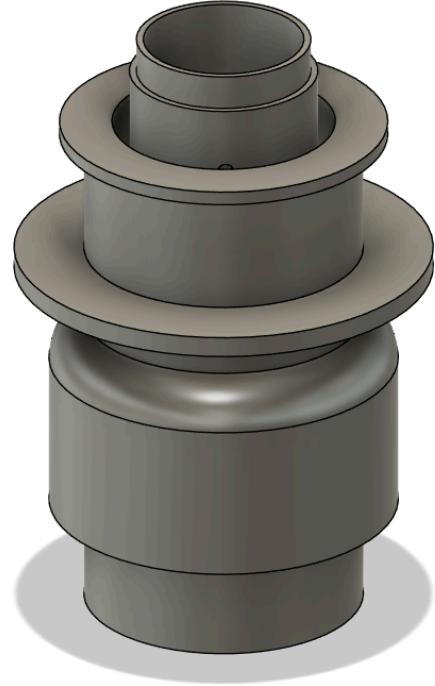


MAKING THE AIR VENTS

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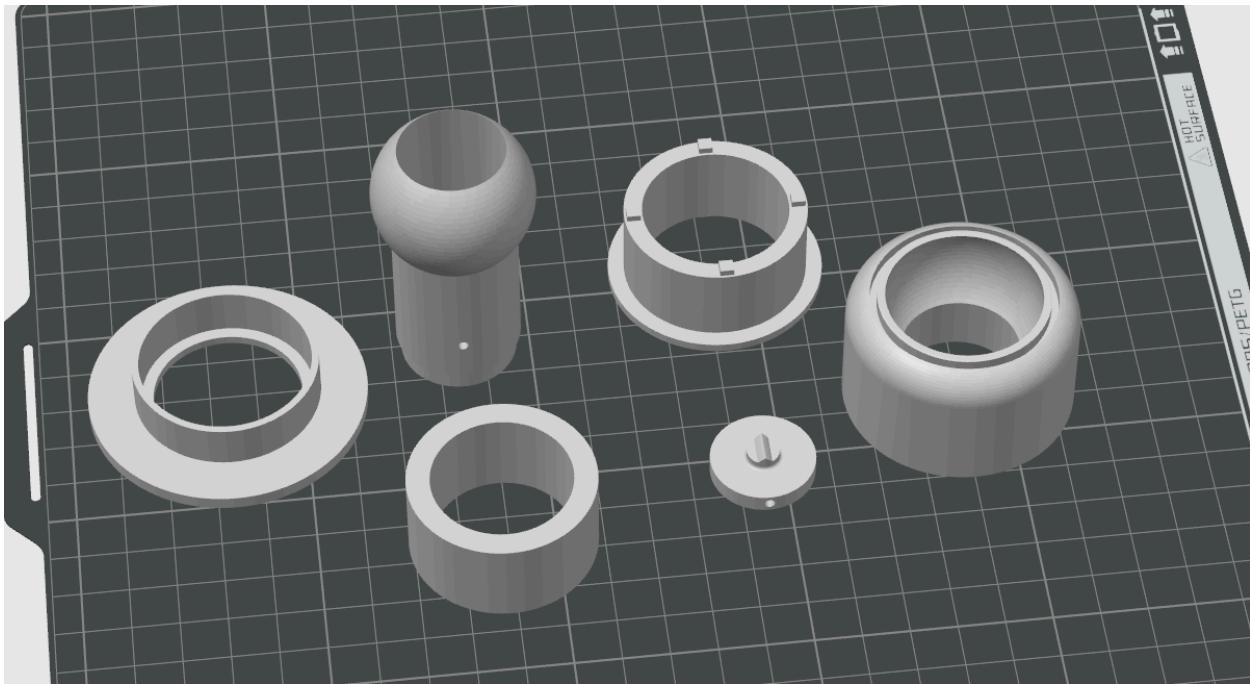
Bill of Materials

- All the printed parts
- 2mm metal rod Or a toothpick can be used as your hinge x1
- Self tapping screws to panel if wood
- Fan

Hardware Needed

- Hot glue or any type of glue to keep the toothpick/steel rod in place, optionally, it should not fall out under general use.
 - Soldering iron
 - 3D Printer
- Black Spray Paint (Optional)
- Sandpaper (Optional)

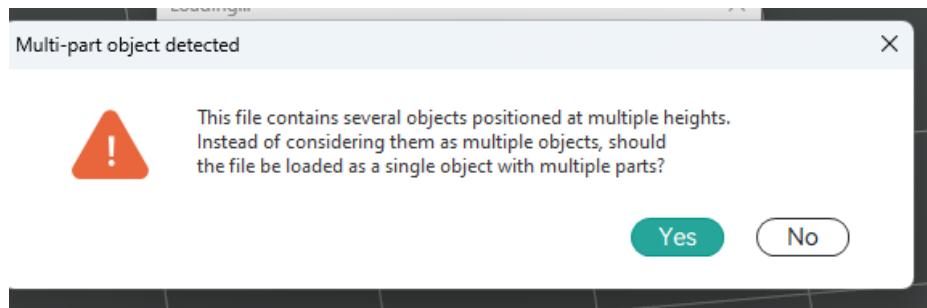
PRINT DIRECTIONS



Ideally the Top External face should be printed on a **Smooth Build Surface** for the best looks or least amount of sanding to get a smooth surface.

