MrBaddeley
R2D2 version 2 Body instructions
Version 0.1 (Draft)

https://www.patreon.com/user?u=4294285
for other parts and instructions

Features…


Prints at .3 layer for speed.

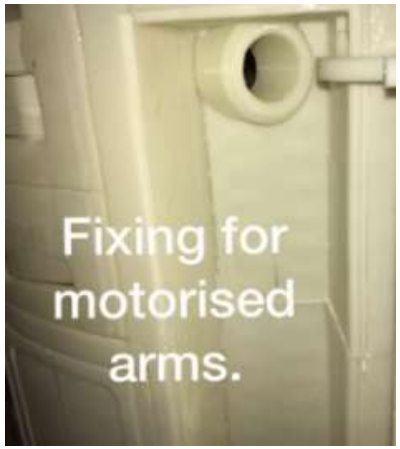

Modular utility frame.

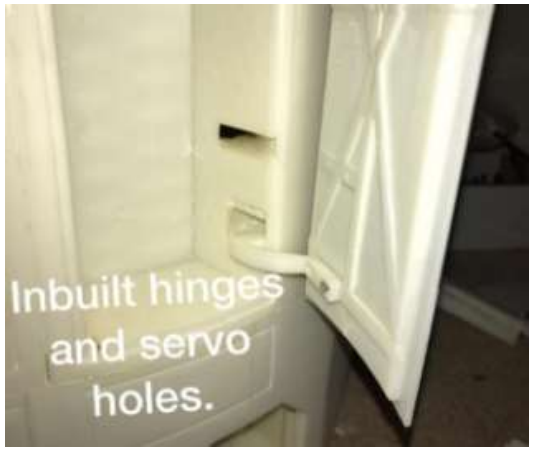

Modules fixed with bolts for easy swap.


Modular shoulder for fixed or 2-3-2

Features…


Servo control for utility arms


Fixing for motorised arms.

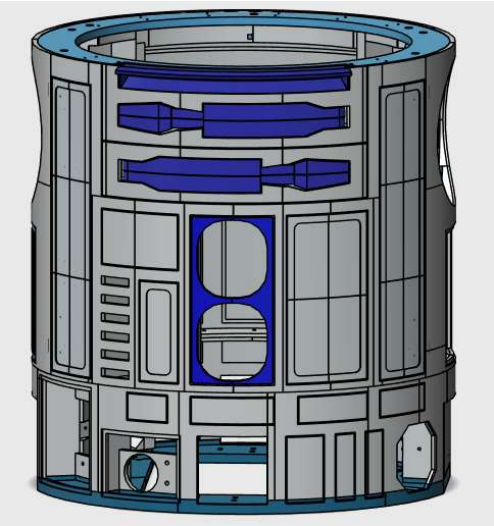

Inbuilt hinges and servo holes.


Integrated internal panels.

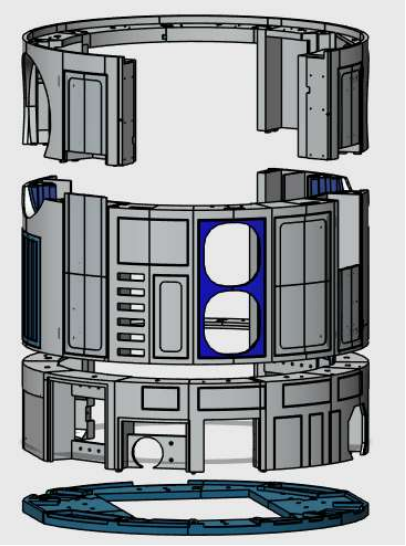

All parts have brackets and fixings


Max room inside

MrBaddeley R23D printed body instructions



Based CS:R specs. It is a fully printed droid and the internal fittings may not work with the standard club build but may fit with modification.



Firstly the basics, the main from of the body is printed as a base with 3 main rings.

I use 3 layers, 10% infill and **.3 layer height**. (You can print at a higher resolution but it will take ages with not much difference. **I've designed the prints to minimise visible layers when printing at low rez to speed up the process. The frame is very clean and detailed at .3**).

I printed in ABS (as I love actetone welding) but would imagine it's fine in PLA, I would be nervous using CA to glue just as it could split if knocked or stressed, so would recommend epoxy, but I have no experience).

All major parts are numbered and are built 1,2,3,4 etc. in the rings.

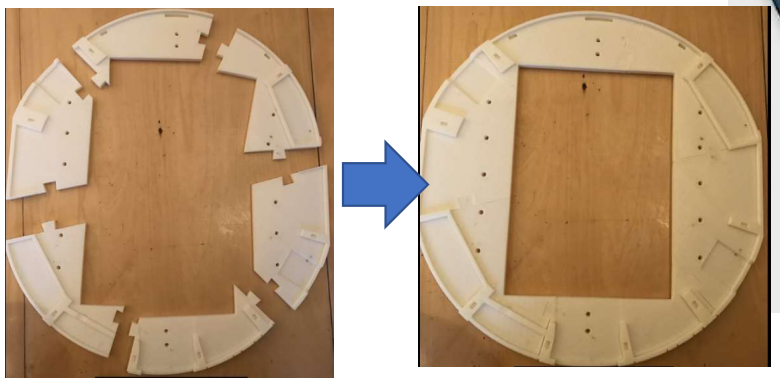
I've used filament peg holes throughout, so small holes which just fit 1.75mm filament so you can make alignment pegs.

