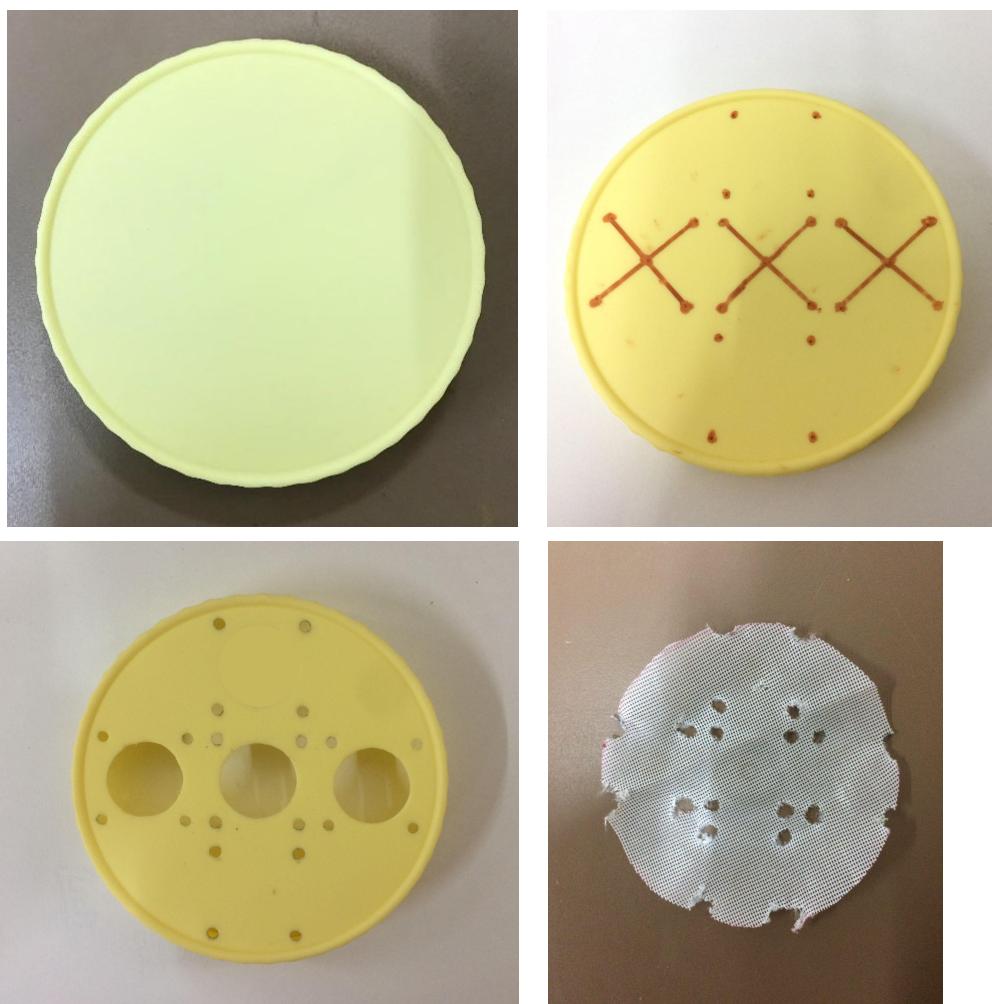


reBreather Assembly Instructions

Before starting the assembly process, please ensure that you have all the items mentioned in the BOM which are to be purchased, 3D printed and Laser Cut.