Supports are needed for the Internal Gimbal vent, and it cannot be printed the easy way unfortunately as there's no flat face 😞

Apart from the Internal Gimbal Vent the rest of the overhangs can be bridged but supports can be used if you are unsure of your printer's bridging capability.



If any of the parts has this error press "Yes." It is due to parts in Fusion 360 not being combined together. You are able to make an assembly of the loose parts in Orca Slicer and Prusaslicer if you want but that isn't required.

Print Color

Able to Spray Paint Front Face

Print the faceplate in white or black filament, preferably not any other color but ideally it should be matching the color of your filler primer, and considering it's black ideally your filler primer would be black and therefore the part would also be black however I printed my parts in white filament and painted it black, it does mean if it wears it'll be white though.

Not Intending to Spray Paint Front Face

Printing in black would be the most realistic color, hopefully with a smooth surface and being black you should get a pretty smooth glossy front face.

Slicer Settings

The internal gimbal requires support settings to be on. Infill doesn't matter for any of the parts here. Bed might need glue here or a good stick if you use a textured plate. A nice slow preset to make a nice even wall distribution for where your fingers would feel or a low layer height would be great to improve overall feel but not required whatsoever.

Multi Material Users: Can also use the interface material here if you use PLA then use PETG as your interface or if you're printing these out of PETG use PLA as your interface material.

ASSEMBLY INSTRUCTIONS

Next Page

Post Processing

1. Remove Supports off off the parts containing supports

- Internal Vent
- Gimbal Case (Optional support placement)

Supports can be pulled off by hand for the Internal Vent if it hasn't automatically released when you pulled it off the bed.

For the Gimbal Case, if you used supports, you can use a knife or something similar to take the supports off of the small gaps.

Sanding (optional)

Now in the print instructions we used the bed surface to make a smoother first layer for the front face however that is never perfect if your bed level is slightly off other areas will be raised, which will show once you have painted. Sanding your first layer preferably should be done before painting anyway.

In order to sand 3d printed parts, some quick tips:

- If you are sanding PLA you have to be careful about heat.
- Sand in a circular motion across the entire face.
- Ensure to wash your part off before viewing as dust can hide the layer lines that existed.
- Make sure to wear proper PPE when sanding, as small particulates from prints are toxic.
- Coats of primer help in hiding layerlines, sandpaper a bit, add a primer coat, and repeat.

I personally used 200 grit sandpaper and 1200 grit sandpaper as it was the only thing I had in my workshop, for an easier experience to grind down the sandpaper I recommend something harder to start with, 120 is probably good. You want more of the harder sandpaper but ensure to step up the grit to get a smoother surface, before painting 1000 or above is ideal.



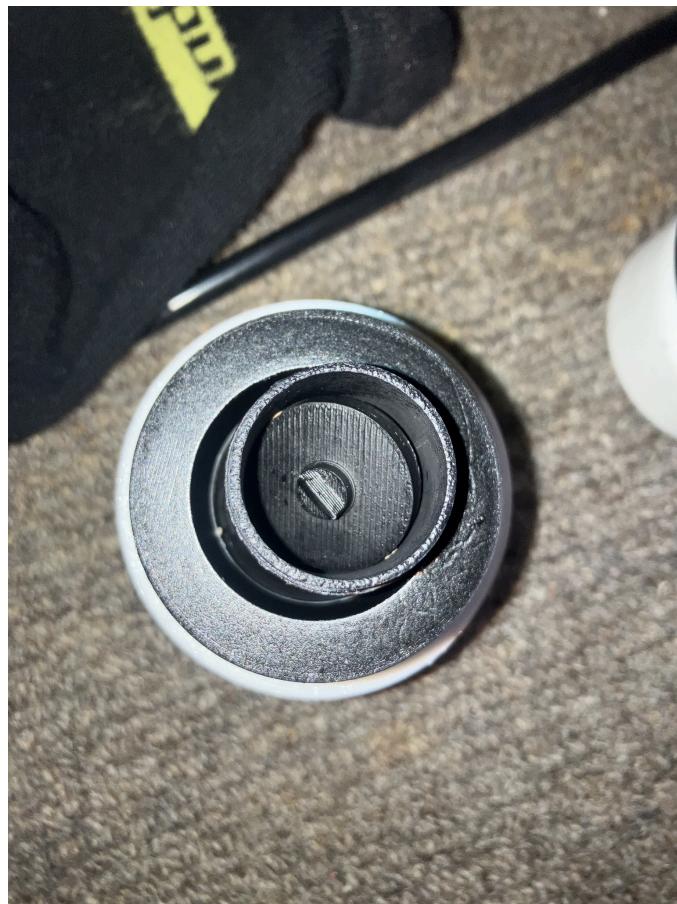
This image is hard to see but this is the consistency I was able to achieve, this is using 1200 grit sandpaper if you are able to see. It needs to feel smooth and look as good as you want it to be.