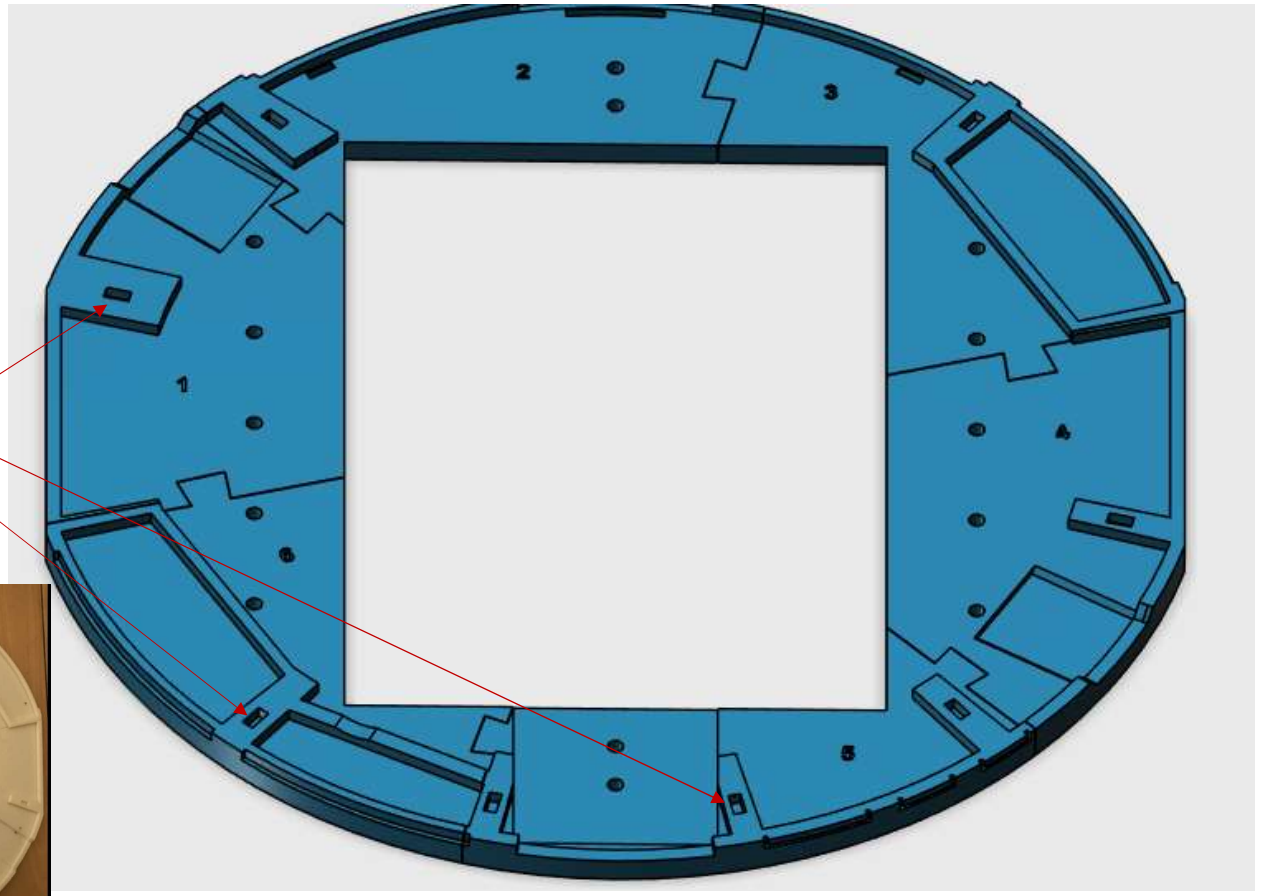
For the door hinges, a 3mm metal peg is needed, around 12mm. This is epoxy glued in before assembly. Don't assemble without this peg.

Base Ring

For the base, print all six parts out, they have a dovetail joint, slot together to check / sand if needed (I didn't) and once happy you can glue together.

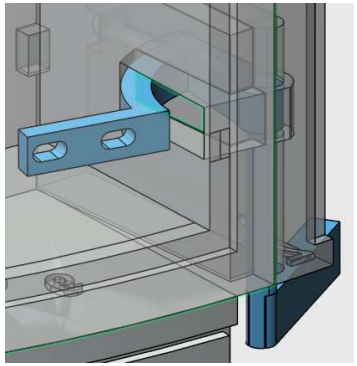
Notice the 8 alignment holes (square holes) for the next ring.

