



3D Printed Exoskeleton – Instruction Manual



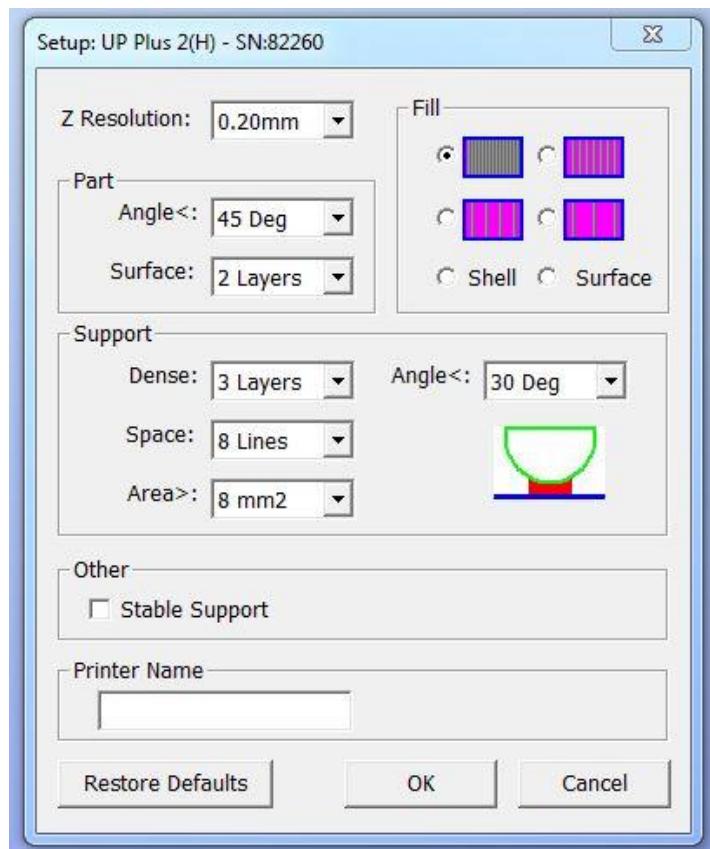
*****Disclaimer – 3D Print It will not be liable for personal injury resulting from negligent use of this product. Please use the 3D Printed Exoskeleton with care and do not cause harm to others. Do not distribute the 3D Printed Exoskeleton STL files. The files that you have bought are for your personal use only.**

*******IMPORTANT*******

The files were designed to be printed in ABS plastic. Printing the files in other types of 3D printed material may cause the pieces not to fit correctly and lead to serious frustration. Please use the following settings to insure that the 3D printed parts fit together.

All parts were printed on an Up Plus 2 printer:

- Material: ABS plastic**
- Surface Layers: 2 layers**
- Density / Fill: The more solid the infill the stronger the hand**



*******IMPORTANT*******

So What Do I Print? (Parts for 2 x Exo-Hands)

1 x Back_Hand_Left_Hand.stl
1 x Back_Hand_Right_Hand.stl
40 x Cube_Joint_Washer.stl
10 x Cube_Universal_Joint.stl
10 x Finger_Attachment_Claw_Type_1.stl (Optional Extra)
10 x Finger_Attachment_Link_Pin.stl (Optional Extra)
10 x Knuckles_Screw_Cover.stl
40 x Panel_Joint.stl
2 x Ring&Panel_Joint_Link_Pin.stl
2 x Ring_Link_Index_Finger.stl
2 x Ring_Link_Middle_Finger.stl
2 x Ring_Link_Pinky_Finger.stl
2 x Ring_Link_Ring_Finger.stl
2 x Ring_Link_Thumb.stl
10 x Shield_Attachment_Type_1.stl (Optional Extra)
10 x Shield_Attachment_Type_2.stl (Optional Extra)
2 x Wrist_Lock_Link_Pin.stl
2 x Wrist_Lock.stl

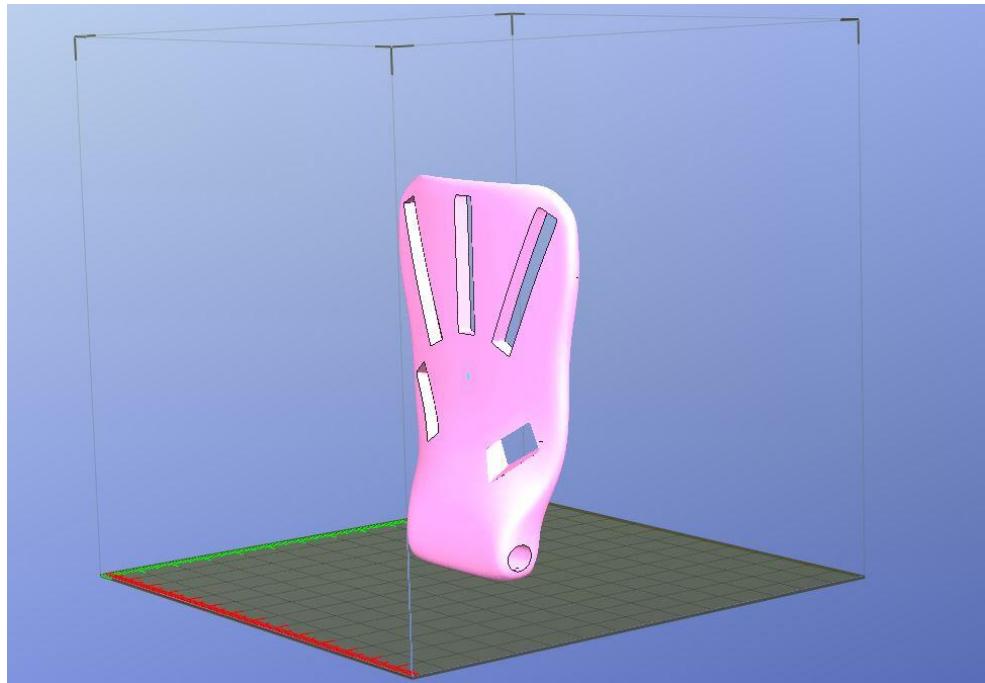
You will need to purchase: (Parts for 2 x Exoskeleton Hands)

80 x Metal Screws

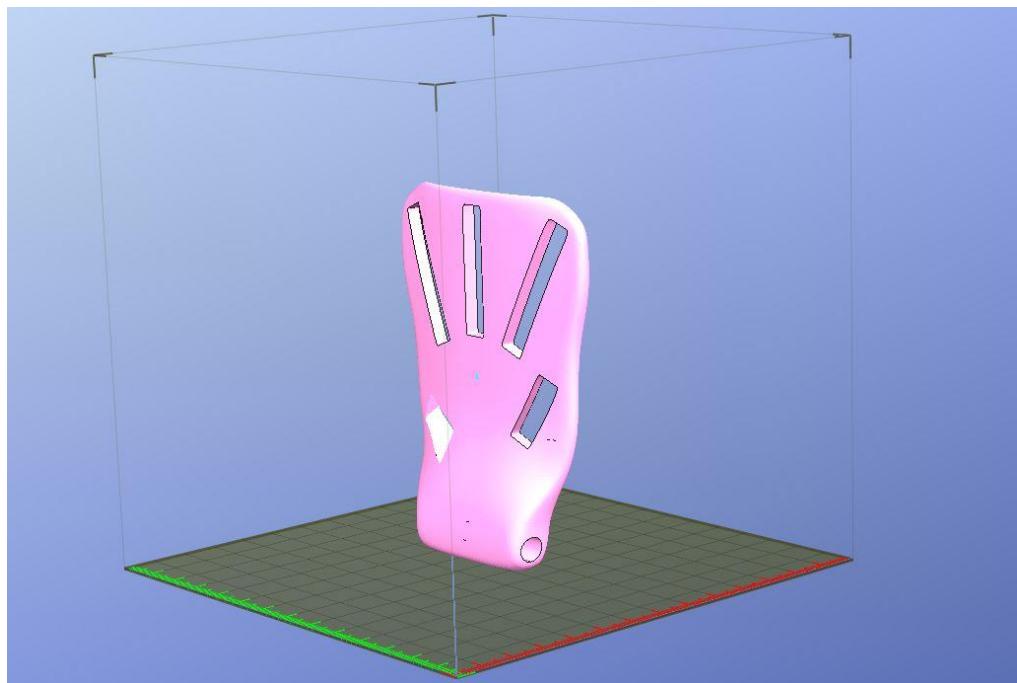
80 x Metal Washers

Which Way Do I Print The 3D Models?

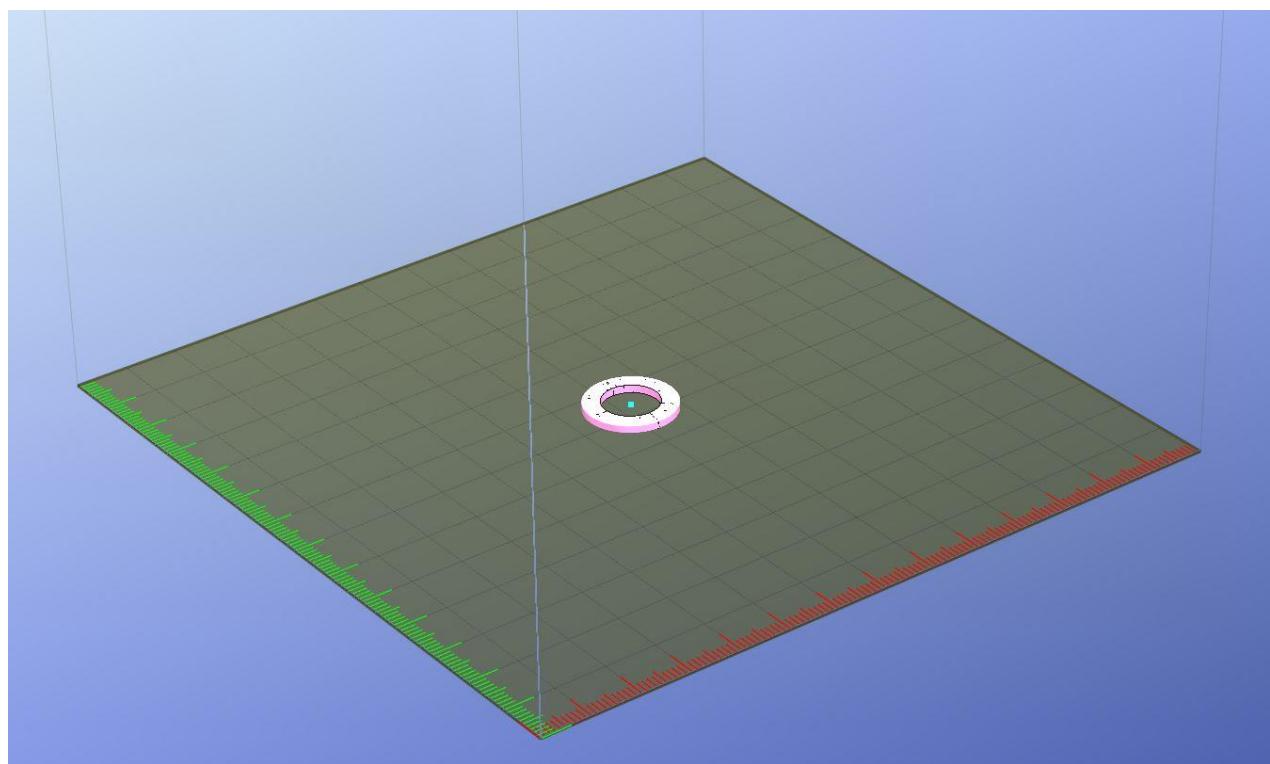
1 x Back_Hand_Left_Hand.stl



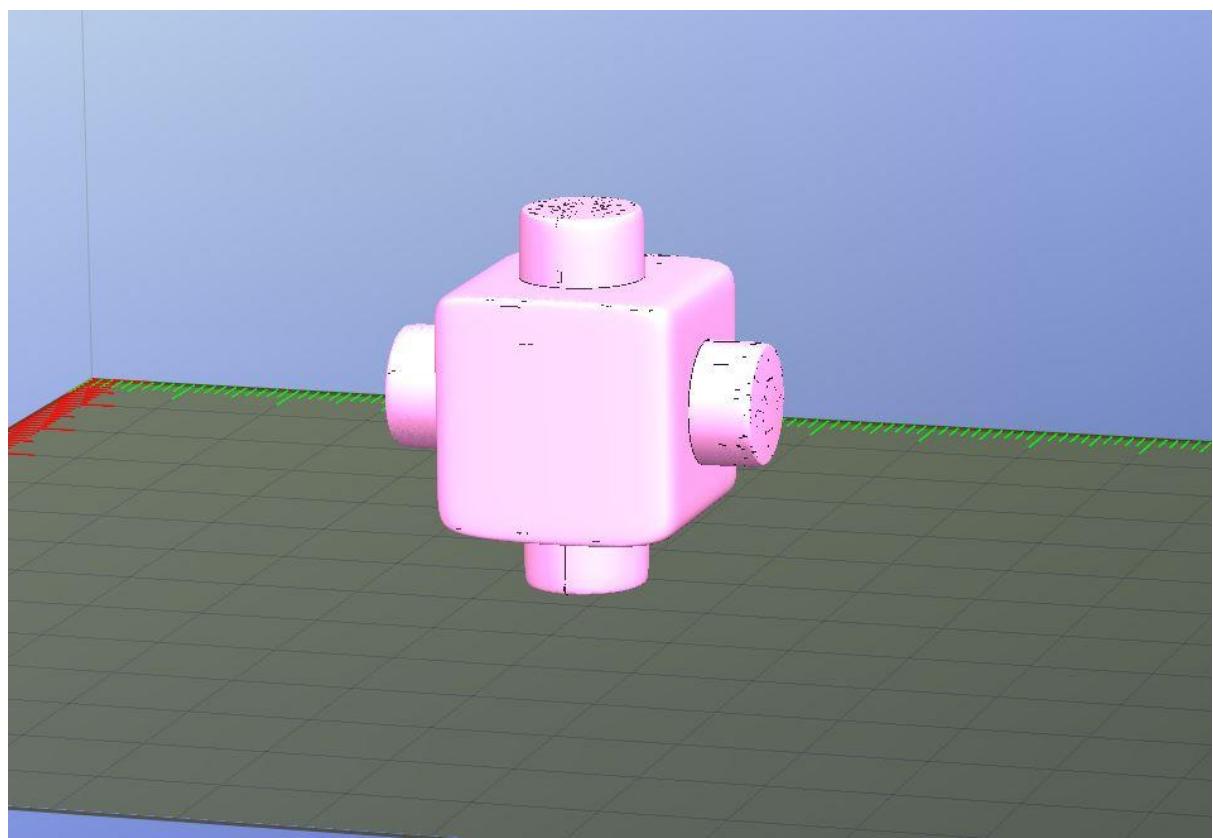
1 x Back_Hand_Right_Hand.stl



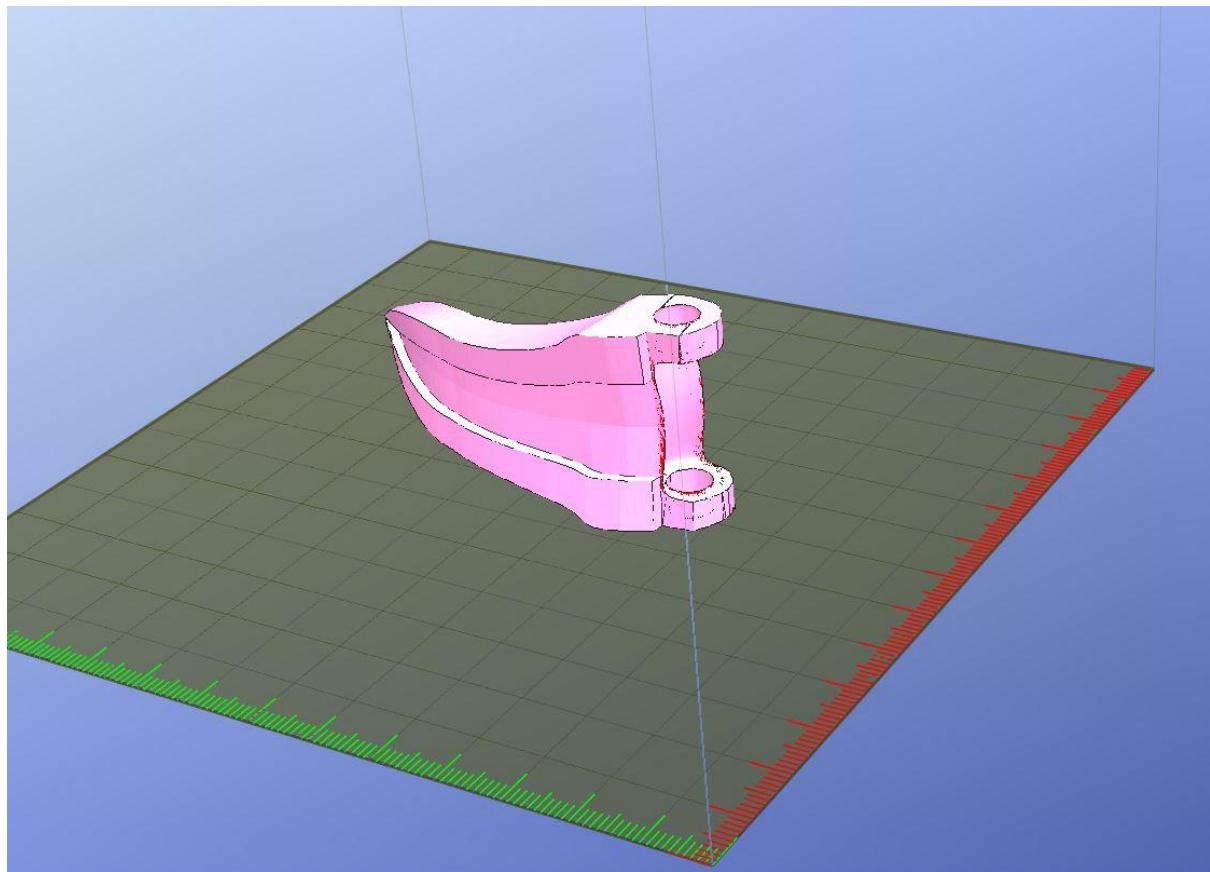
40 x Cube_Joint_Washer.stl



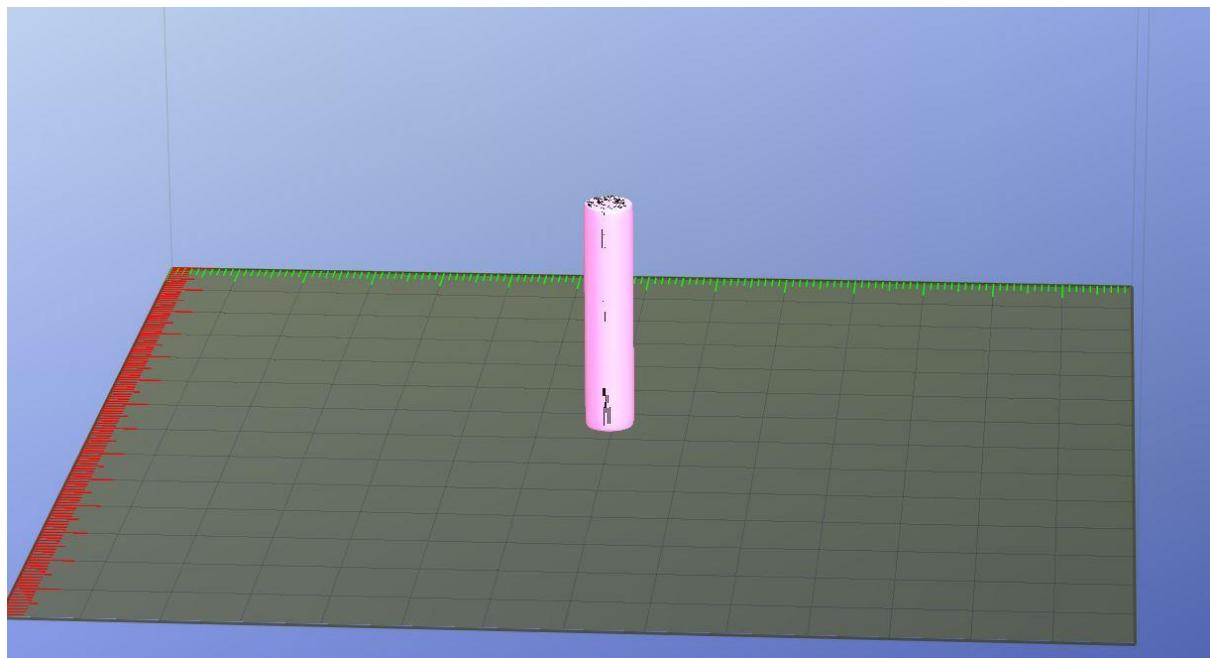
10 x Cube_Universal_Joint.stl



10 x Finger_Attachment_Claw_Type_1.stl (Optional Extra)