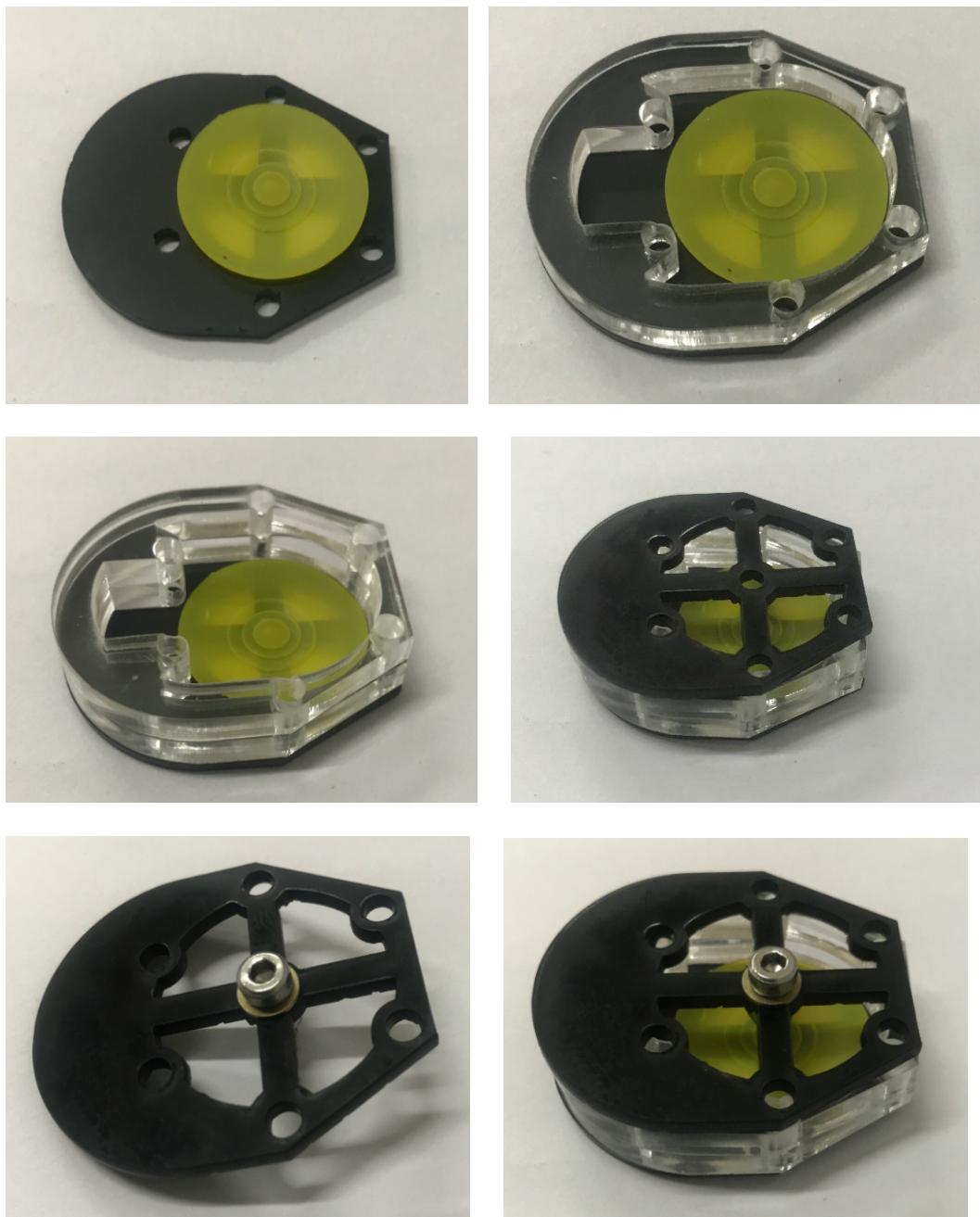
1. Jar Lid Modifications

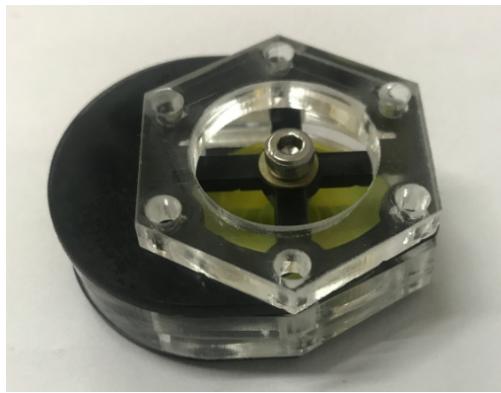
- Take the jar lid and drill holes of 3mm diameter to fit your M3 bolts.
- Draw lines to find the midpoint of the 4 holes.
- Drill a hole of 13mm diameter for airflow at the centre. Repeat this for all 3 holes.
- Make the same pattern holes on the net as well to fix it inside the section of the lid.



