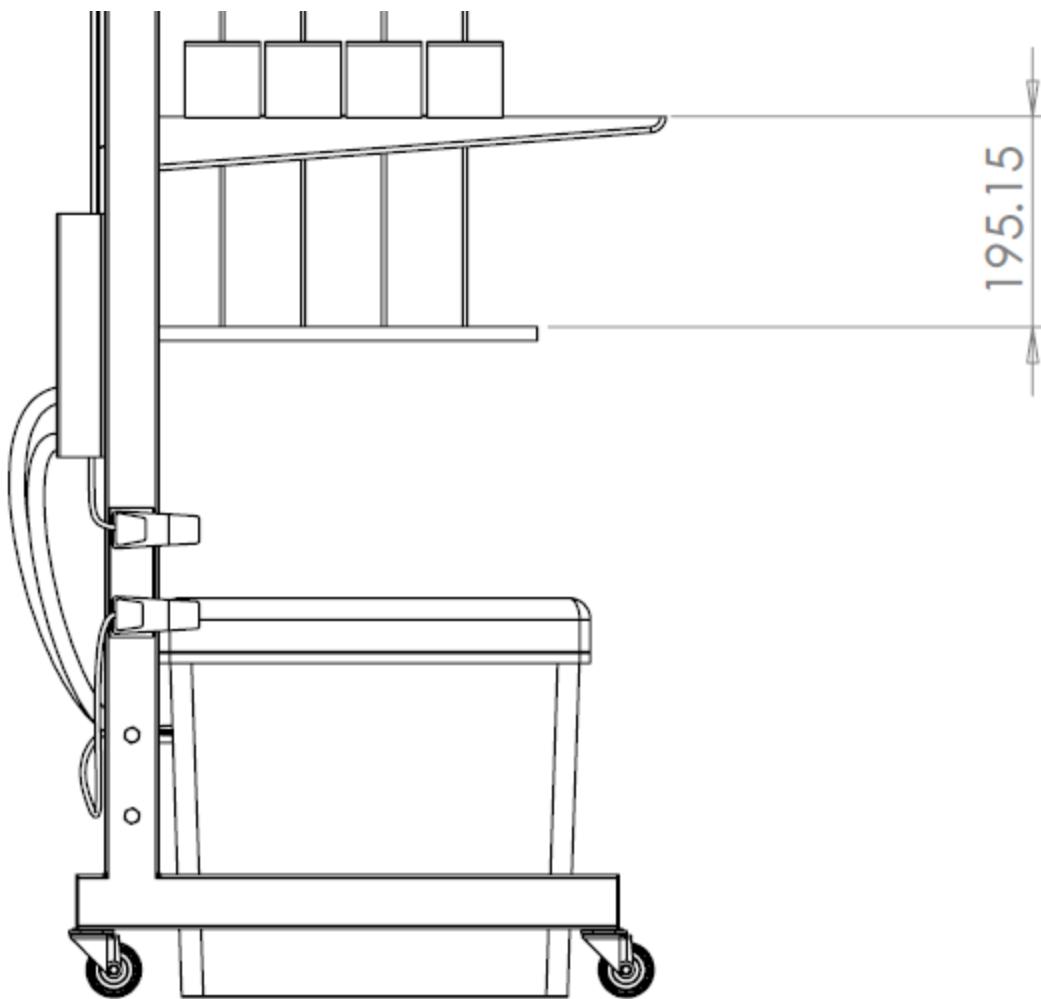


2. Make 2x the following pipe: stop end, 8cm, T, 8cm, T, 8cm, T, 8cm, elbow.
3. Connect the elbow of one of the pipes made in step 2 to the 160cm supply pipe and connect another elbow on the other end of the supply pipe.



4. Mount both together to the unit.
5. Connect the second pipe's elbow made in step 2 to the 15cm pipe and add another elbow on the other side.

6. Mount to the unit, around 20 cm underneath the lowest shelf.



7. Cut 2x 35cm silicone tubing and add a quick connector to one end of each pipe.
8. Connect the other end to the elbows sticking out from the pipes that should now be mounted on the unit.