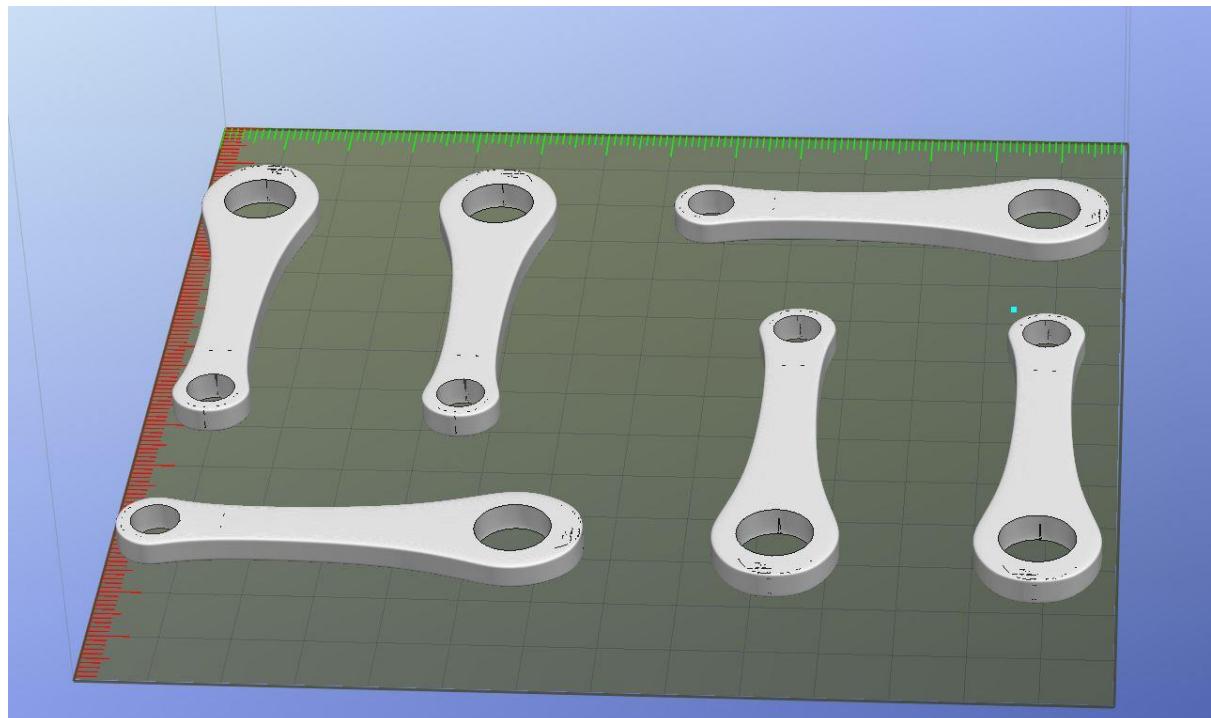
10 x Finger_Attachment_Link_Pin.stl (Optional Extra)