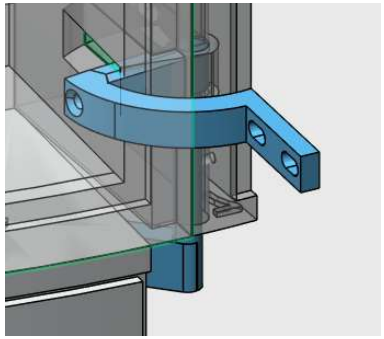


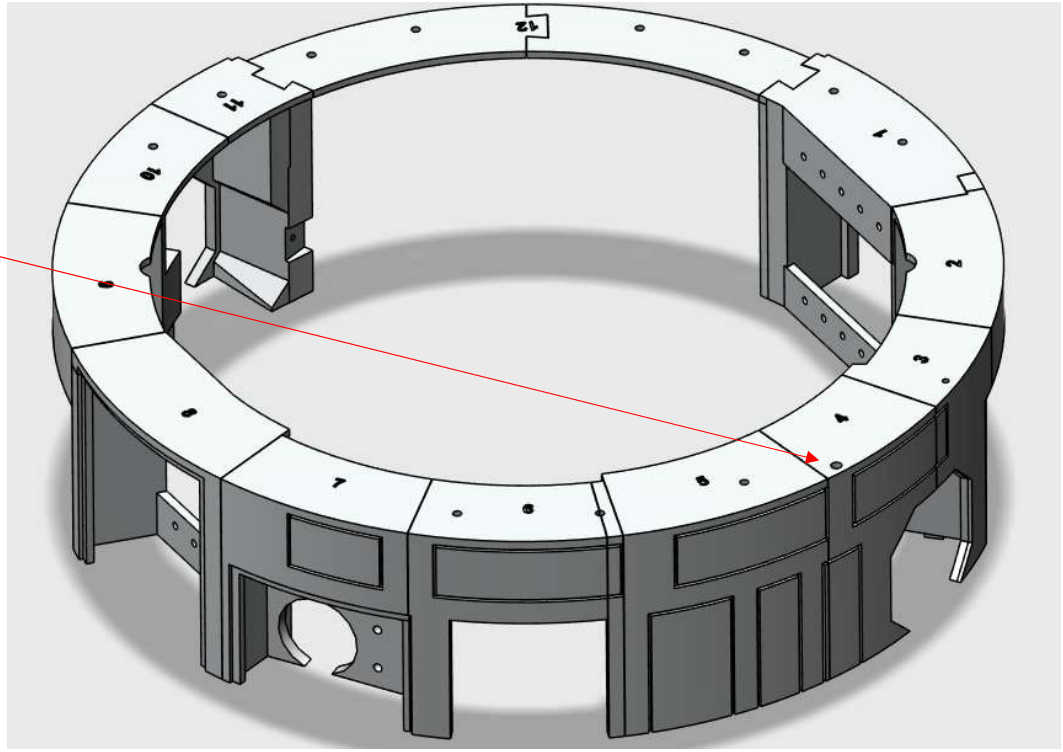


Ring 1, again numbered, this is made of 12 parts assembled clockwise. Uses 1.75 alignment pegs throughout.

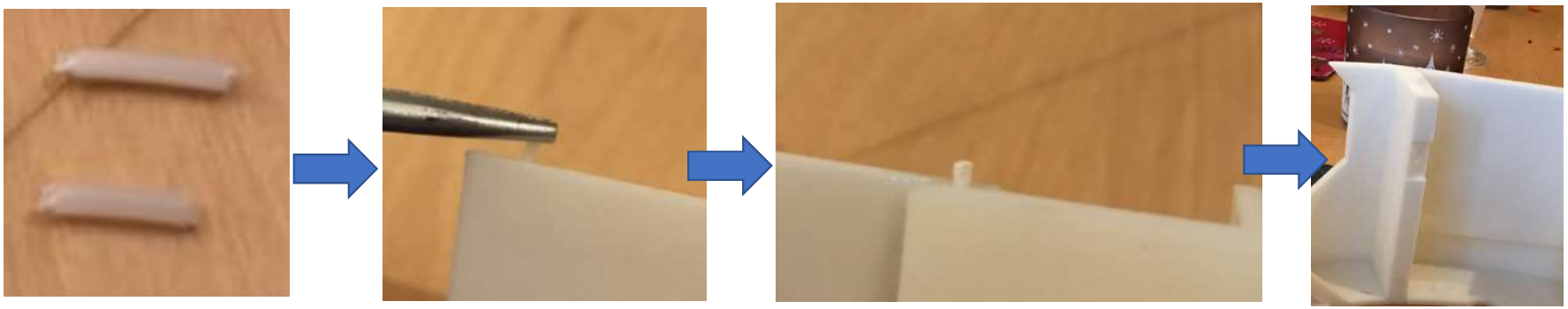
Note on ring part 4, there's a hole near the edge. This is the fiddliest part of the build when assembling the frame. This is for a servo controlled Data Panel door and used a printed 5mm peg which goes through ring 1 and ring 2. Covered later on but make sure this hole is clean.