2. Making the unidirectional valves

- Stack up the parts of the unidirectional valves as shown below. There are 3 unidirectional valves to be made in total (Two inlets and one outlet).
- The direction of the valves is determined by the bolt which is screwed in the middle. If the bolt head is facing away from the hole of the Male Adapter Port, then the airflow direction is into the jar. If you mount the bolt head in the opposite way, the airflow direction is out of the jar.

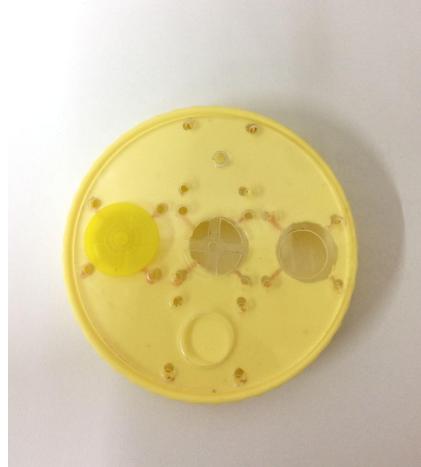
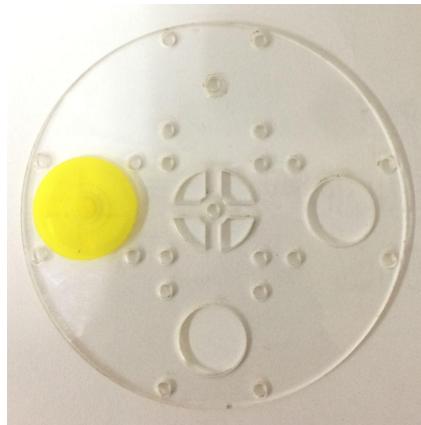


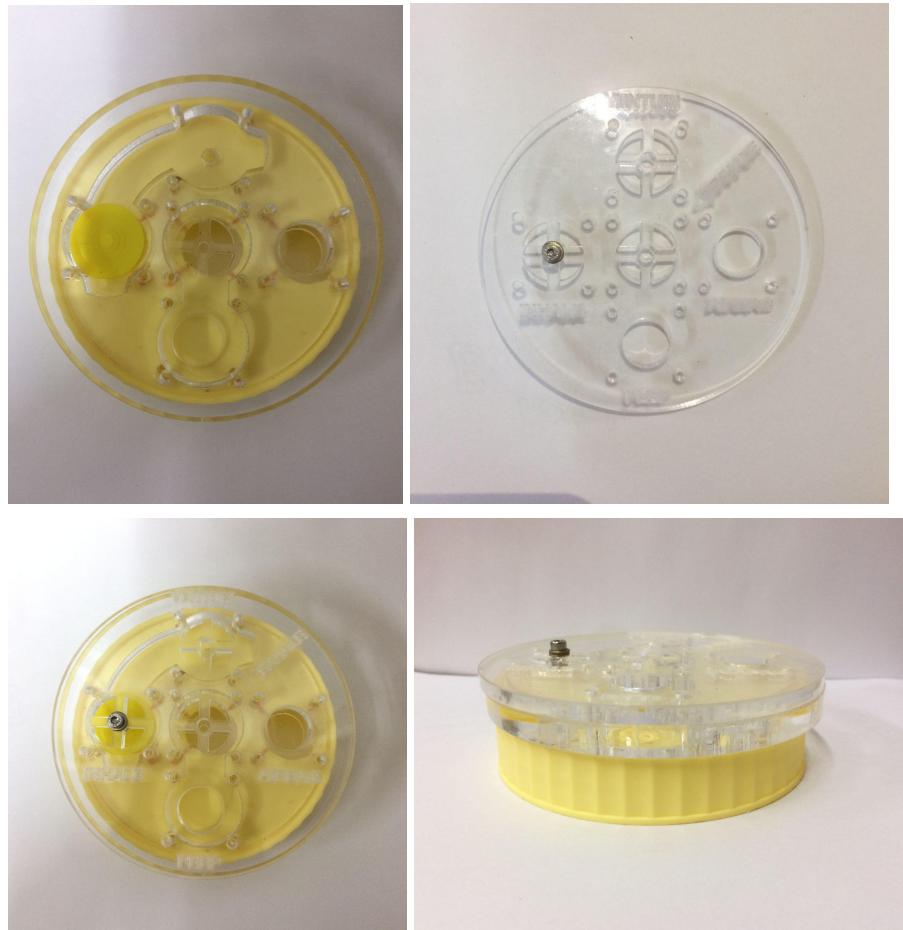


Use Transparent Acrylic for all the parts (In pictures we used black because of resource constraints due to lockdown)