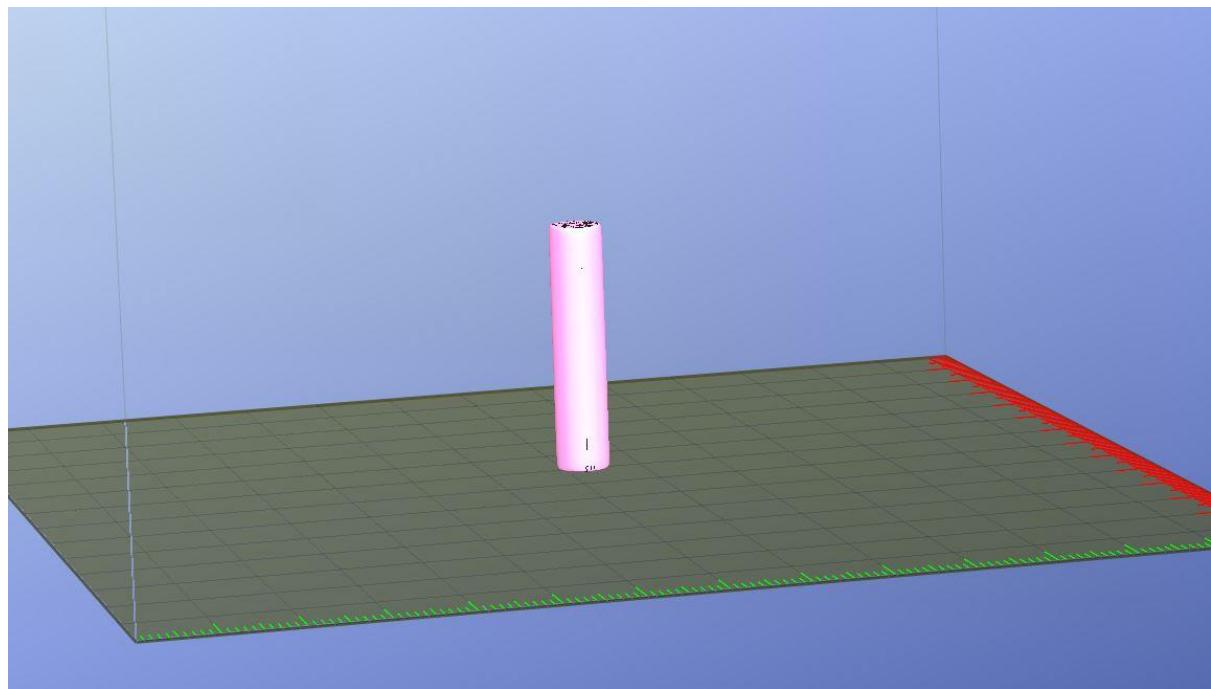
10 x Knuckles_Screw_Cover.stl



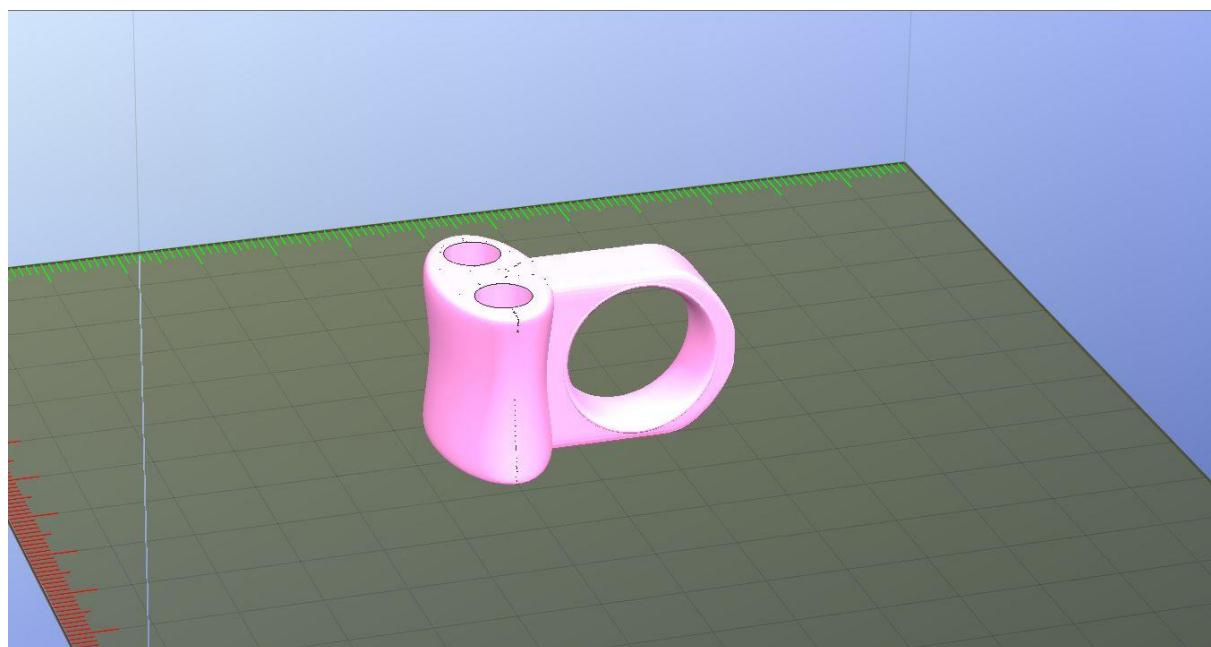
40 x Panel_Joint.stl



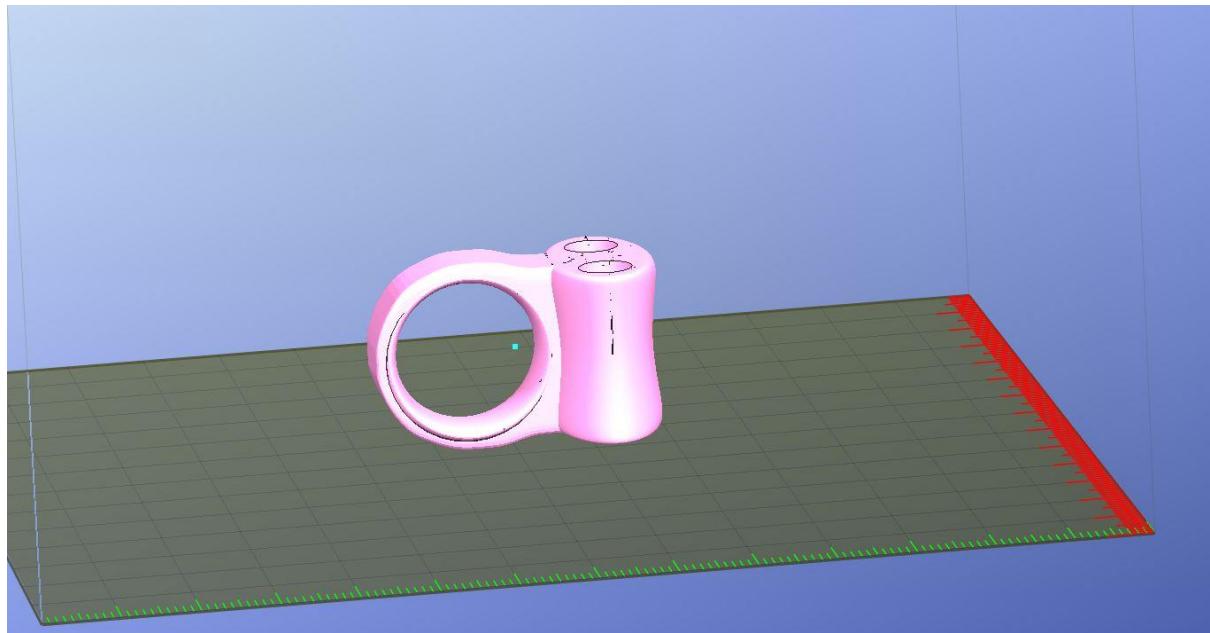
2 x Ring&Panel_Joint_Link_Pin.stl



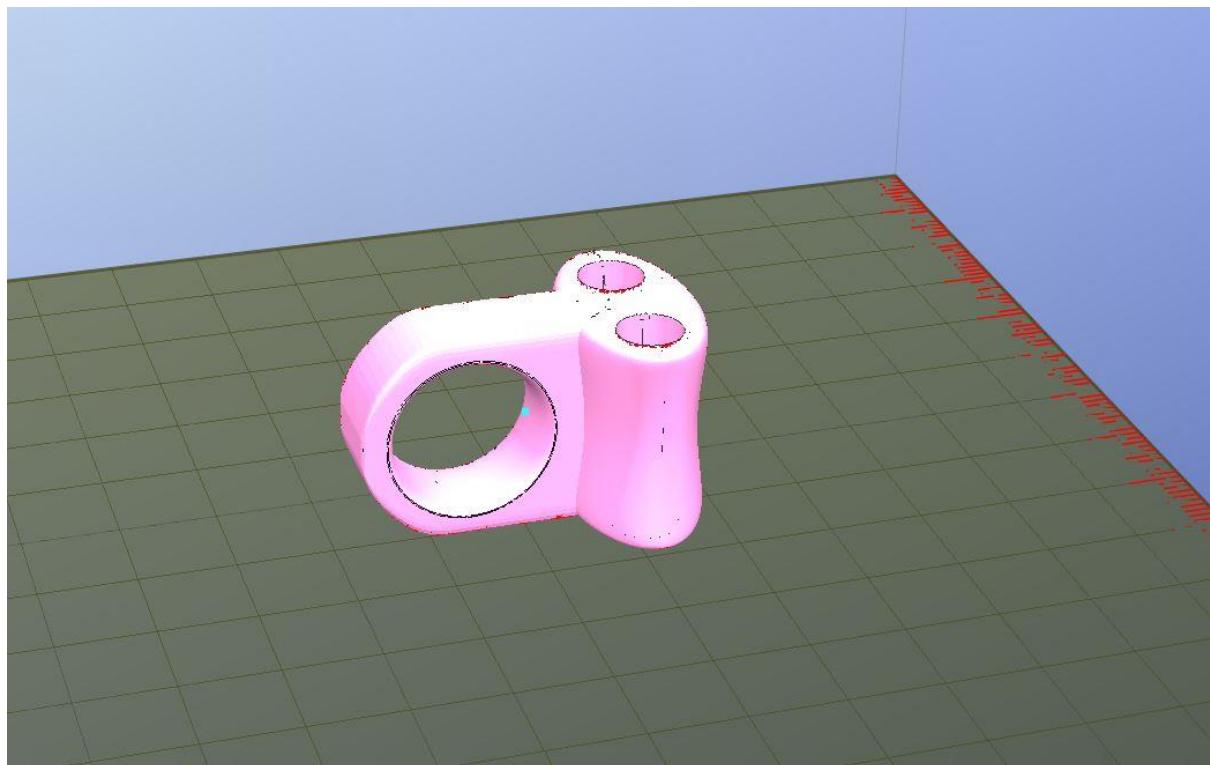
2 x Ring_Link_Index_Finger.stl



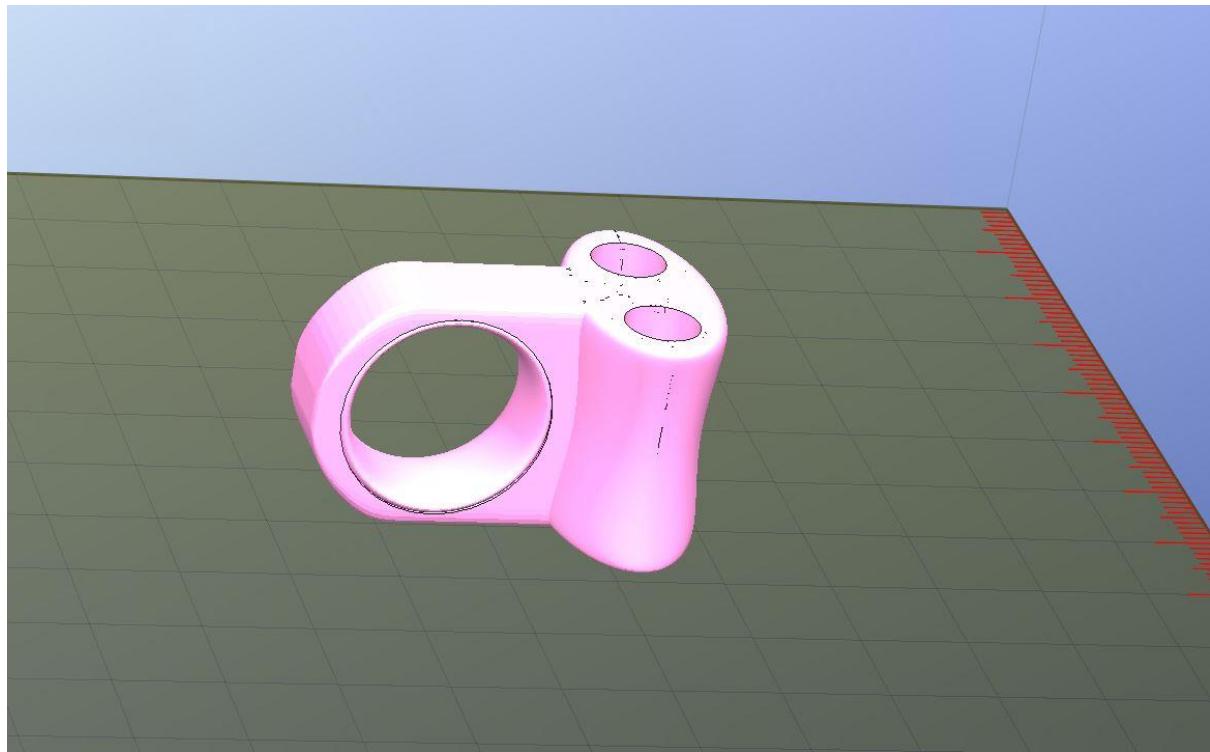
2 x Ring_Link_Middle_Finger.stl



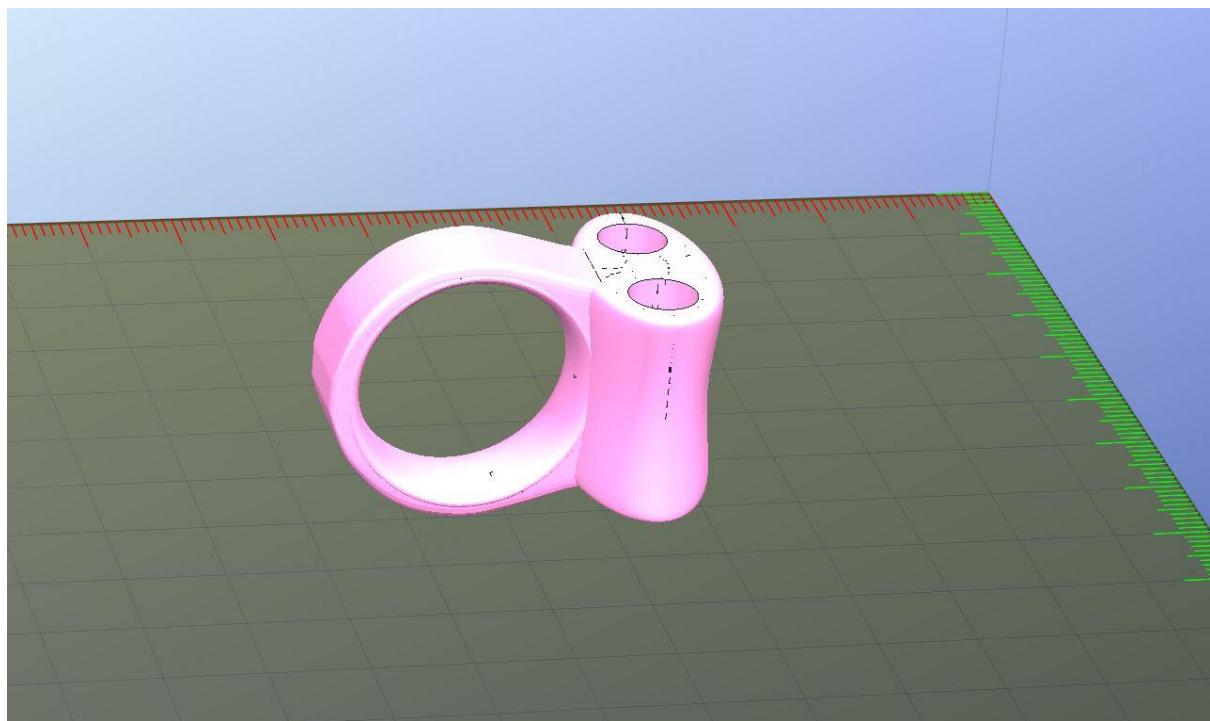
2 x Ring_Link_Pinky_Finger.stl



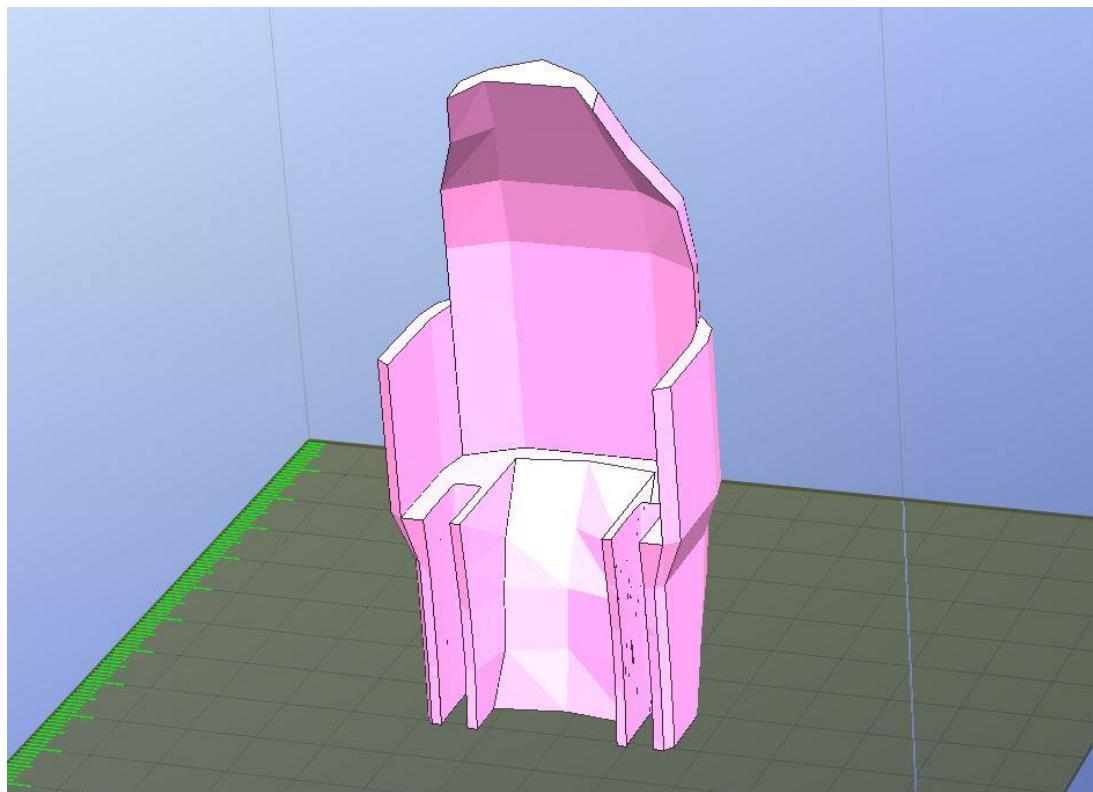
2 x Ring_Link_Finger.stl



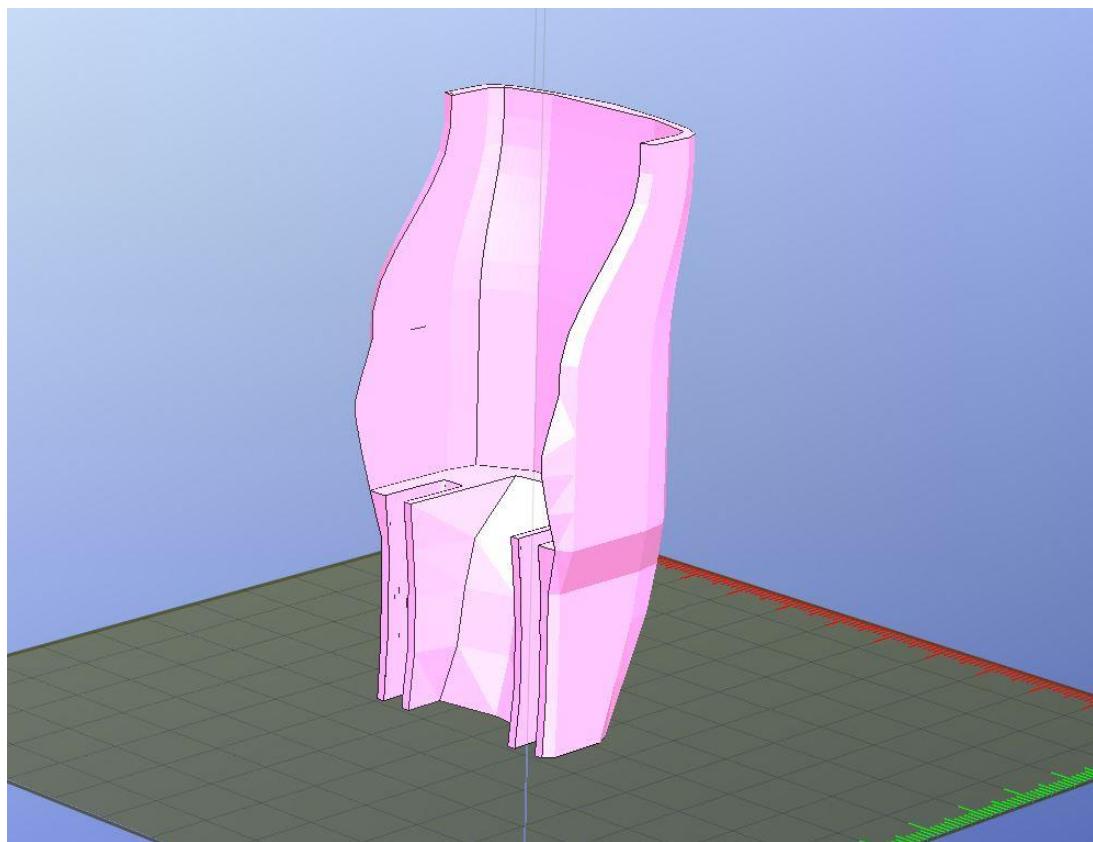
2 x Ring_Link_Thumb.stl



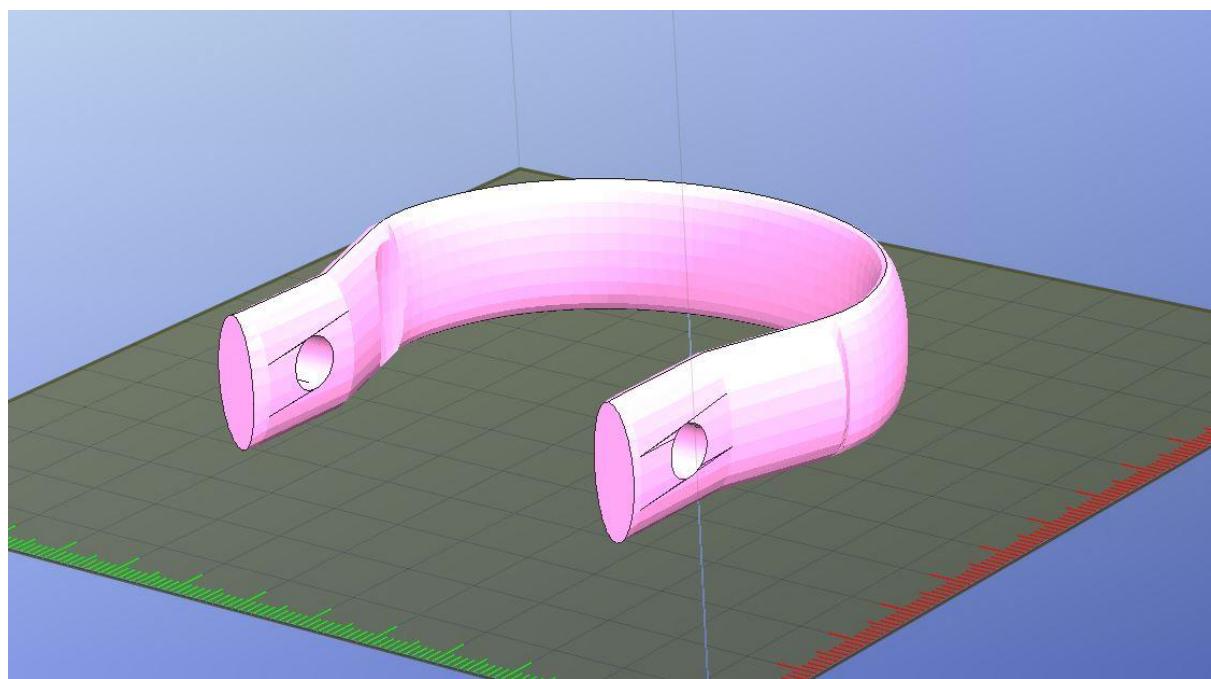
10 x Shield_Attachment_Type_1.stl (Optional Extra)



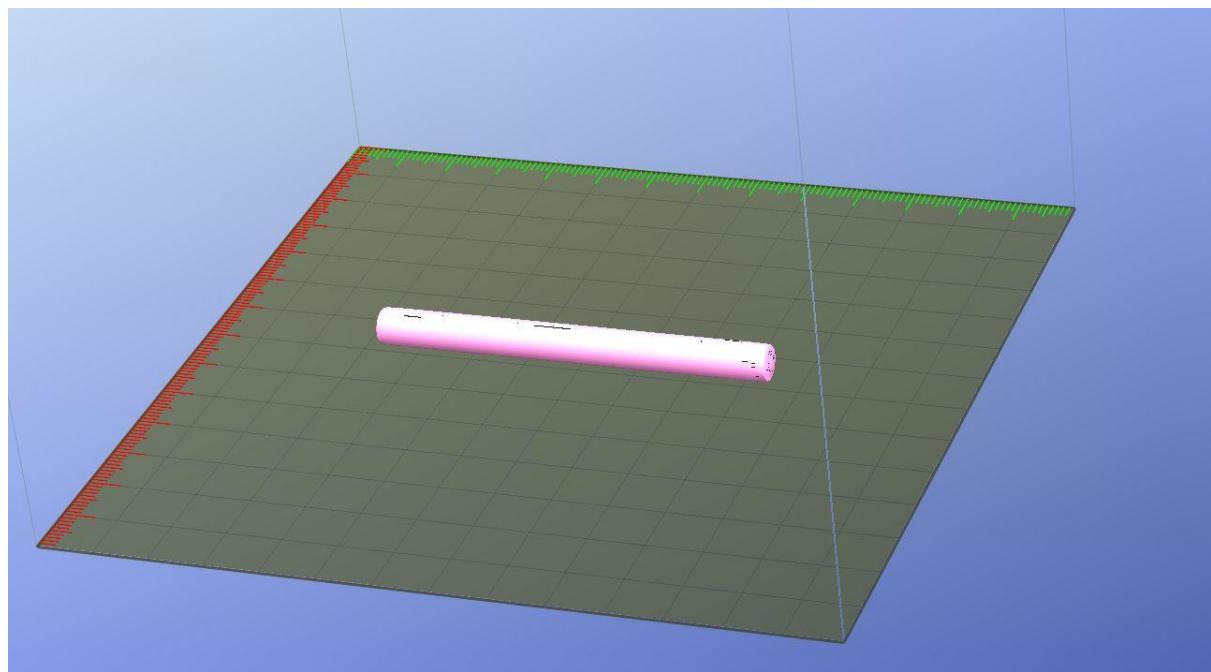
10 x Shield_Attachment_Type_2.stl (Optional Extra)



2 x Wrist_Lock_Link_Pin.stl



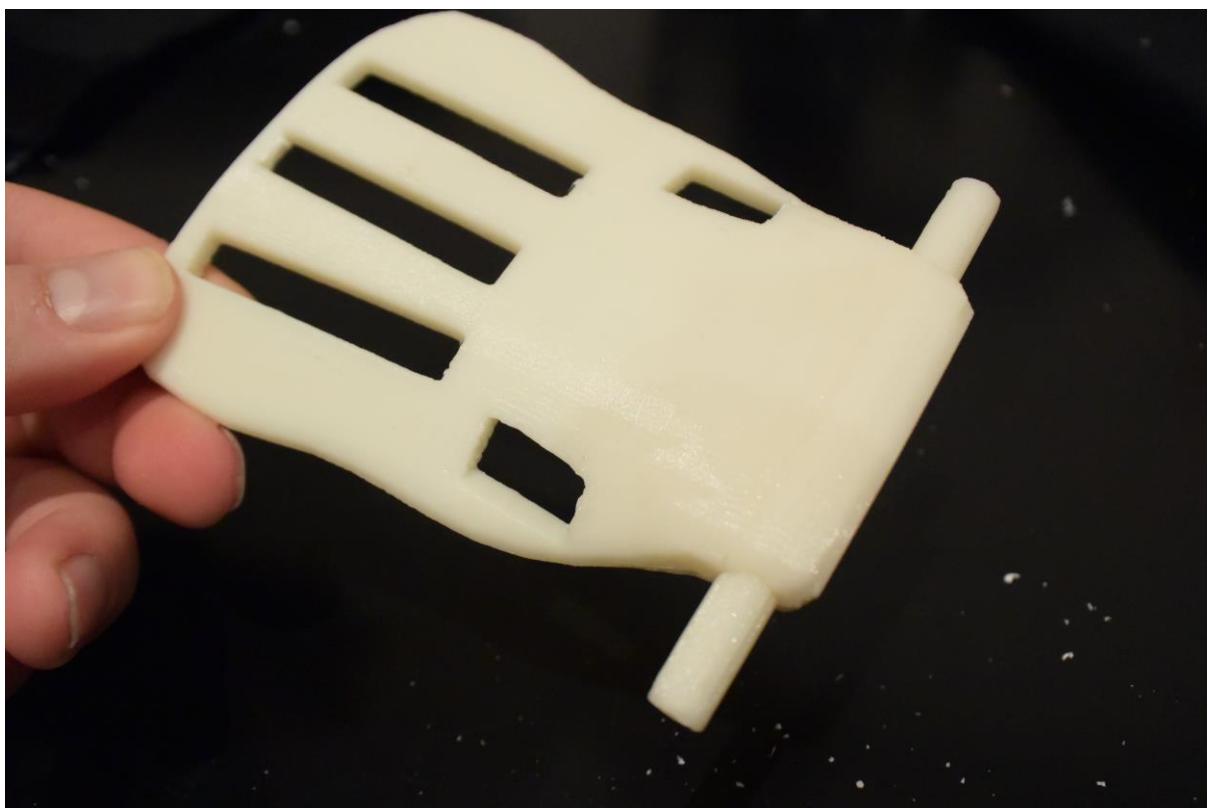
2 x Wrist_Lock.stl

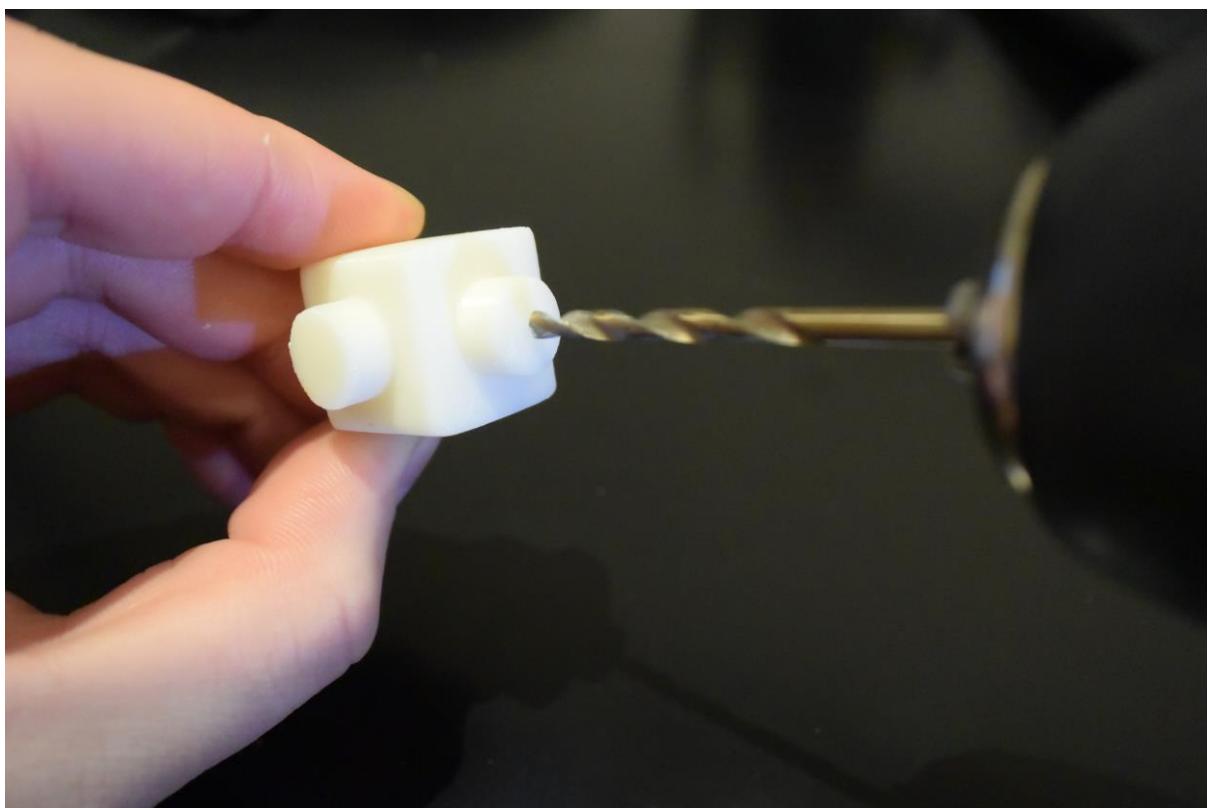
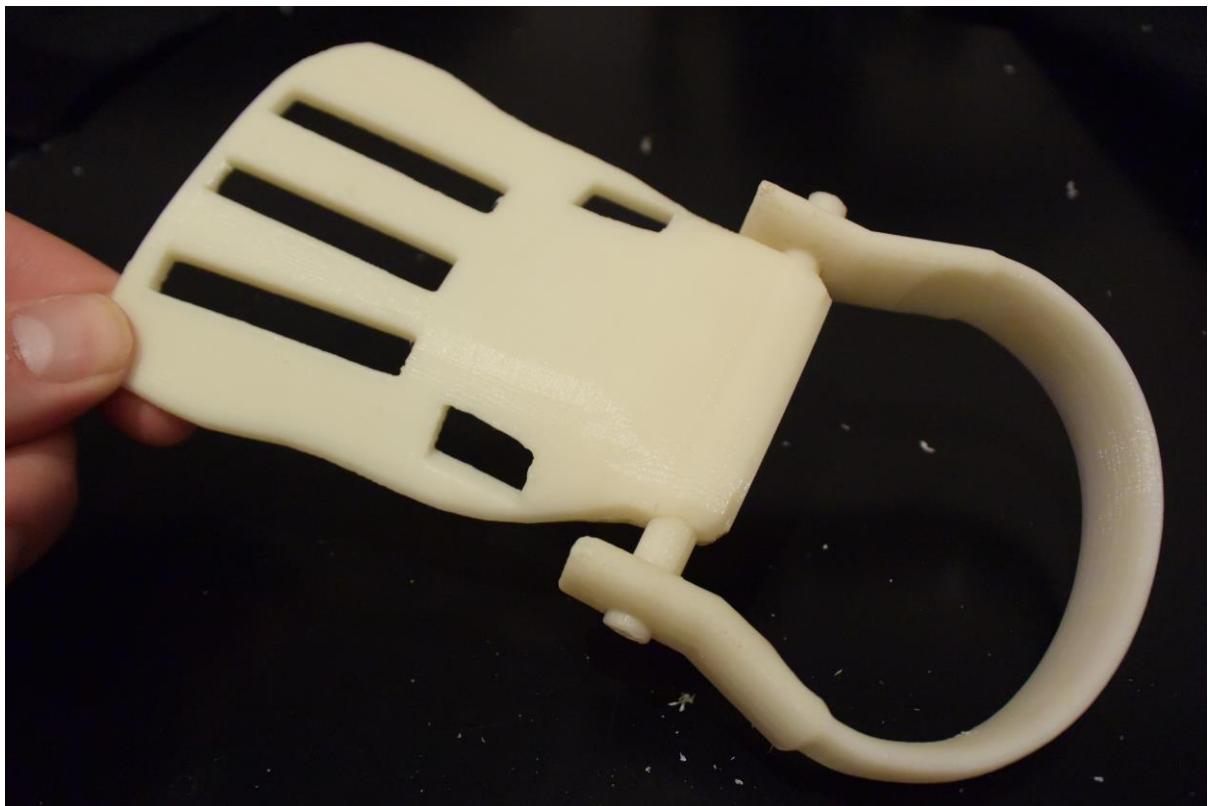


How Do I Assemble The Exoskeleton Hand?