Example Video: [Finishing 3d prints: How to sand, fill and prime 3d printed parts \(youtube.com\)](https://www.youtube.com/watch?v=Finishing%203d%20prints%3A%20How%20to%20sand%2C%20fill%20and%20prime%203d%20printed%20parts)

Painting (optional)

If you decided you wanted to paint your parts then great! There is a strong likelihood that you have already previously painted 3d printed parts before, the method I choose to always paint parts is spray paint. It is cheap, easy, fast, and gives a great result. There is also a strong likelihood that you have previously used spray paint before, spray painting 3d printed parts is exactly the same as spray painting wood or any other material. Go light on the coats and parts tend to bleed paint in. However, do as many coats of paint as you need (I often do 2 plus a clear coat on top to help with the paint's longevity.)

This is how my vent faces looked, and the rest of the parts. As the vent block is inset in another part and isn't very visible.



Vapor Smooth (optional)

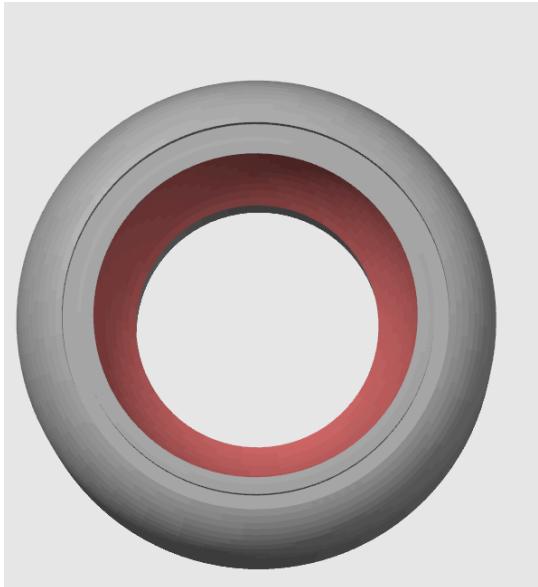
(Warning this method uses flammable and toxic Acetone)

An alternative to painting is Vapour smoothing parts made out of ABS using Acetone
Example: [Easy method of vapor smoothing abs \(youtube.com\)](https://www.youtube.com/watch?v=HgjyfzXWVJU)

This can be done for various parts but I decided this was not required for any of the parts here.

Continued Instructions

2. Ensure that all parts have been painted prior to starting the rest of the Assembly if you intend to paint your parts, refer to the slide above on tips to painting.
3. The Internal Vent needs to be placed in the freezer before popping into the Gimbal case, it needs to be in for at least 15 minutes to get cooler, this will shrink the case and make it easier to pop in.
4. Apply some water-based lubricant (I used plumbing grease) to the inside of the Gimbal case to ensure that the gimbal slides nice and smoothly over the layer lines. I used Fix-A-Tap found in New Zealand, but I'm sure there's quite a few alternatives as it seems to be regular plumbing grease. I have shared an image of the product I used below. Make sure to spread this evenly across the inside of the case, and in every area highlighted in red below.



Gimbal Case .3mf

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Fix a Tap Lubricant

5. Once the Internal Vent has been cooled in the freezer, firmly press down the Internal Vent into the Gimbal case region shown above, this requires a relatively large amount of force even while frozen. Once popped in you should be able to move the Internal Vent around in the case and it should glide smooth. If it does not glide smoothly your parts have not been printed with enough precision and the parts may need to be modified or your printer may need to be tuned.



This is how the assembly should look like.

6. This is a bit hard to-do but using two of your fingers. Hold the Internal Block holes and align them with the holes for the Internal Vent. When the two holes align, move the toothpick through both the Internal vent and the Internal block. Snap the ends of the toothpicks at the ends of the Internal Vent so it's flush, and paint it black to make it look more seamless with either spray paint or a sharpie, either should work. You can replace the toothpick here with a 2mm steel rod for better longevity I guess? But a toothpick works just as well and it's much more common..



This is how the assembly should look like once completed.

7. Grab your Top External Face.3mf part and your Connector Ring.3mf part and join the two together using the provided squares. No glue or screws are required to join these parts together. Press down and these should bind together and look like the image below.



8. With your two new assembled parts, take the bottom side of the part in Step 6 and place it in the groove of the Gimbal Case, it should pop into place firmly, it should look like the image below.



The hose connector like in Step 7 can be connected to the bottom of the Gimbal case and that is a completed assembly. Please do note that the connector ring is not fully completed and therefore will not work on a panel (WIP)