3. Connecting Discs with the Jar Lid

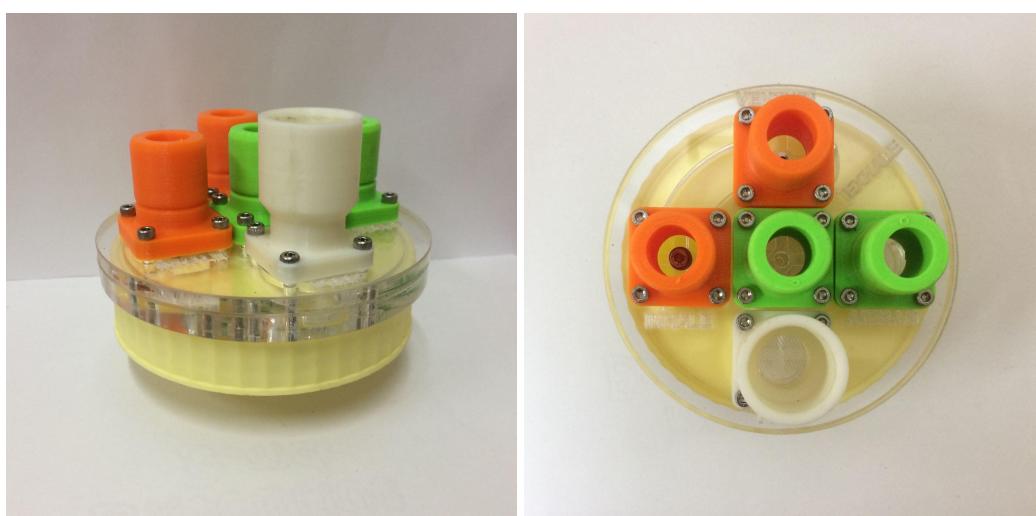
- Put the 3 laser-cut acrylic discs as shown on the top of the jar lid.
- The net and the white disc will go on the bottom (other side) of the jar lid.
- The screws hold the discs and the jar lid together which will be done when fixing connectors.