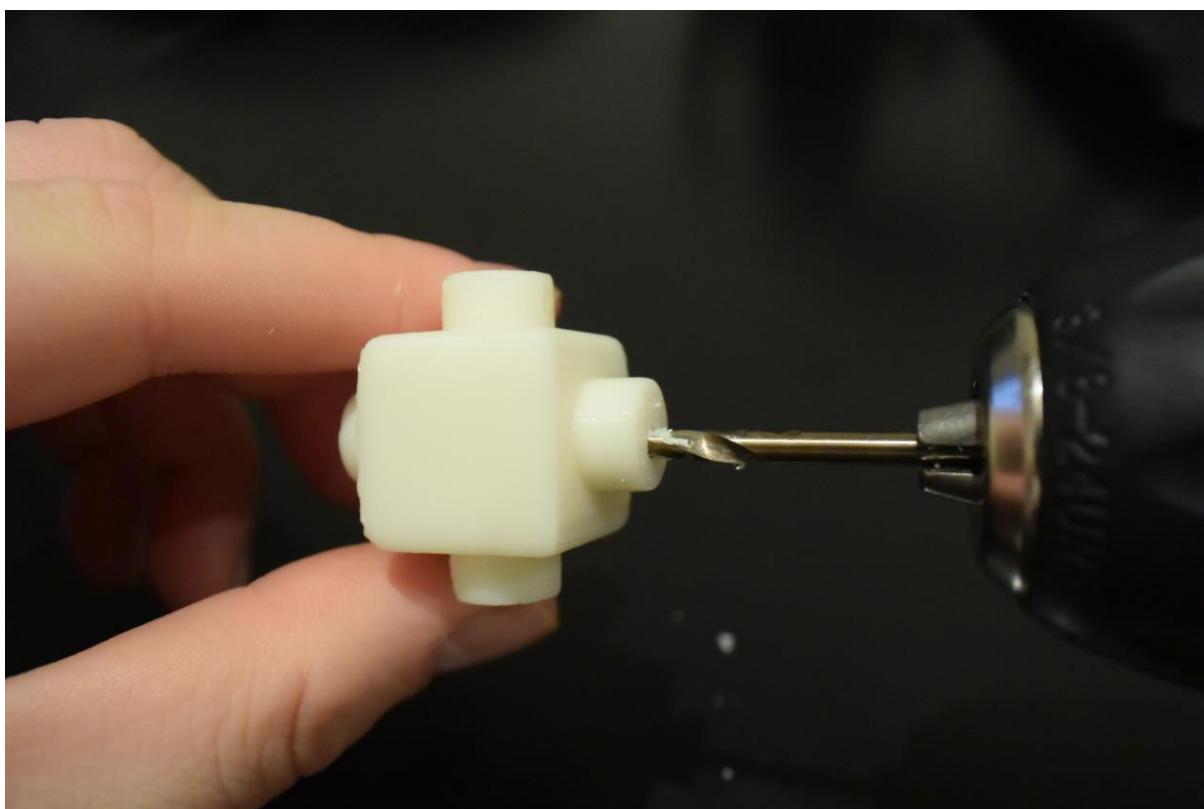
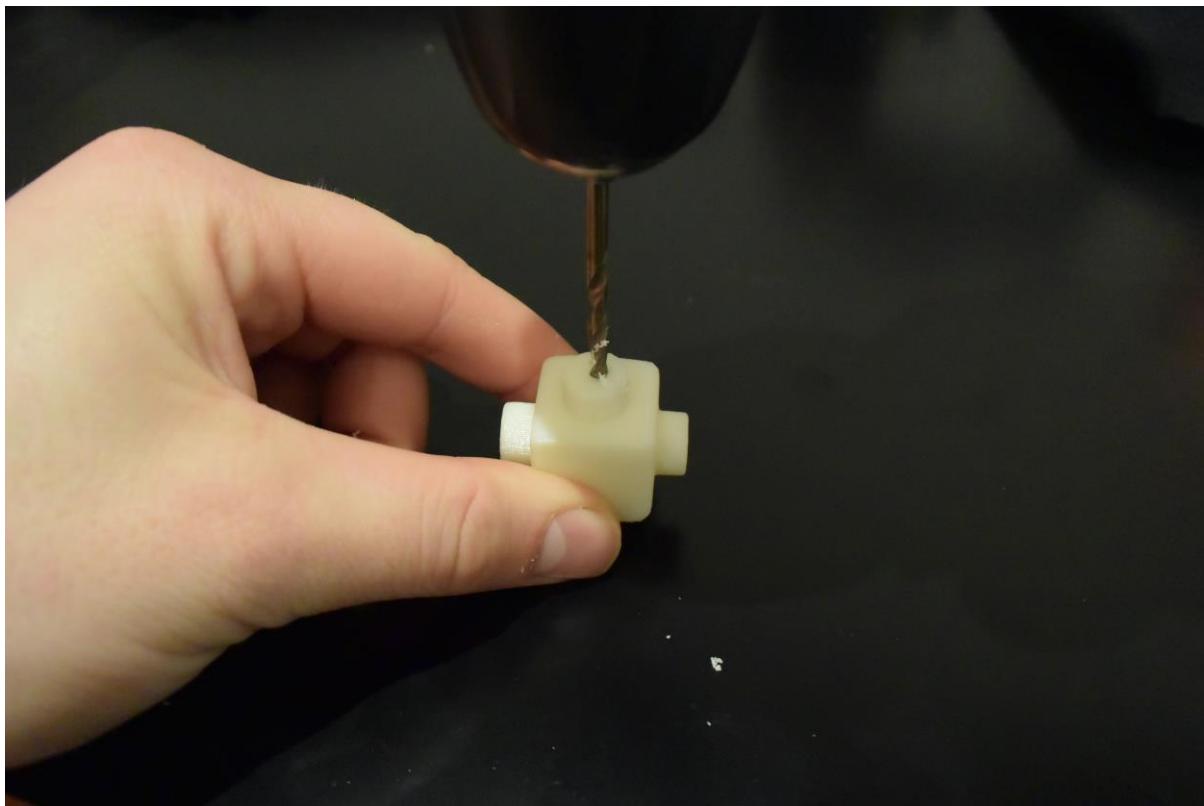
Follow the step by step pictures once you have printed out all of your parts.

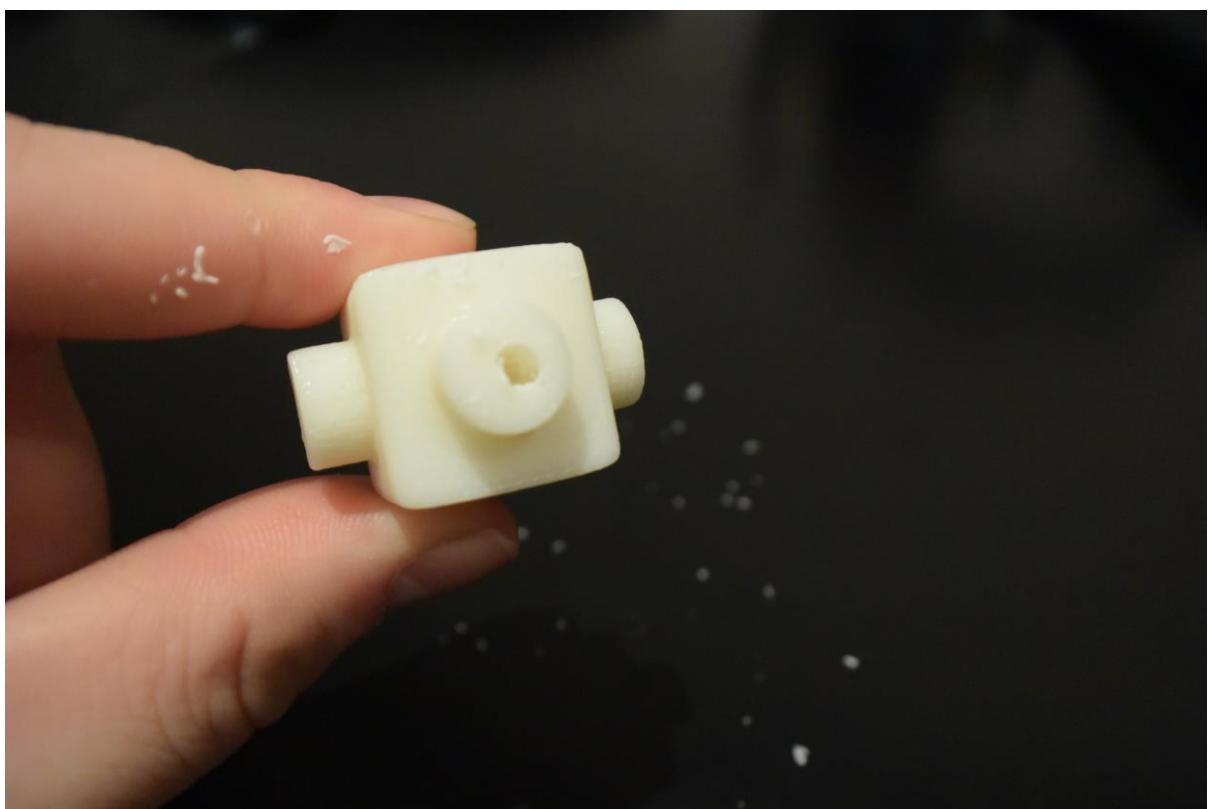
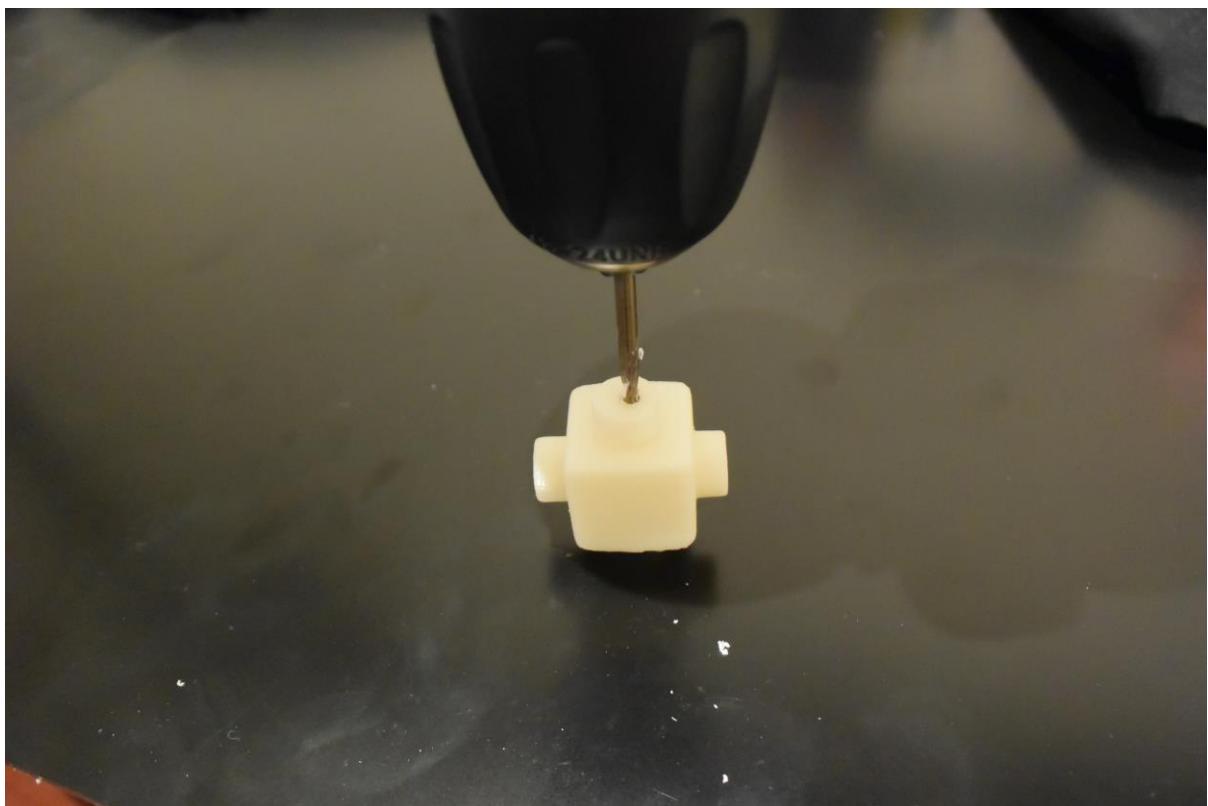




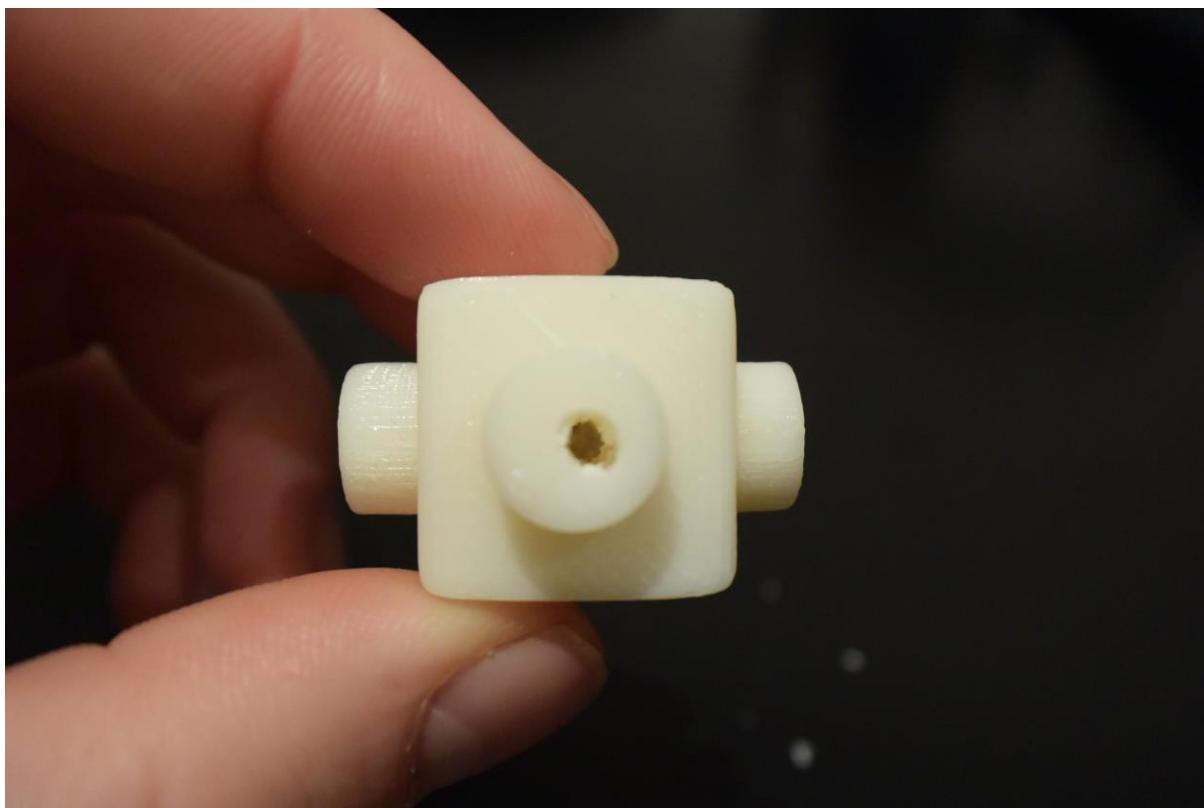


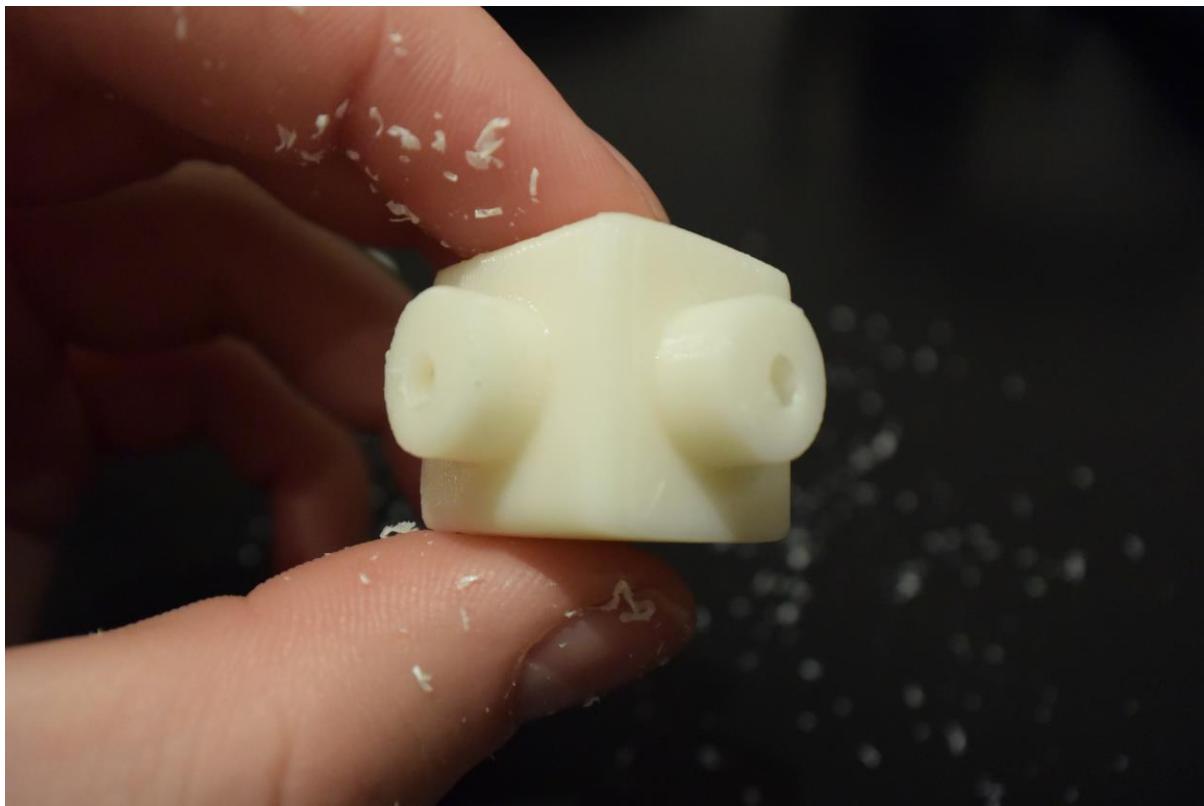
Drilling holes into the Cube_Universal_Joint.stl will allow you to put in the screws a lot easier. Make sure the holes aren't too big, as your screws won't be held in tightly.