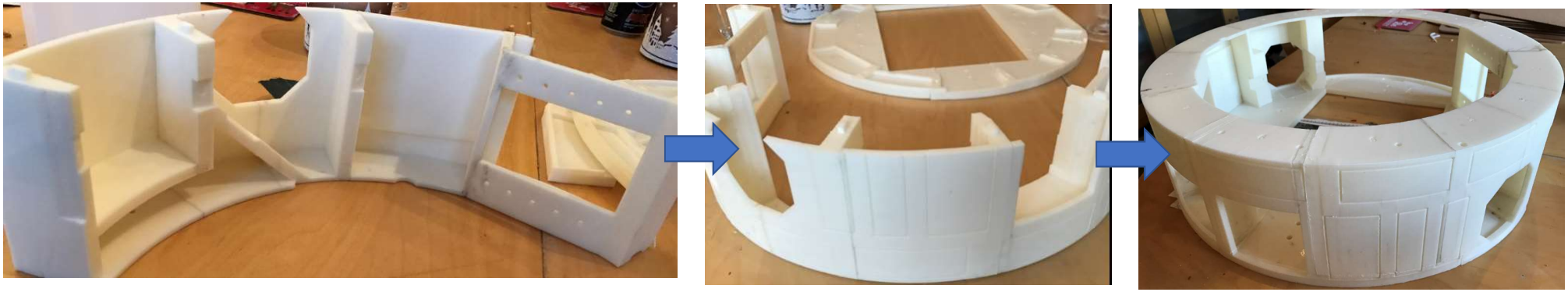




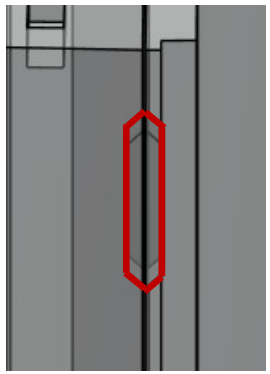
Using 1.75 filament for alignment pegs….

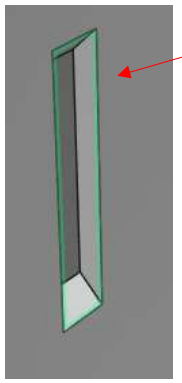


Ring 2 assembly



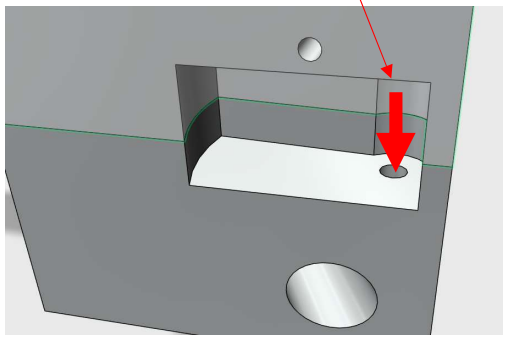
Ring 2 consists of 21 part in clockwise. The shoulder areas are heavily reinforced for strength and therefore built in multiple parts.
Assembly is similar to ring 2 with 1.75 filament throughout. I have also used small plates as it's a tall section. These consist of a printed plate which sits between the flat sections.

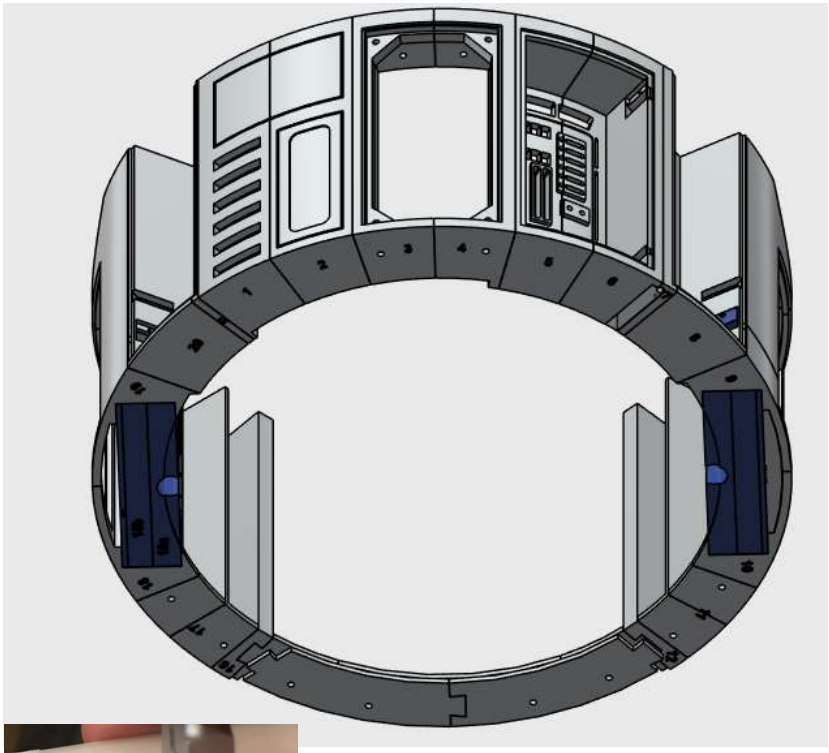


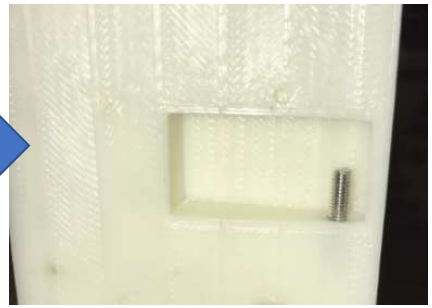


Cut a 3mm peg from steel or metal, around 12mm (the height of the inset) and glue into the hole with epoxy, should stick out about halfway. Make sure it's straight.