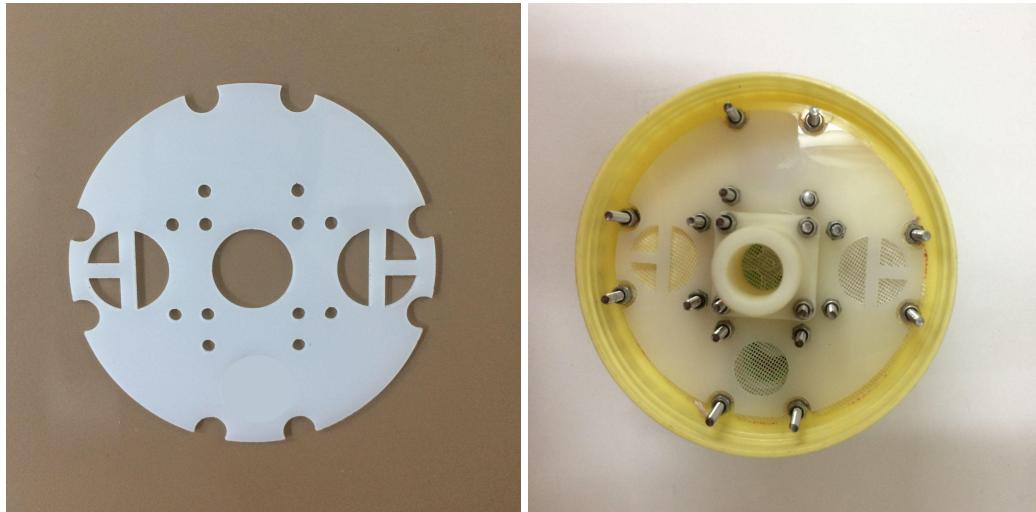




4. Fixing Connectors to Discs and Jar Lid

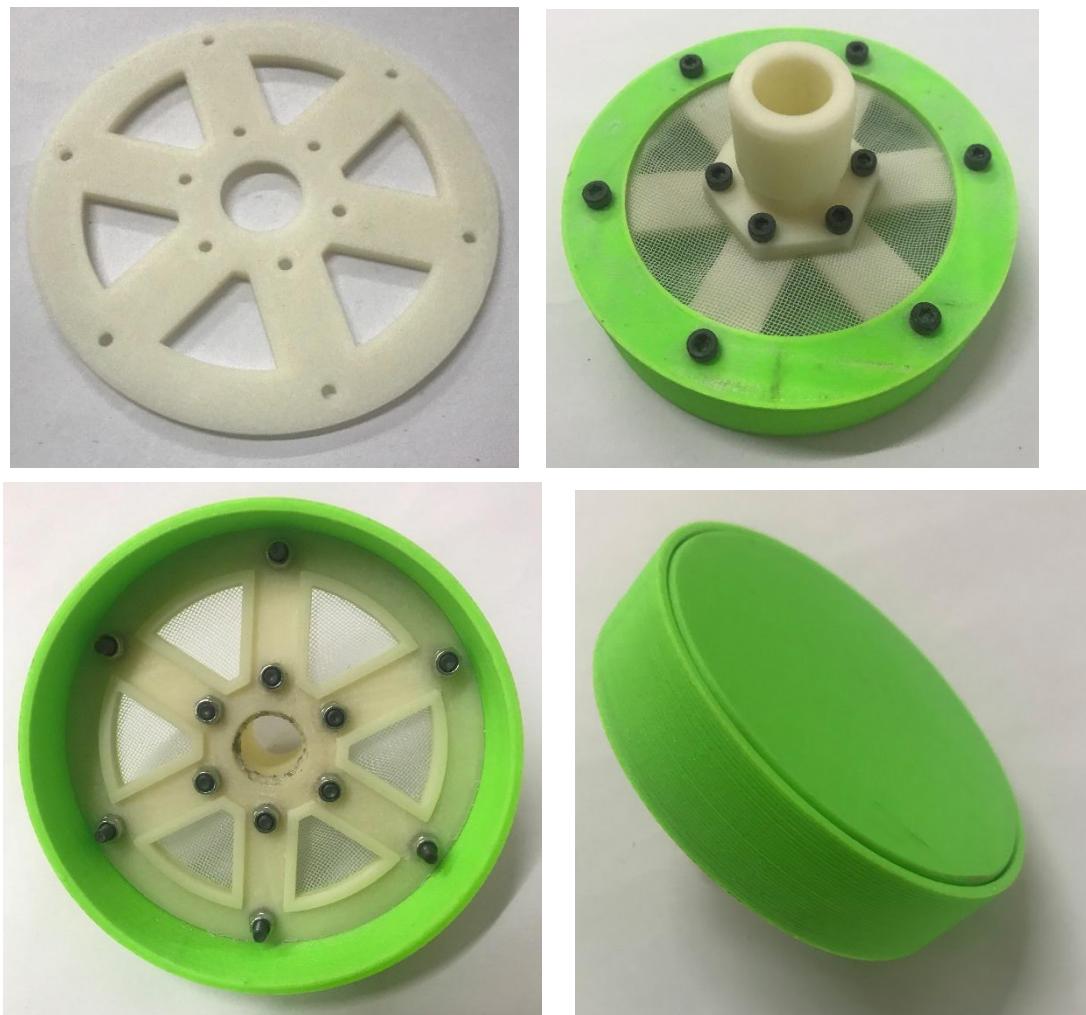
- Screw the four Male adapters and one Female Adapter Port to the top of the lid. Of the three unidirectional Ports, two of them allow air into the jar and one allows air to move out of the jar.
- Add the net and Net Filter Holder below the lid before screwing the nut in position.
- On the centre hole, after connecting the male adapter make sure to connect a male connector on the bottom of the lid. Make sure both top and bottom male connectors are in line.