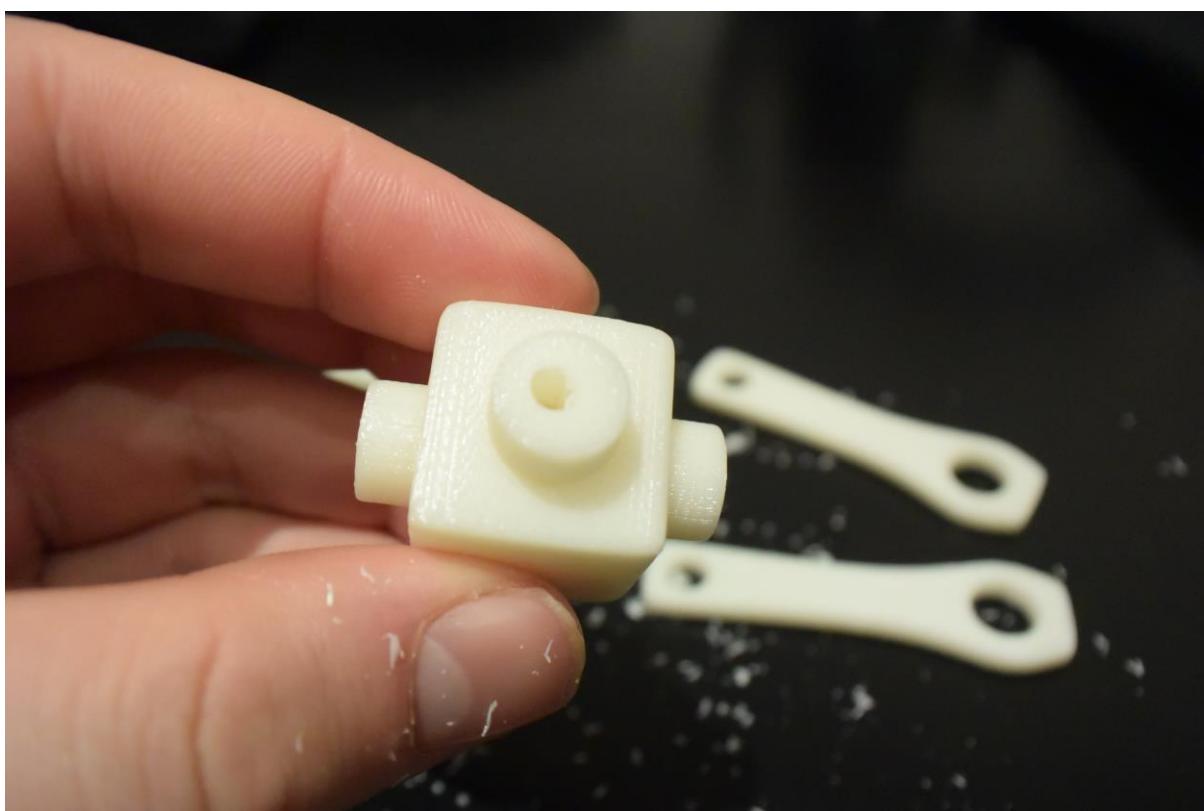


The larger your holes are the larger the screws you will need to hold the hand together.



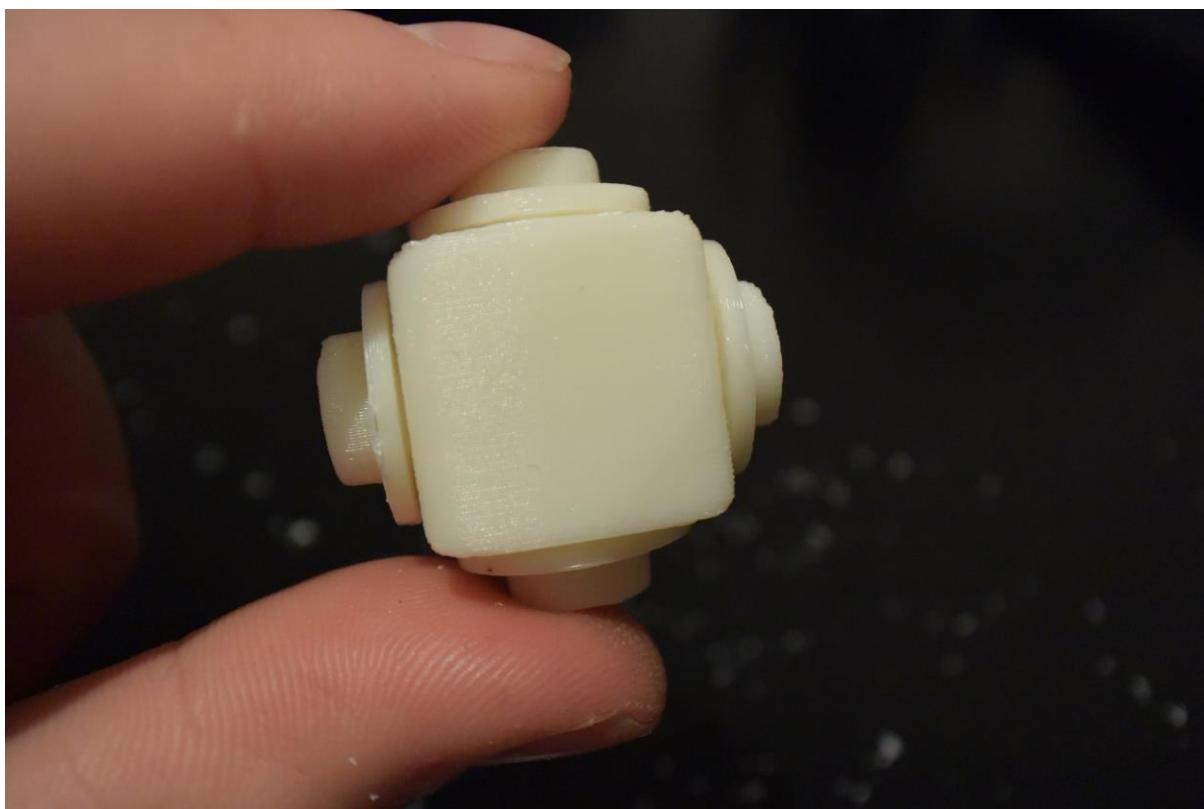
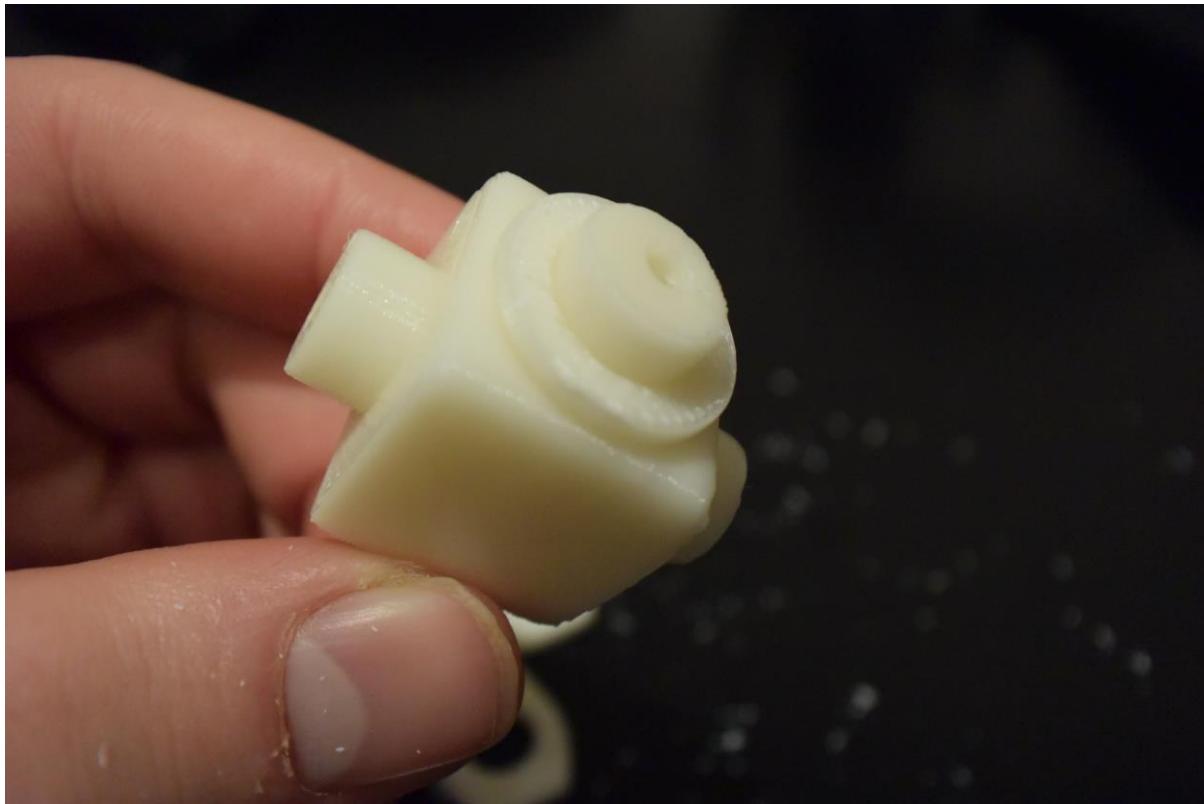


Once the four holes have been drilled you can move onto the next step.

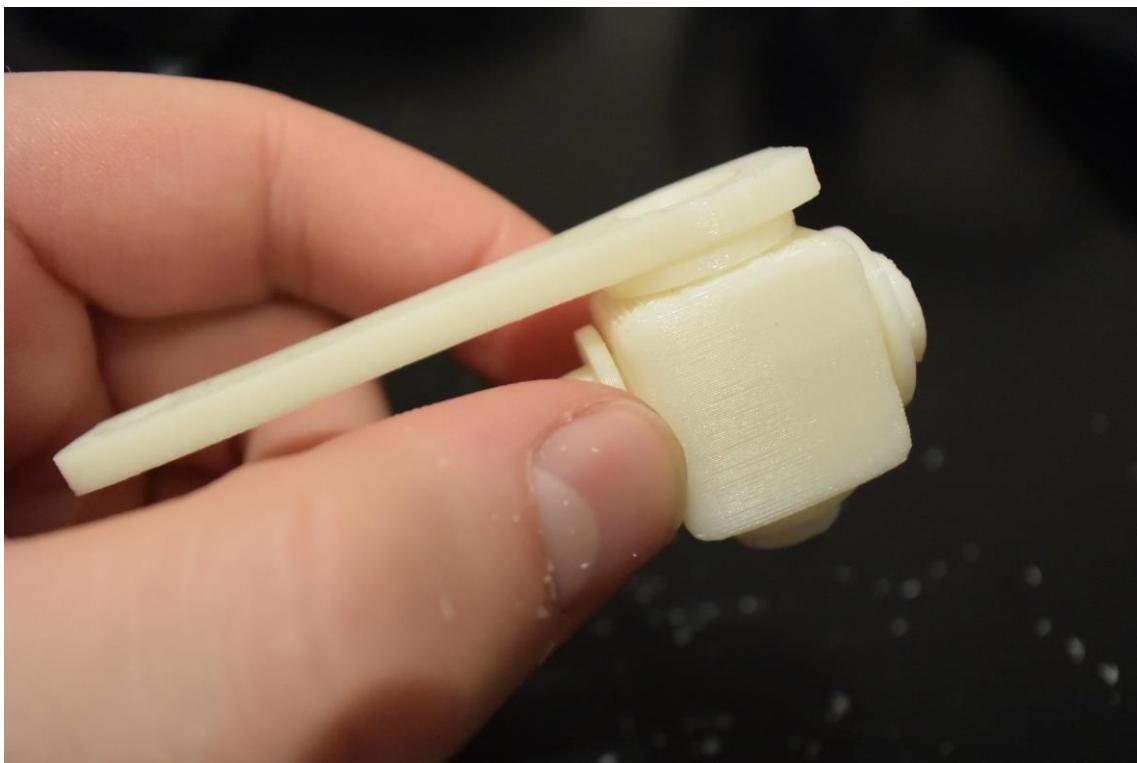


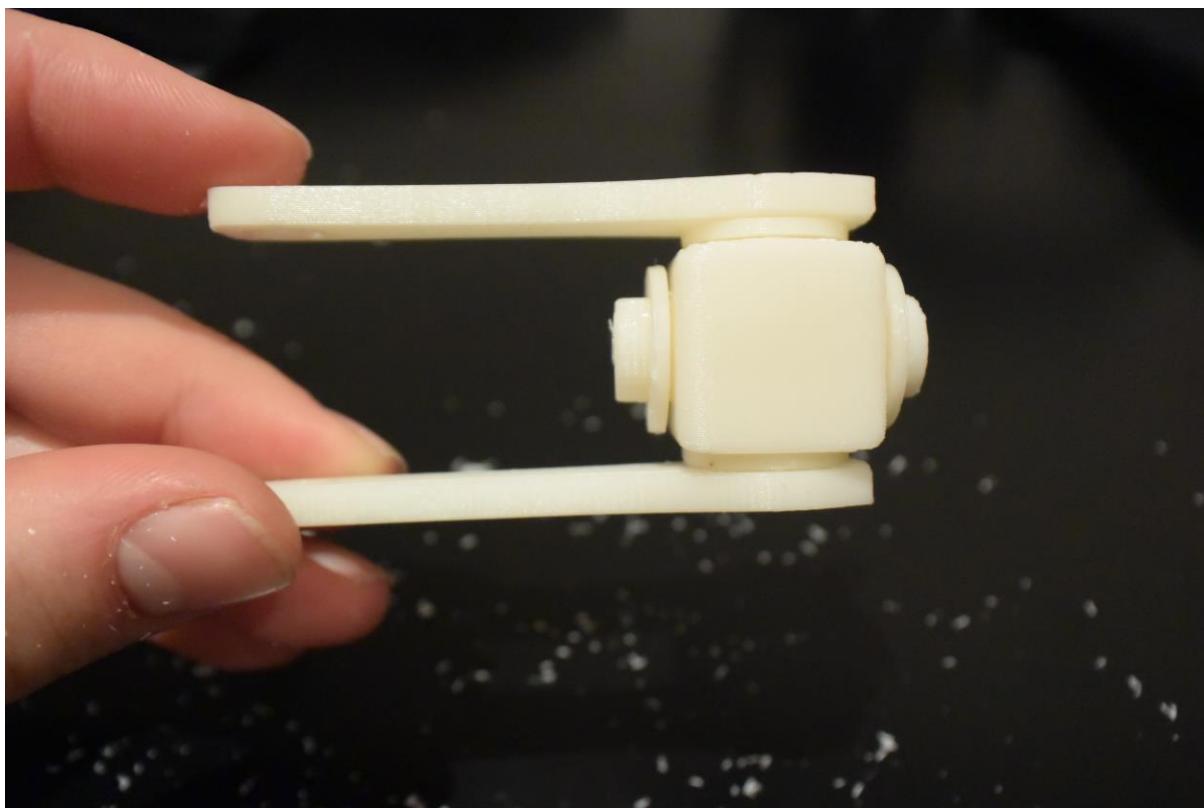
Try and get the holes in the centre of the cylinders. I didn't do a great job on this hole but it doesn't really matter that much.

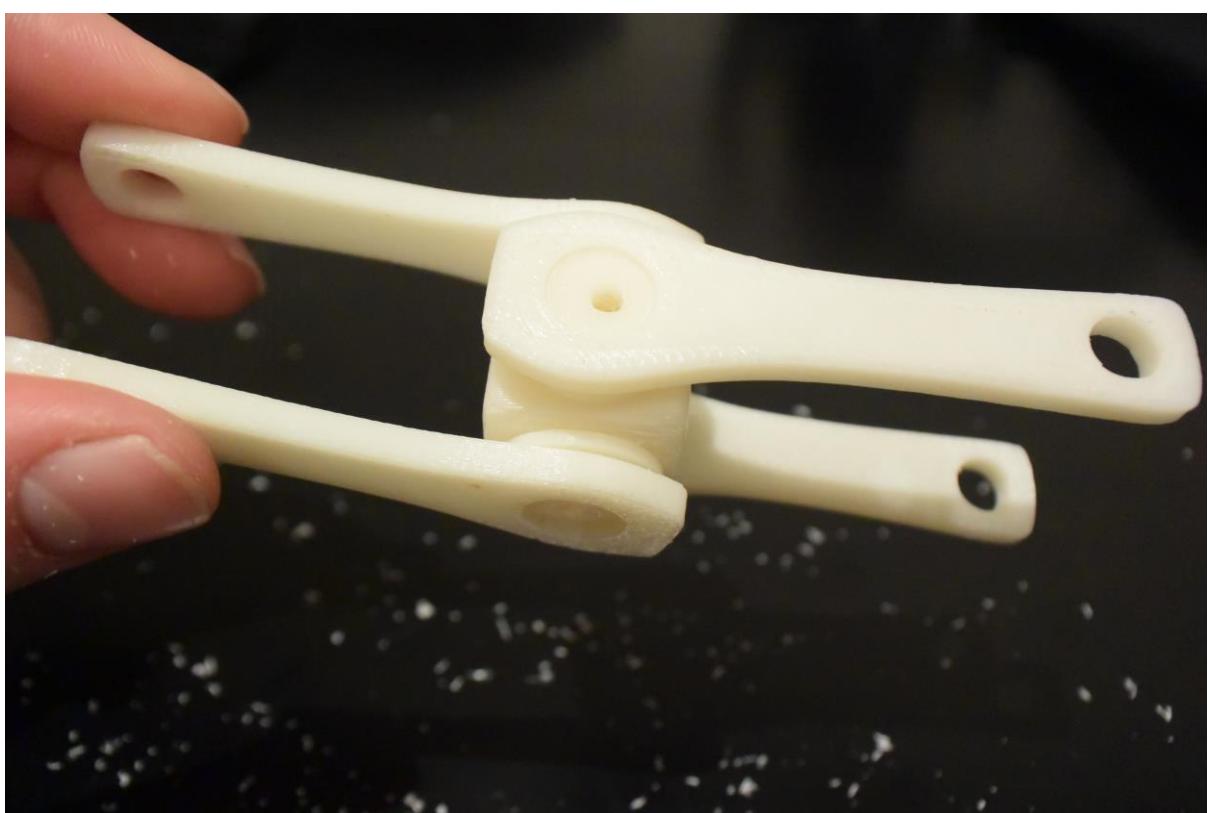
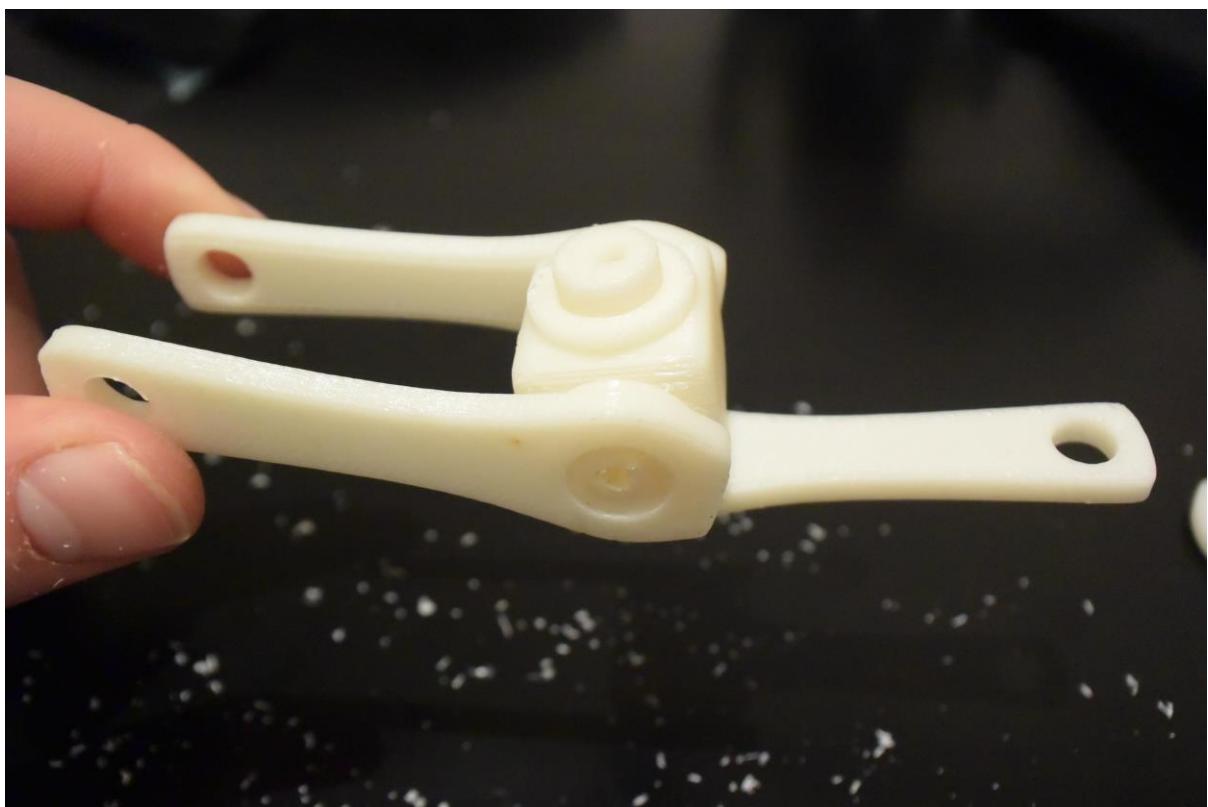
The next step is to add your **Cube_Joint_Washer.stl** onto each cylinder.