The pegs need to be fitted before assembling the ring.

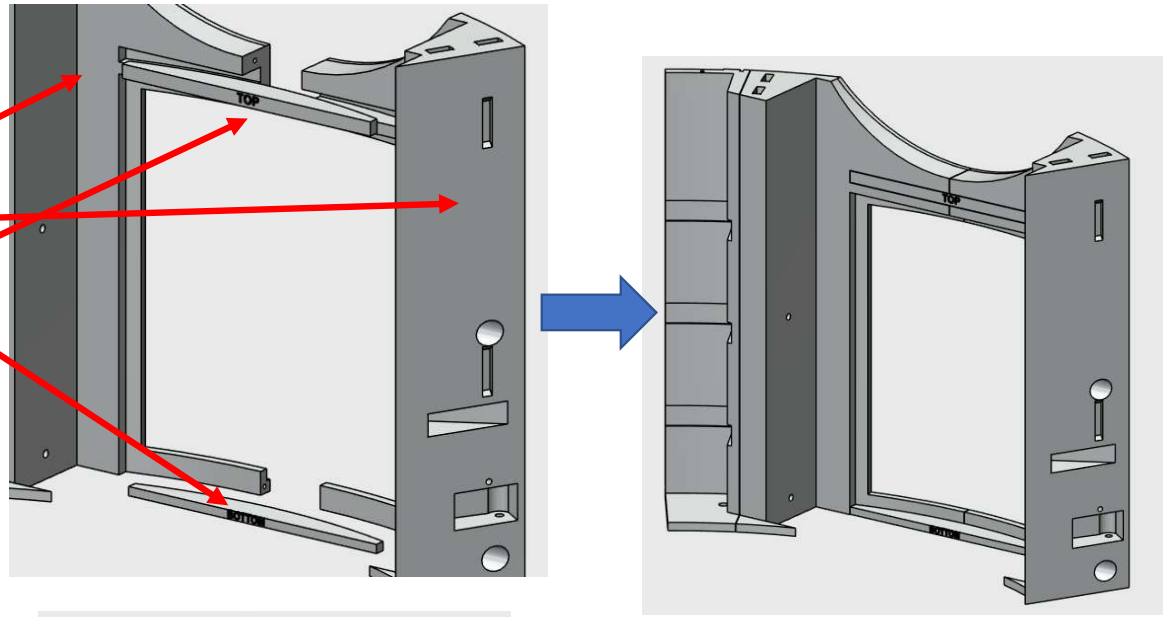




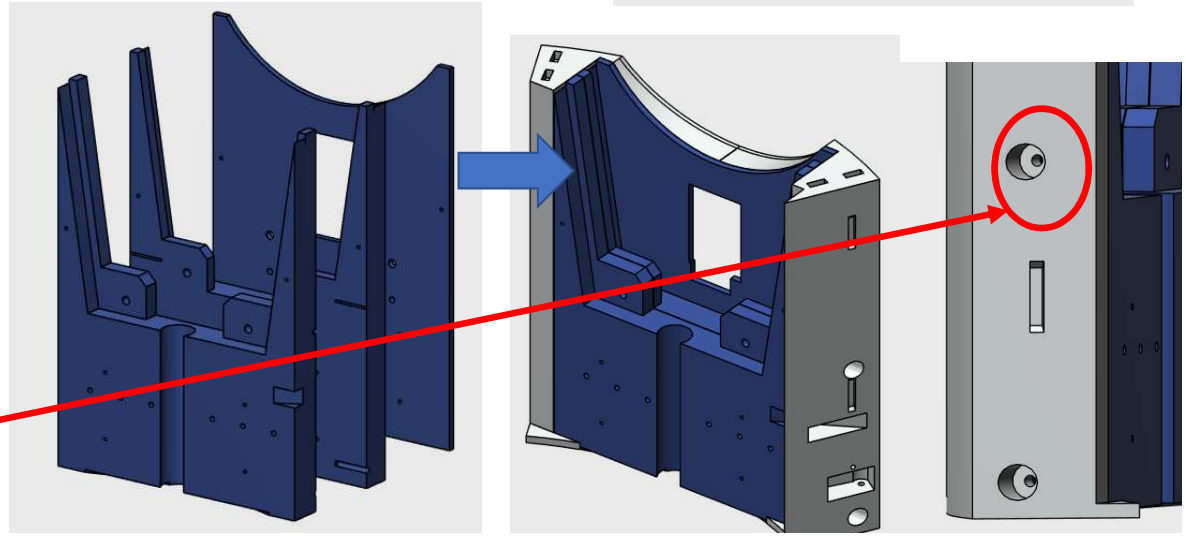


Assembly ring 2 separately again. Watch for hinge and ensure the pins are fitted before gluing ring 2

The shoulder part is printed in a number of sections. This is to give strength around a high stress part. The two shoulder skins come together. There's two braces which glue in. This is assembled before the insert. The model is fragile until these braces are in.



Next assemble the insert, three panels which glue together. Ensure glue or acetone doesn't come out of the gaps and blocks the screw holes. Also watch for any oozing around this part as the shoulder plates fit snugly into this and if glue or acetone juice comes out of the joints it can create problems further along. Once assembled this can be fitted to the shoulder part. There's 4 screw holes to hold this together as an option to make it stronger.