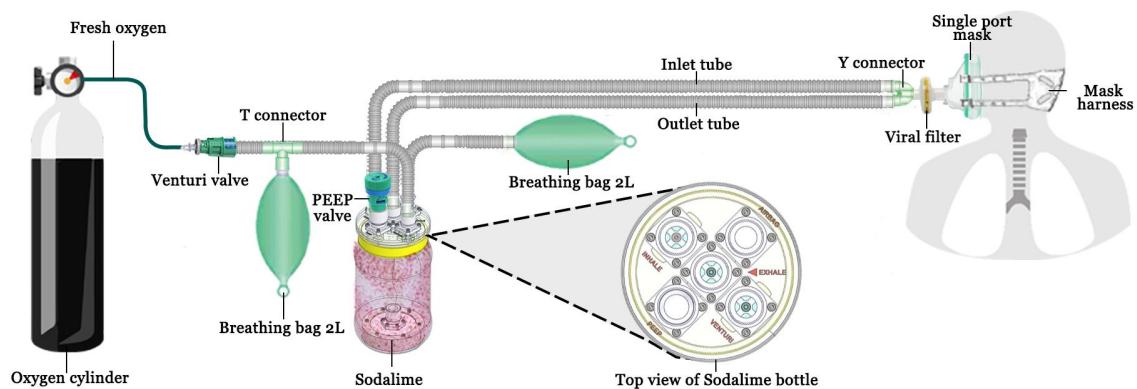
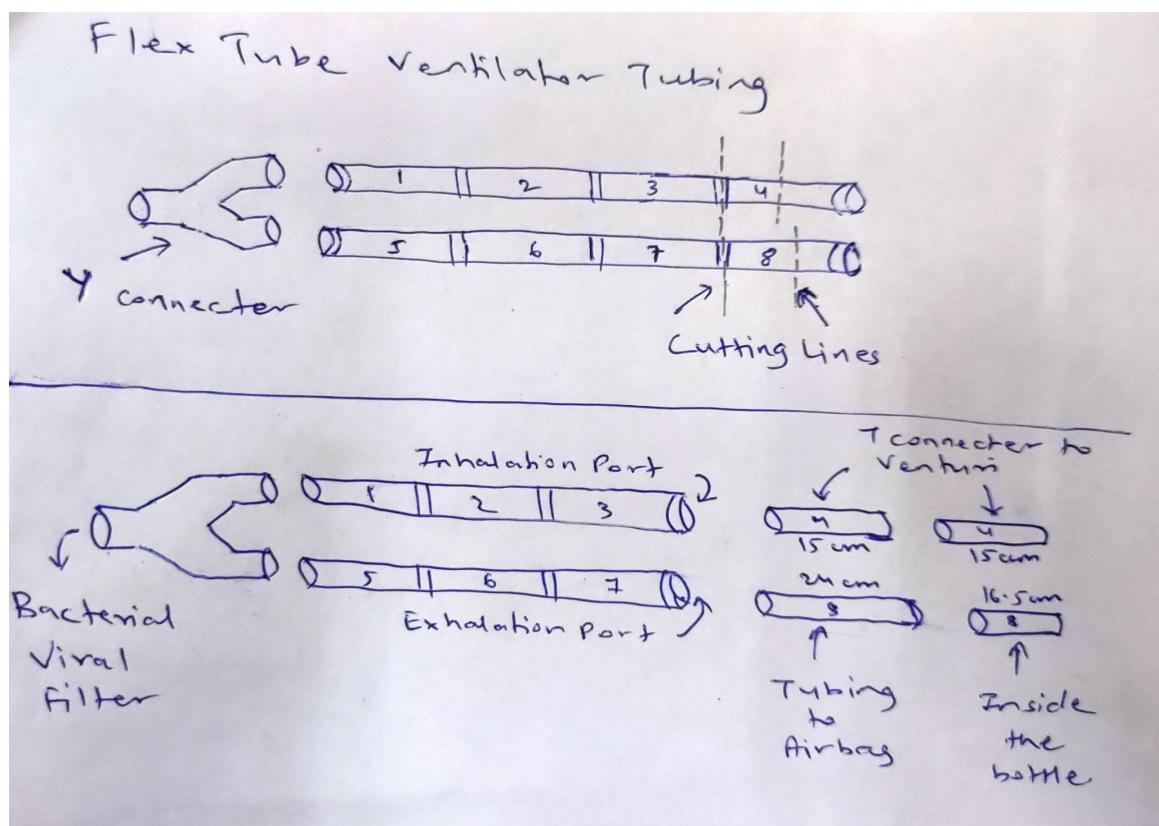
5. Diffuser Assembly