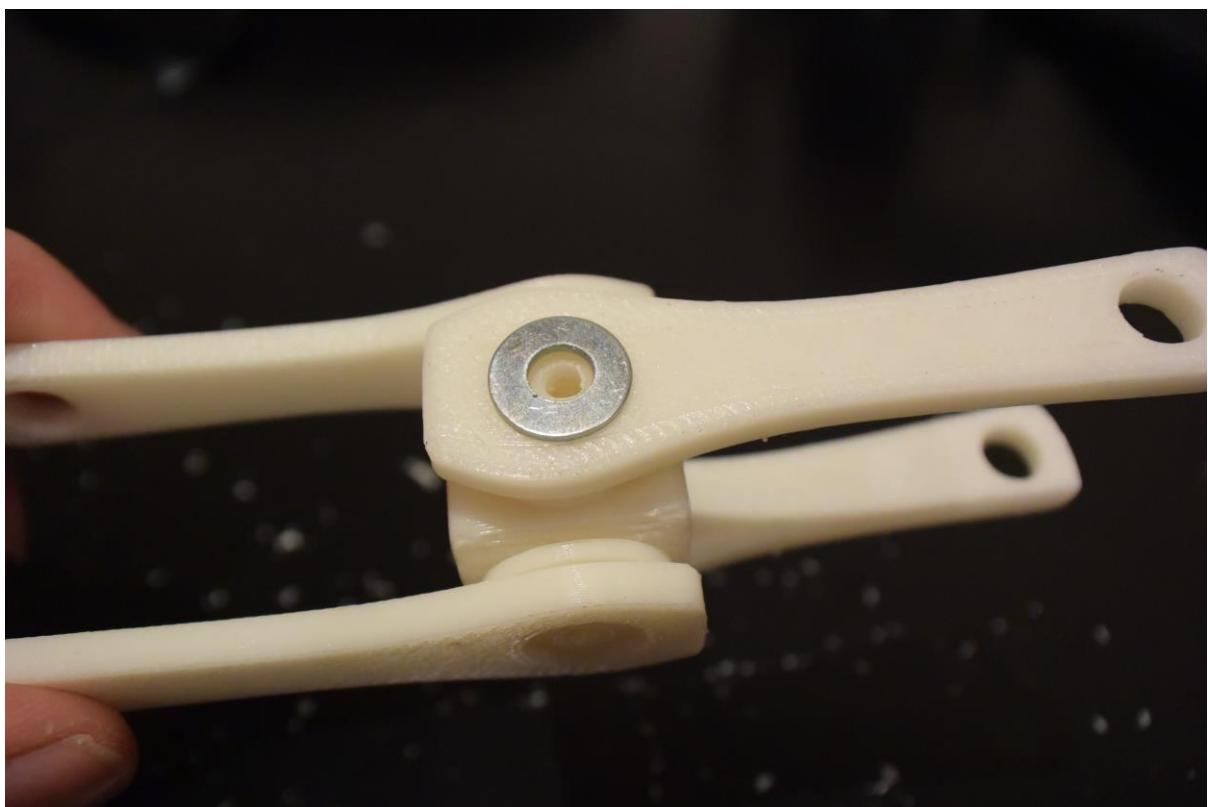


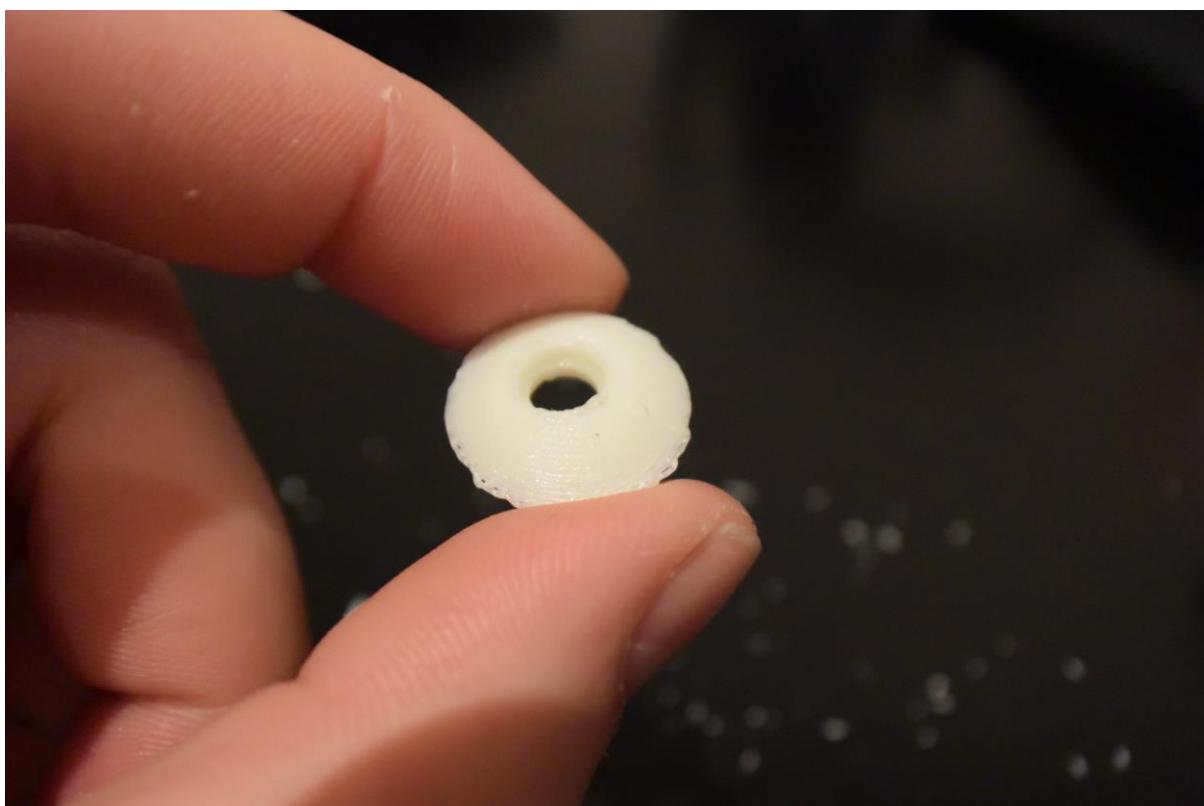
Now you can put the Panel_Joint.stl on top of the washer. If you have printed with the correct setting you will have very little resistance between the Panel_Joint.stl and the Cube_Universal_Joint.stl. If there is a lot of resistance then you might have to drill or sand the large Panel_Joint.stl hole.



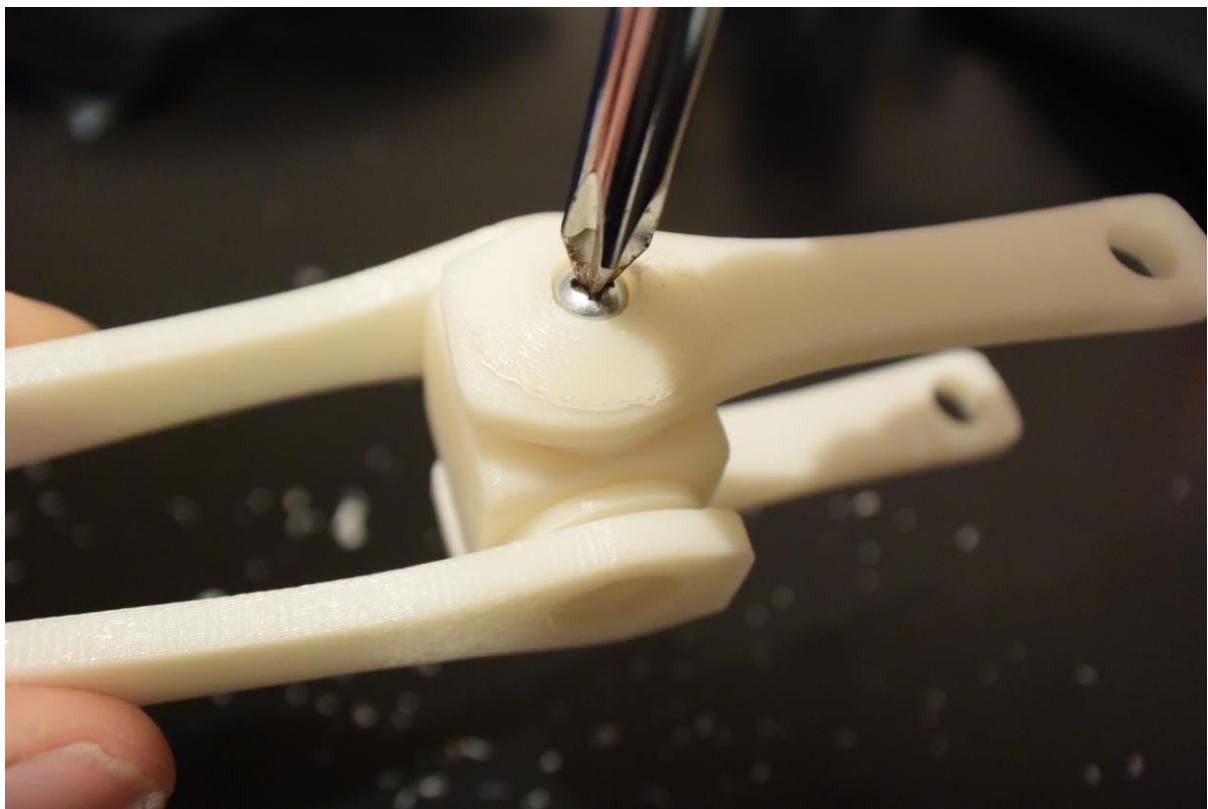
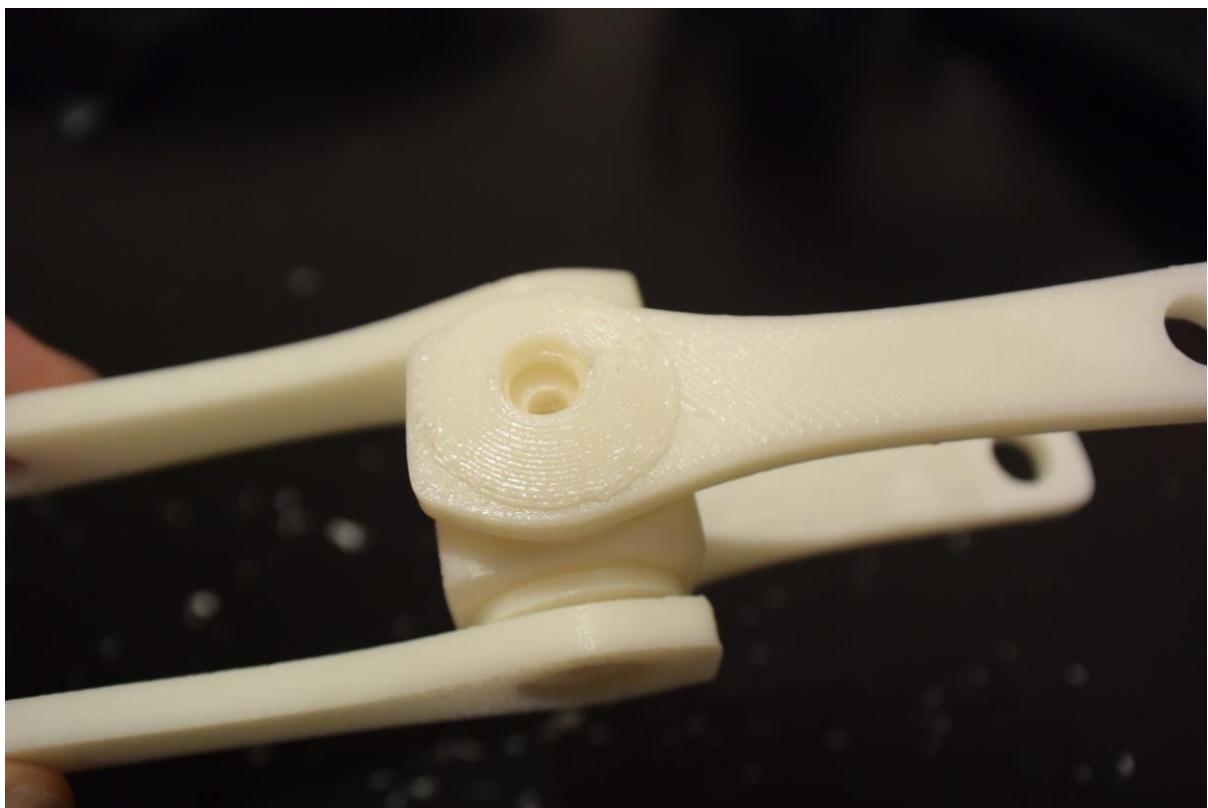


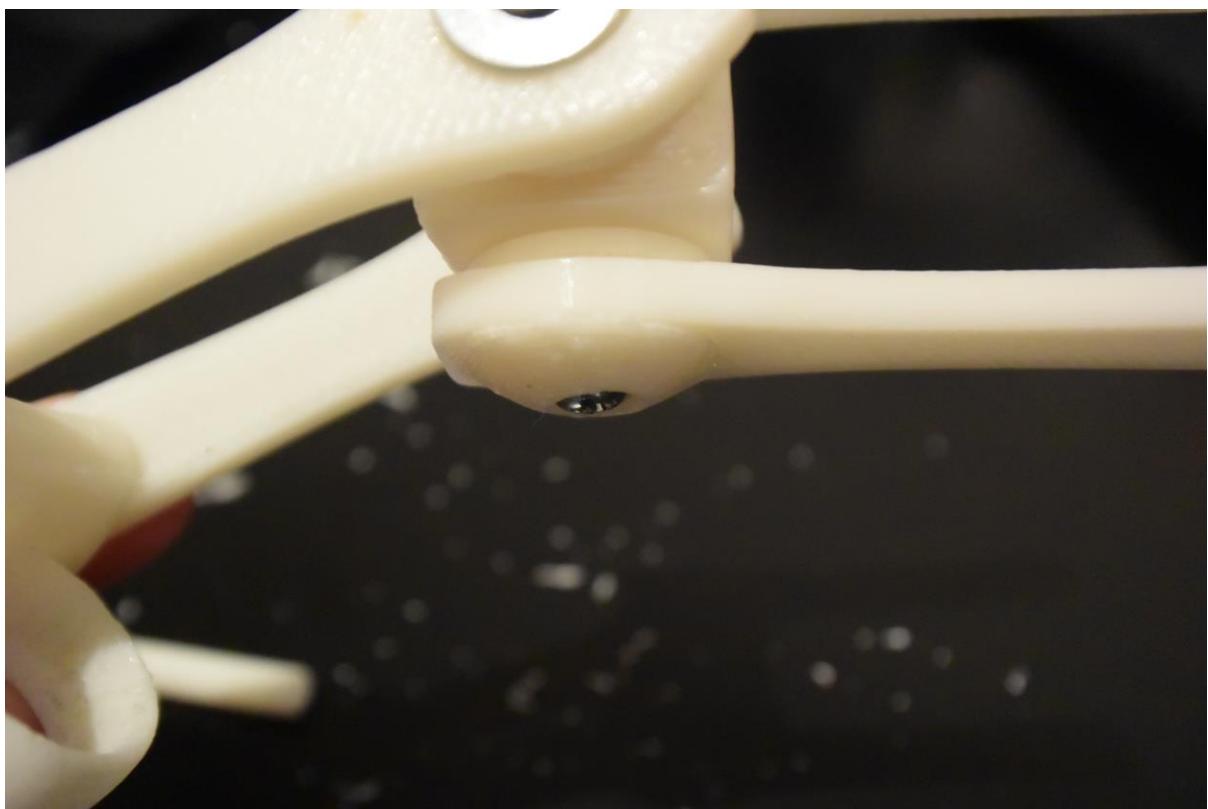
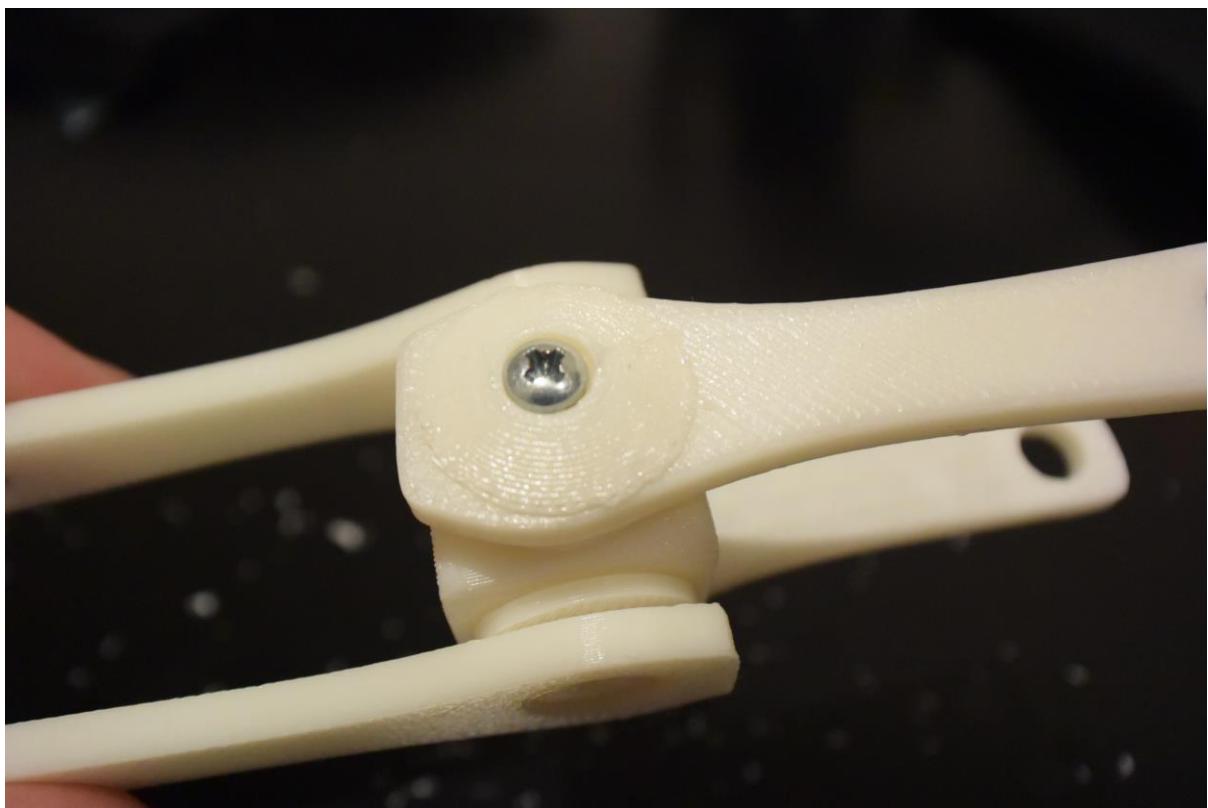