The Ring 2 can now be fully assembled.
A couple of things to note.

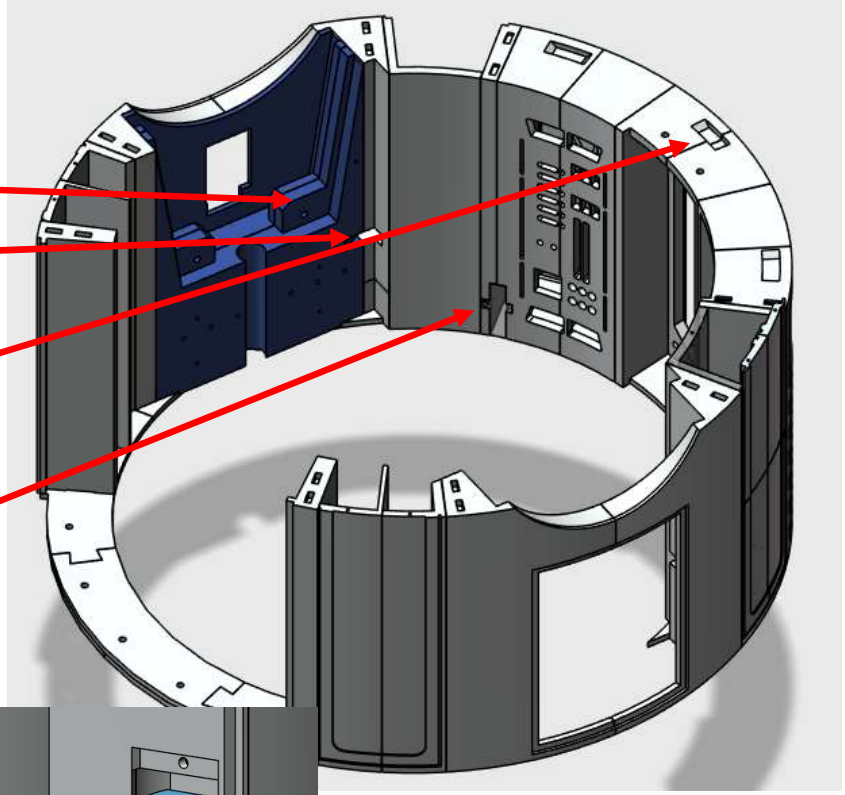
Slots for Shoulder Modules.

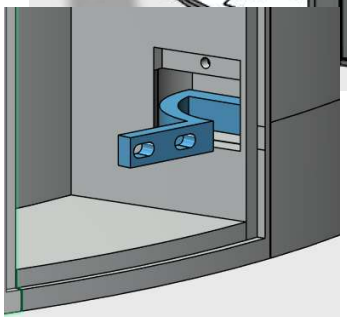
Rod holes for side doors (Servo)

Slots for Utility Arm Frame Modules.

Cover for lower hinge for Data Panel
(Data panel lower hinge goes through lower ring as noted previously. This is fiddly and the two holes need to align.

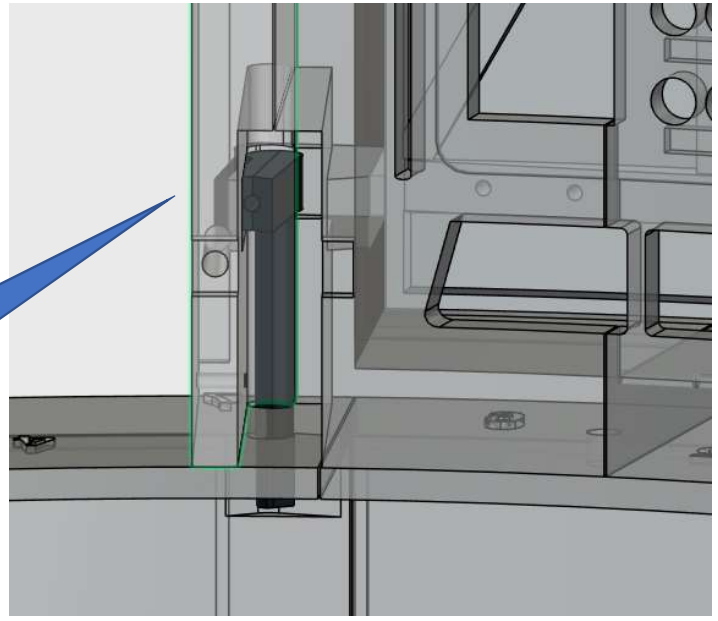
The built in hinges, once the hinges are printed they slot onto the peg previously glued in with a cover above to hold in place.