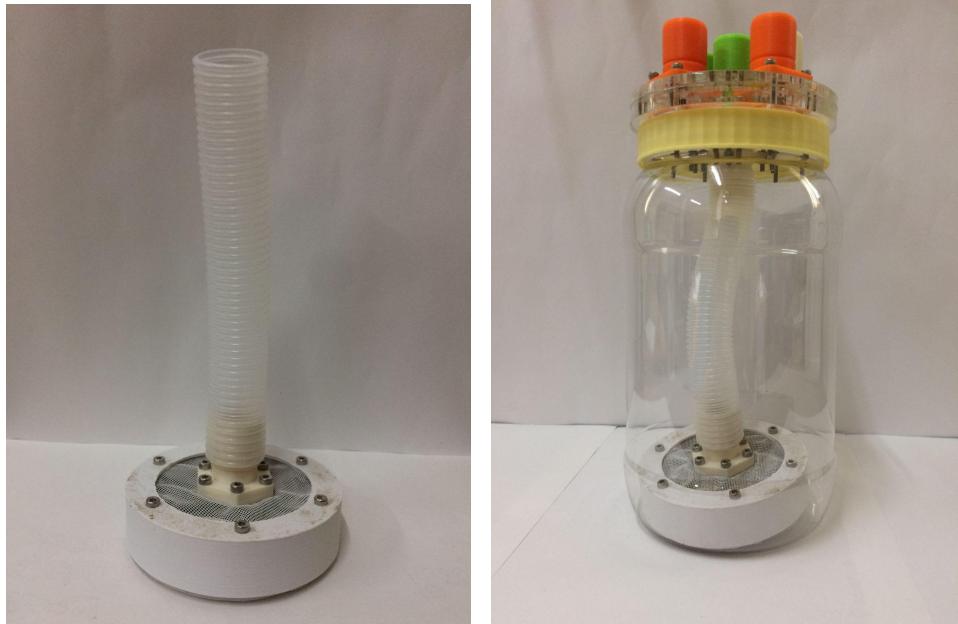
- It consists of a total of four 3D printed parts, one mesh net and twelve M3 nuts and bolts.
- Assemble these parts as shown in the figure with the help of nuts and bolts with tight mesh net fitting.



6. Cutting Ventilator Tubing

- Cut the ventilator tubing as mentioned at the following spots. The two smaller sections are used to connect tubing inside the jar and the rebreather bag. The other two sections are used to connect the T-connector and Venturi valve.
- Please ensure that each numbered section of the tube goes to its respective position to ensure the optimal usage of tubes in a package.
- Cut Section 8 into 2 parts.
- Use the 16.5 cm part to connect two male ports inside the Jar i.e. one port below the lid and the on the diffuser part. The 24.5cm part is used later to connect the rebreather bag.
- Use the two 15cm long tubes to connect the T-connector at opposite ends.





7. Fill the bottle with around 1.5kg of soda lime up to the top.



8. Connect the venturi valve and O₂ inlet valve to the tube which connects to the T-shaped connector to one of the inlet with unidirectional valves on the jar and connect a breathing bag to the T-shaped connector.



9. On the single non-directional port, connect one section of the ventilator tubing along with the breathing bag as shown below.



10. Connect the peep valve directly on the female adapter on the jar lid.



11. Connect the Viral Filter to the mask. The ventilator tubing is then connected via a Y connector to the viral filter. The other end of the two sections of tubing is connected to the inlet and the outlet unidirectional valves on the jar. The patient outlet tubing which carries CO₂ is connected to the port via an external one way directional valve. The mask harness is also connected to the mask to finish the assembly of the reBreather.