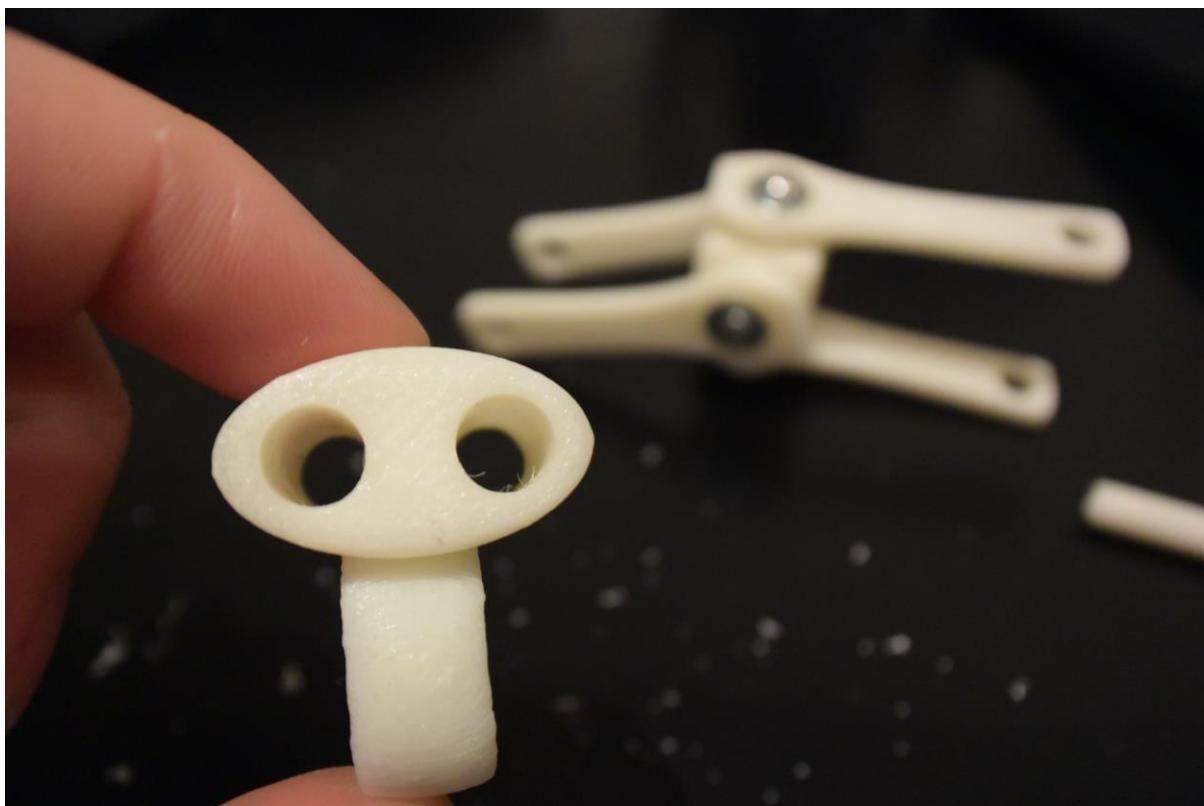




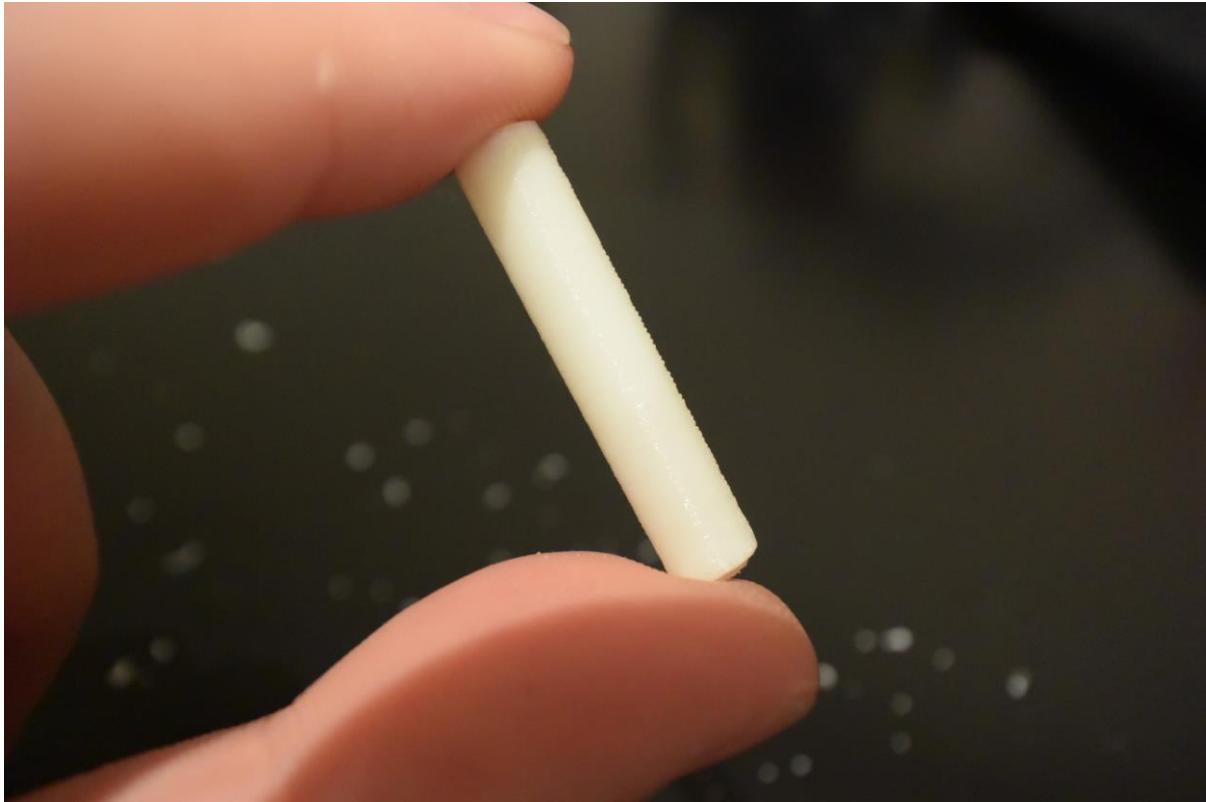
Above is the Knuckles_Screw_Cover.stl which will stop the screw rubbing on the top of your finger.







Ring&Panel_Joint_Link_Pin.stl

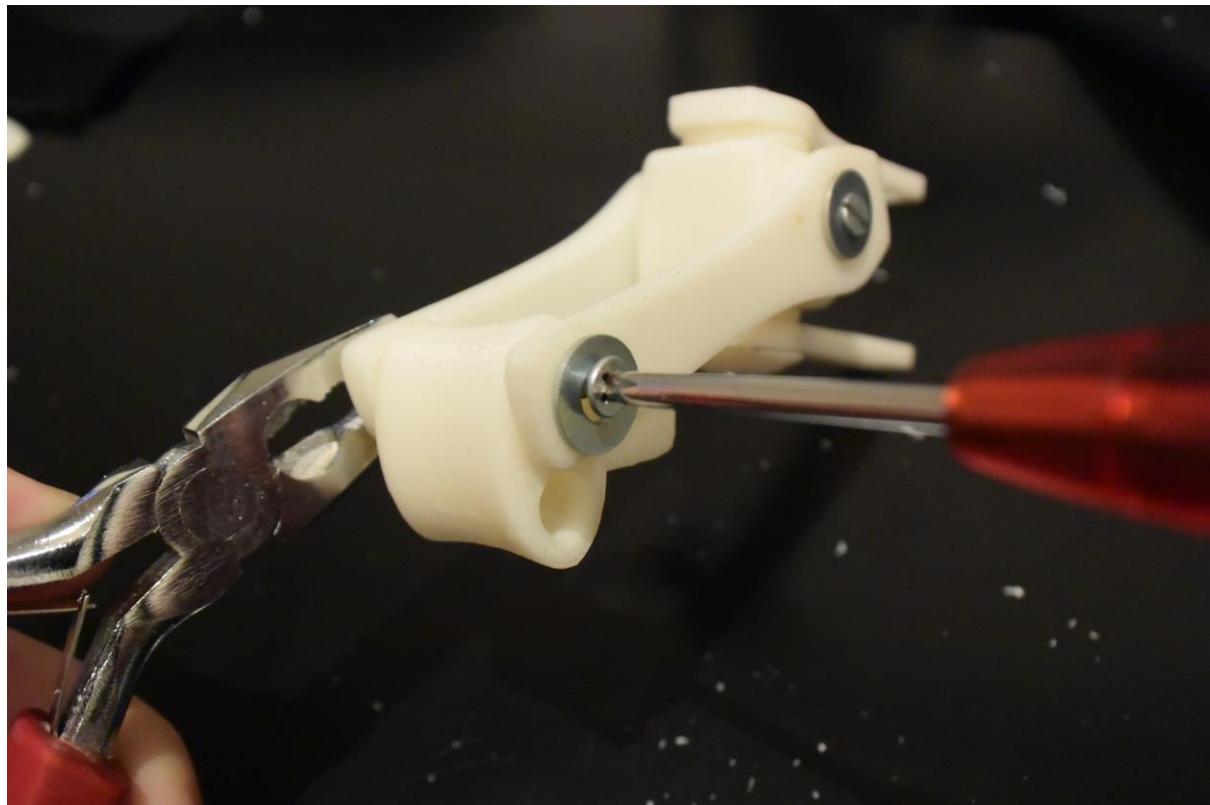


The **Ring&Panel_Joint_Link_Pin.stl** below needs small drill holes in both ends to allow you to put the screws in.

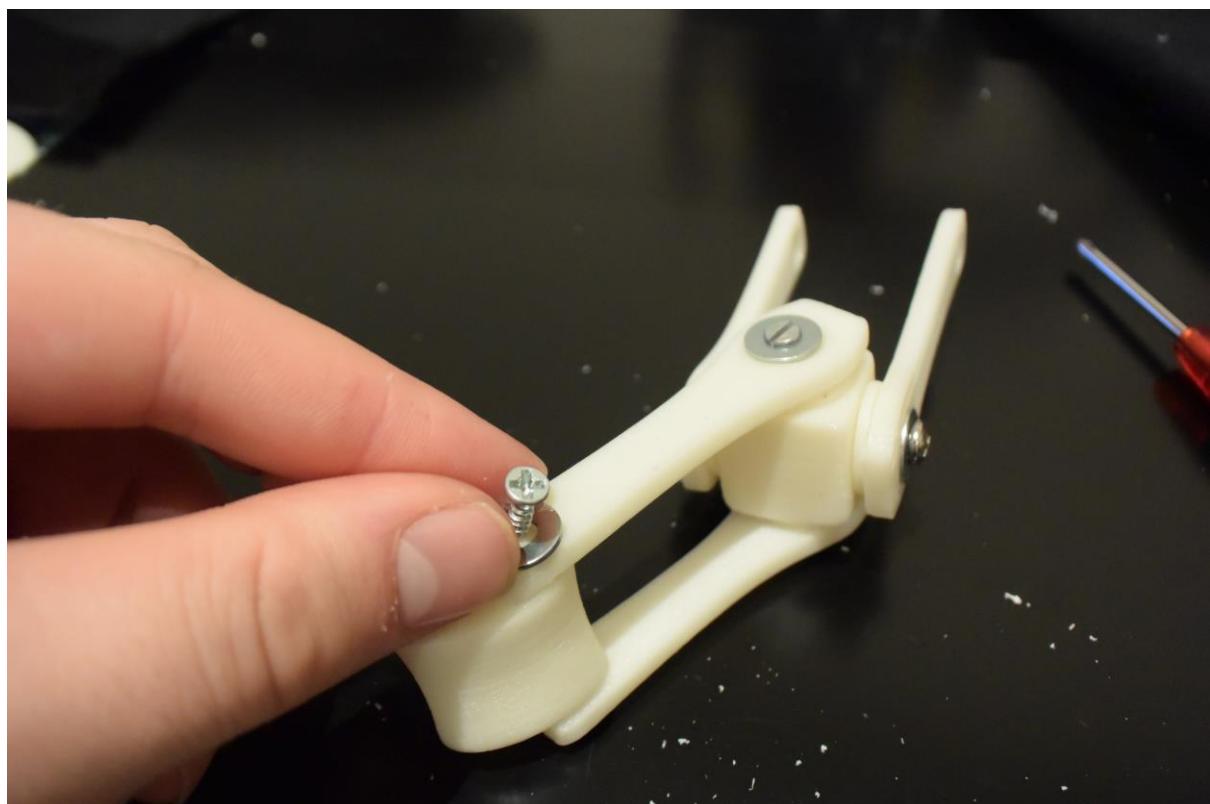




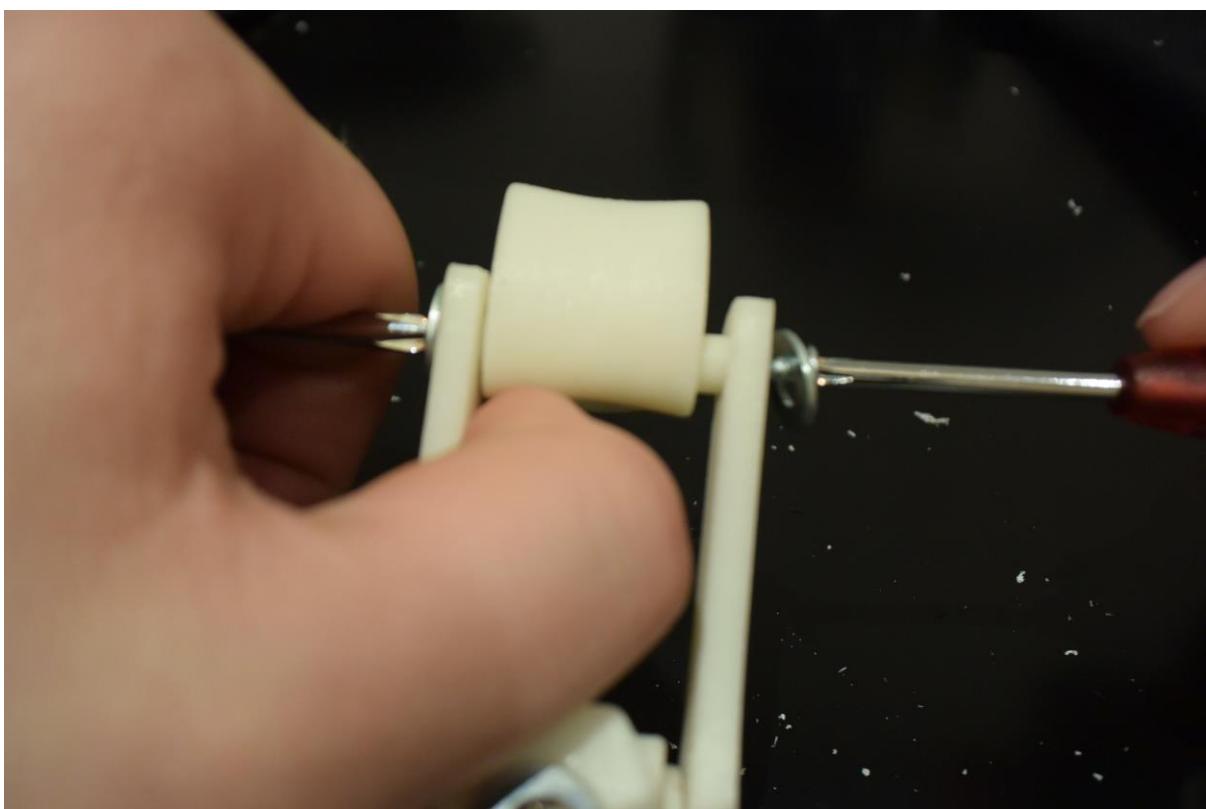
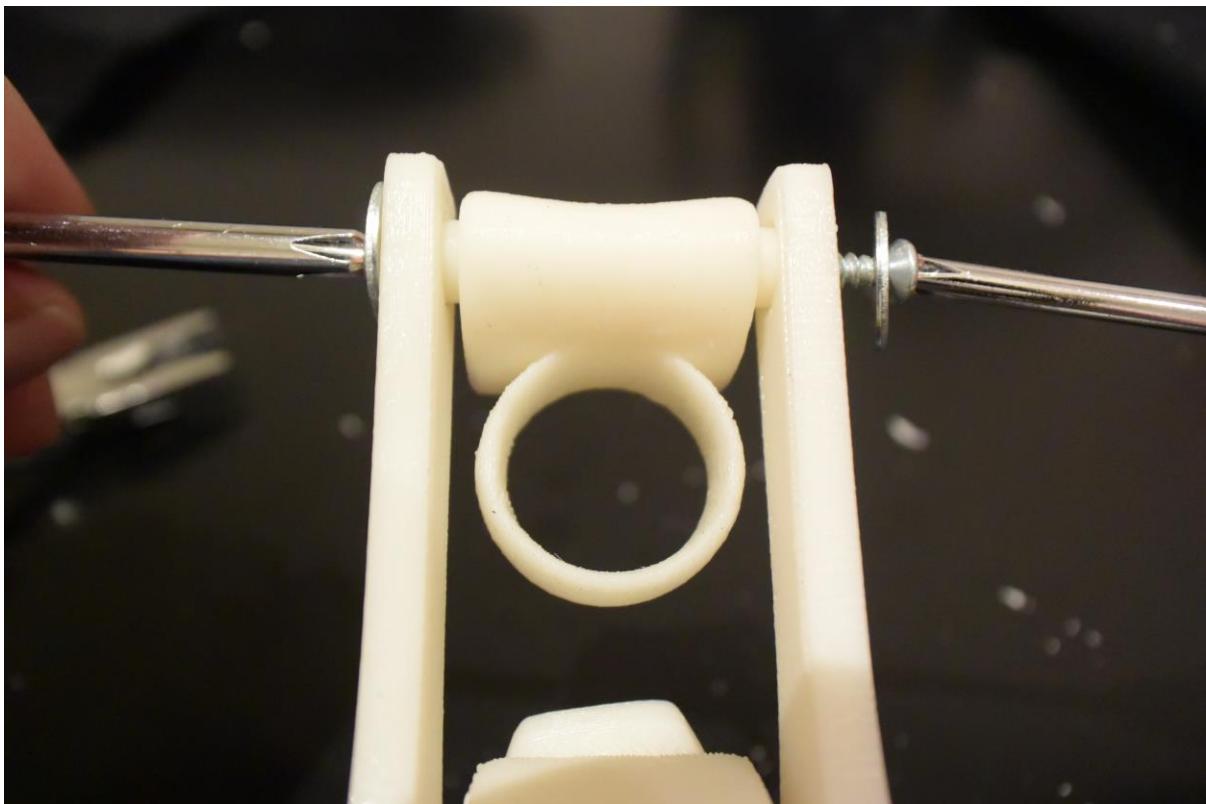
You must hold one end of the Ring&Panel_Joint_Link_Pin.stl with pliers so that the part doesn't spin around without the screw going in.