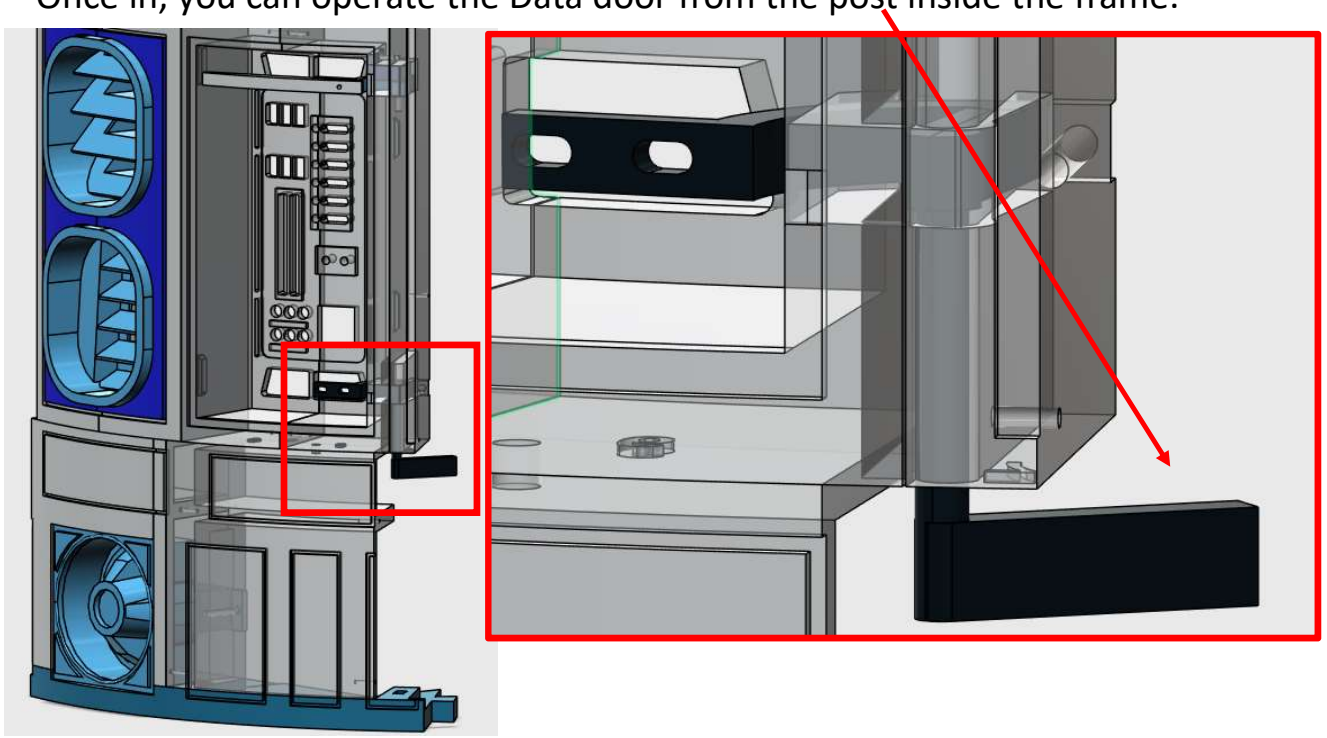
Once the 2nd ring is complete you can assemble the base, ring 1 and ring 2. Spend some time to make sure all the tabs between the rings fit snugly, it may need a little filing or sanding depending on your prints, but shouldn't be much.

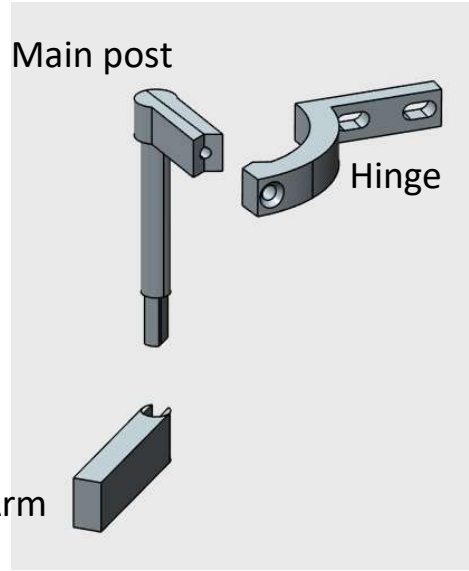
This is a critical point for the data door hinge, the hinge drops into a hole between the two panels, it's really fiddly and you need to ensure this is aligned and no glue or acetone plastic oozes into this bit.



Fiddly bit!!

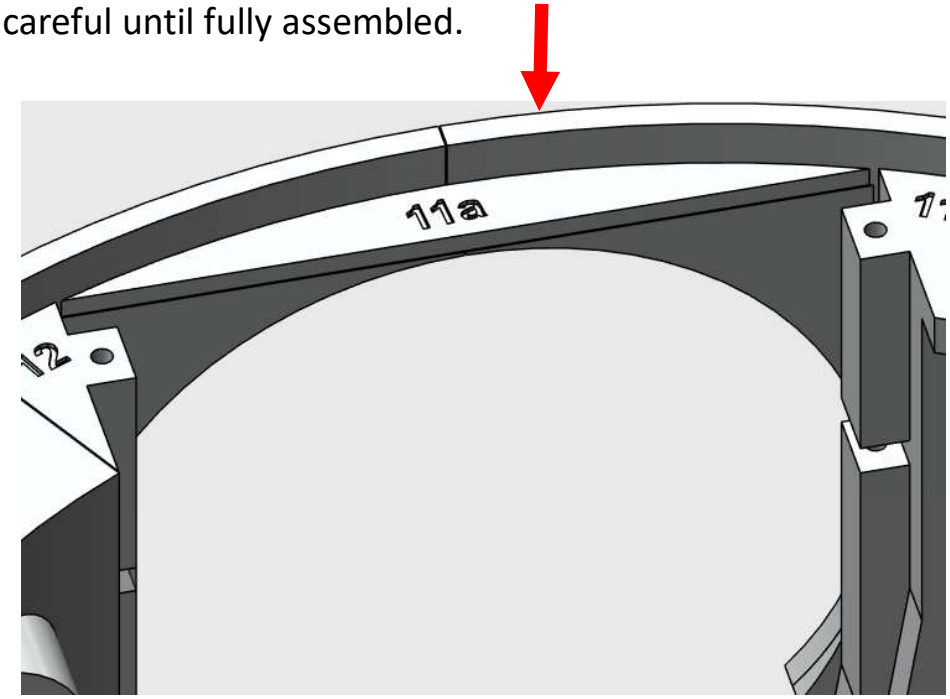
So the lower hinge for the data port door is in three parts, it has to drop down the hole between the ring 1 and 2 from the inside then you attached the hinge section with a screw (or glue) and the servo arm with glue (I may tweak the servo arm as it's literally a straight arm at the moment.
You'll need to sand / tweak the post to make sure it can move but not too loose.
Once in, you can operate the Data door from the post inside the frame.

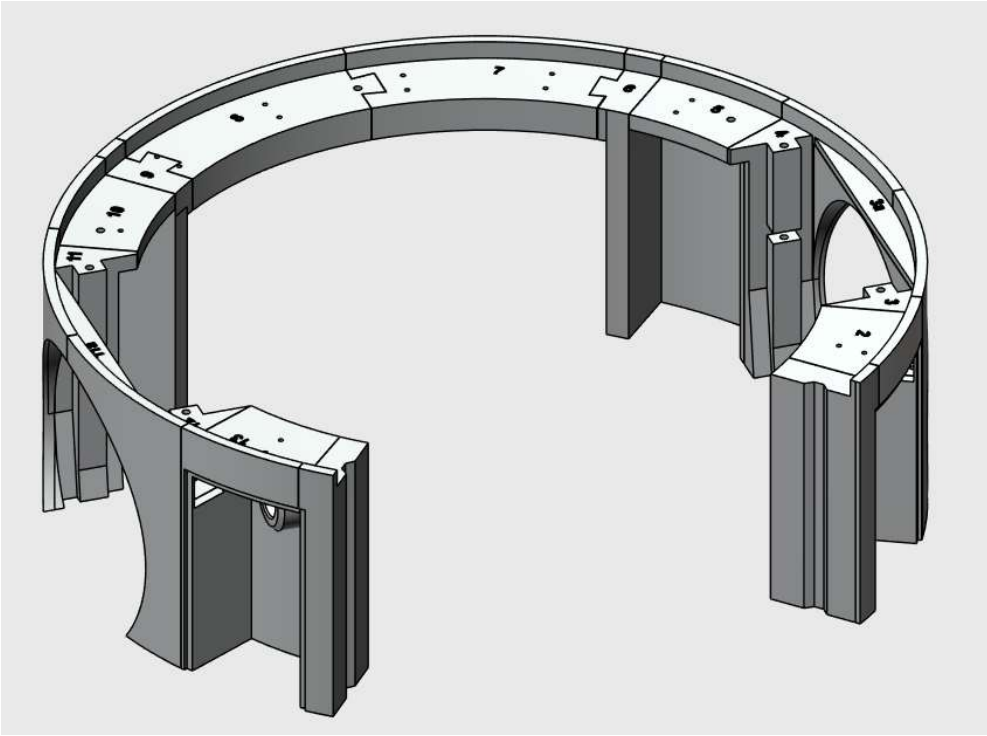




Ring 3, again numbered, this is made of 14 parts assembled clockwise. Uses 1.75 alignment pegs throughout.

This part is a fairly easy assembly. Watch out for the circular parts above the shoulder, when first printed this will be fairly fragile. There's a support rib which is glued in, once fitted the frame is very strong but be careful until fully assembled.












Ring 3, Once assembled, check the fit on the other rings, file and sand to ensure a good snug fit before final gluing.

Assemble, glue and you should now have the base Ver2 Modular Frame.

Sanding and finishing, I use a small mouse sander, starting on 80 and build up to around 300 to get a clean finish. I use body filler for any warped sections or any gaps after the initial sanding.
Once filled and sanded, I use a filler primer, and as with all 3D printed, sand, fill, sand and repeat.
I have to say, the orientation should minimise the sanding needed at fast resolution (.3) so hopefully this parts isn't too hard.
I've tested the strength at this point and it's a really solid frame, if you're worried (and I haven't done this) you can acetone the inside to strengthen the bond or even fibreglass resin however I don't think it needs it.

Supported and tested by Rob Dinniwell, Joseph Masci, Gregory Welch, Sam D. Fenimore, LarryJ, tevans, Rick Davis, Brendan Faulkner, Nicolas Carré, Ben Langley, Mathieu Saint-marc and Brian.