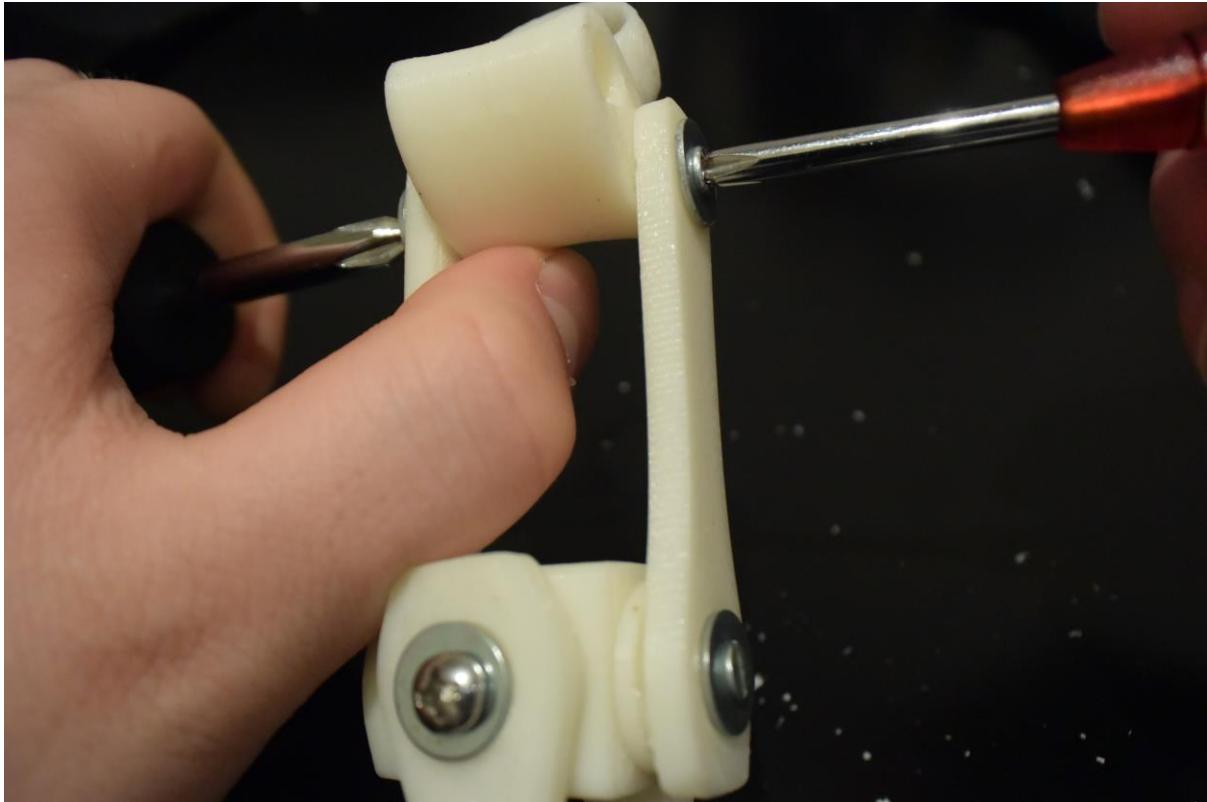
Once you have done one side you will need to do the other.



The below step is probably the hardest part of the hole assembly process. In order to screw the other screw into the pin you will need to hold another screw driver in the first screw hole and turn the second one.



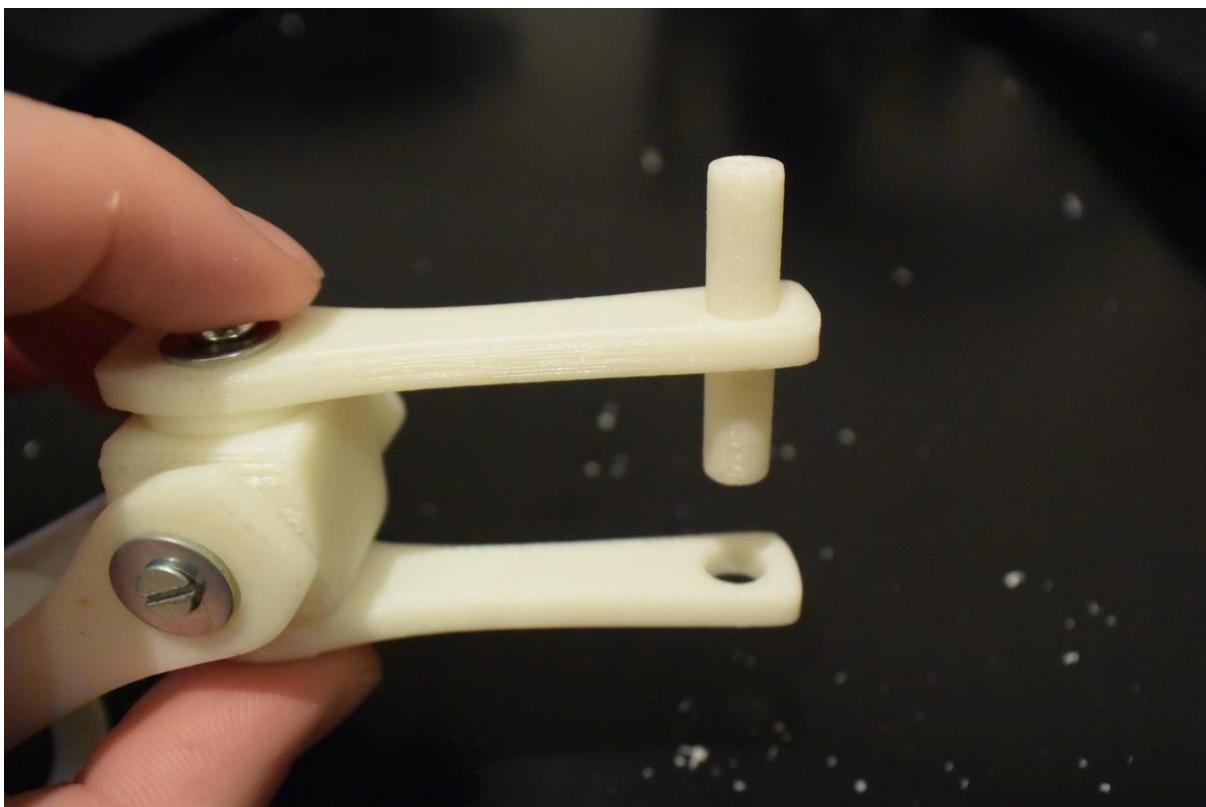
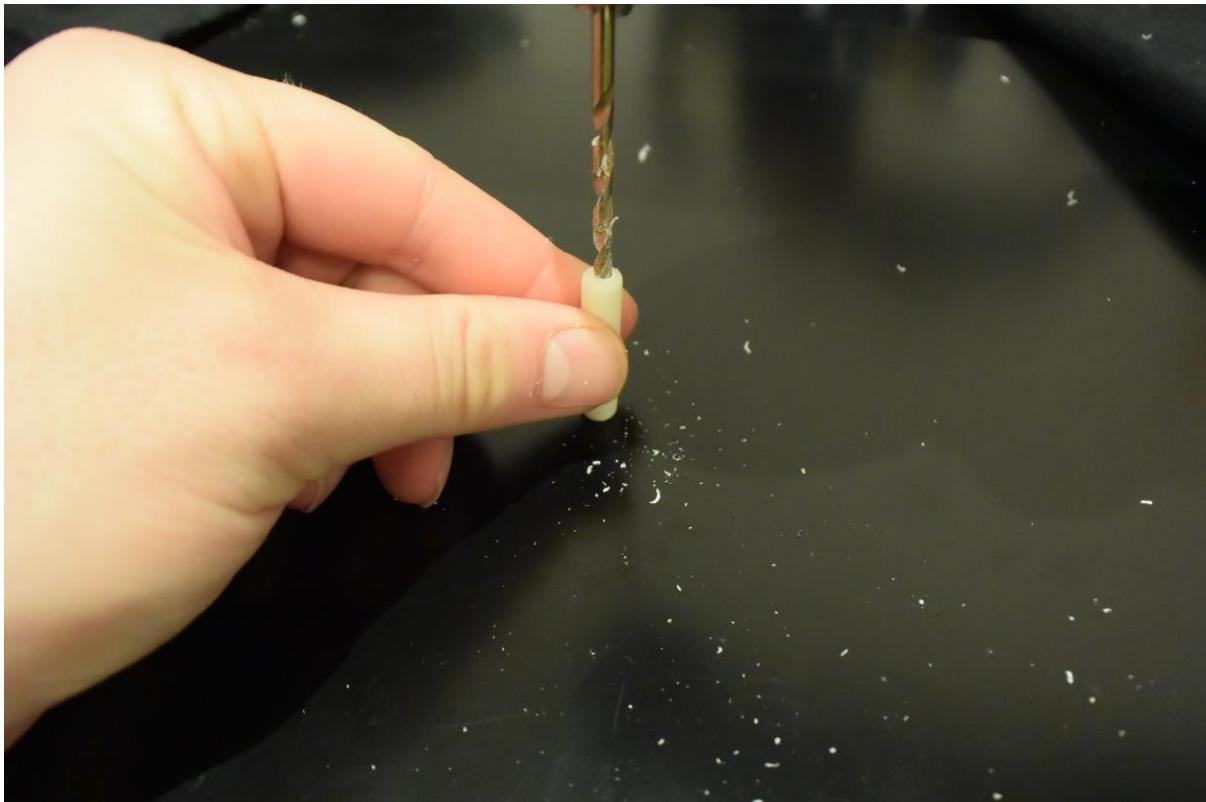
Eventually both sides will be tight but you should still be able to move the Ring_Link_Index_Finger.stl with little resistance.

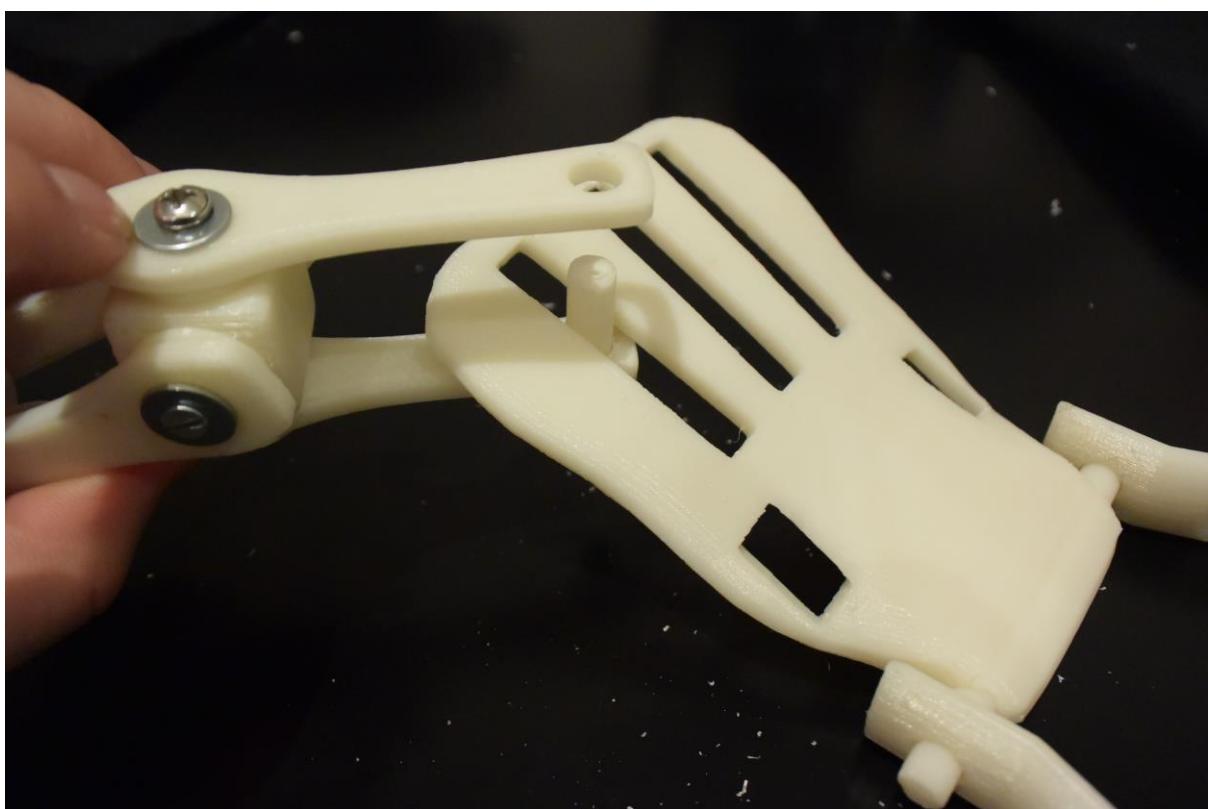
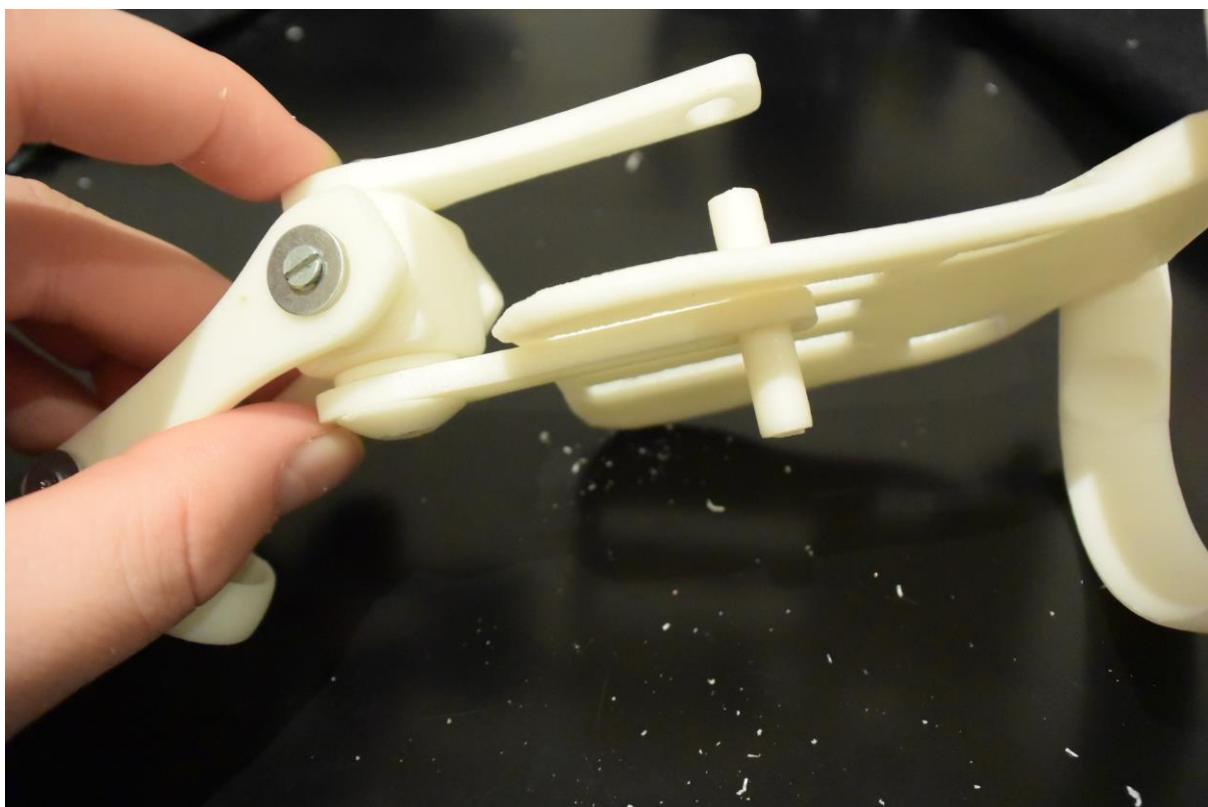


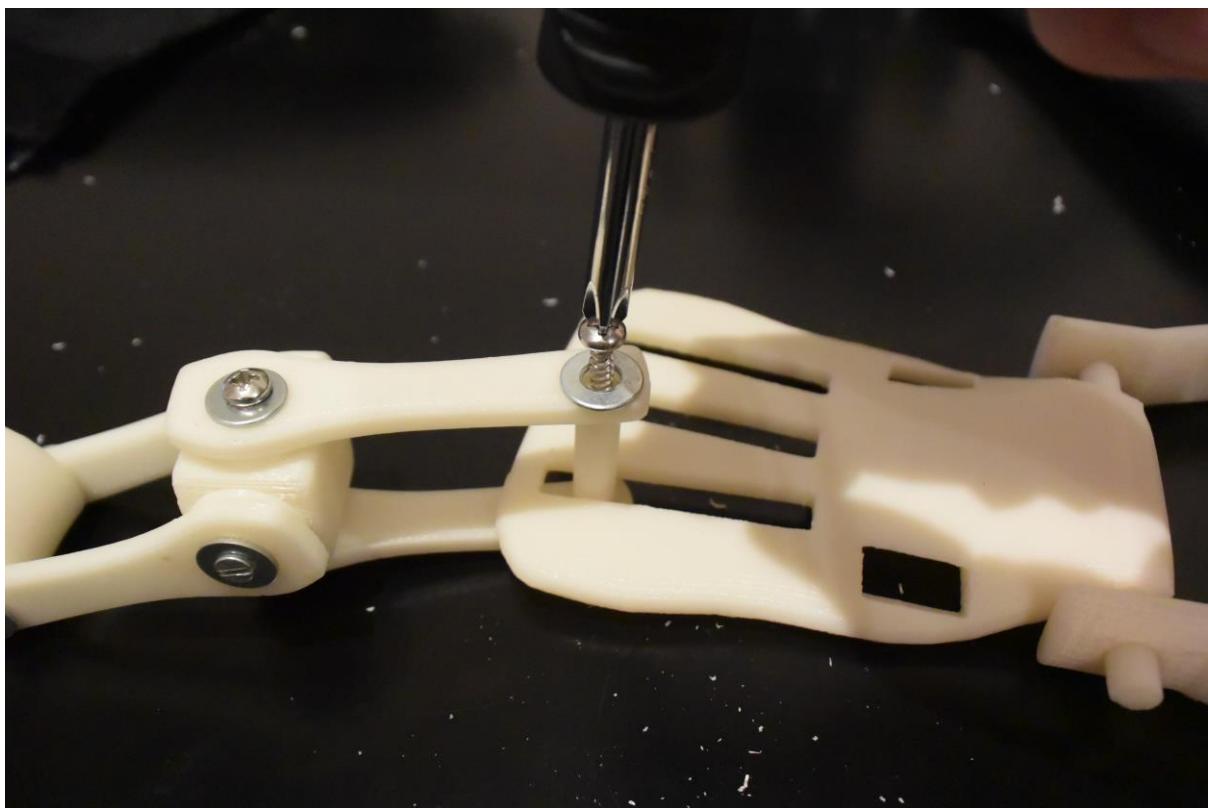
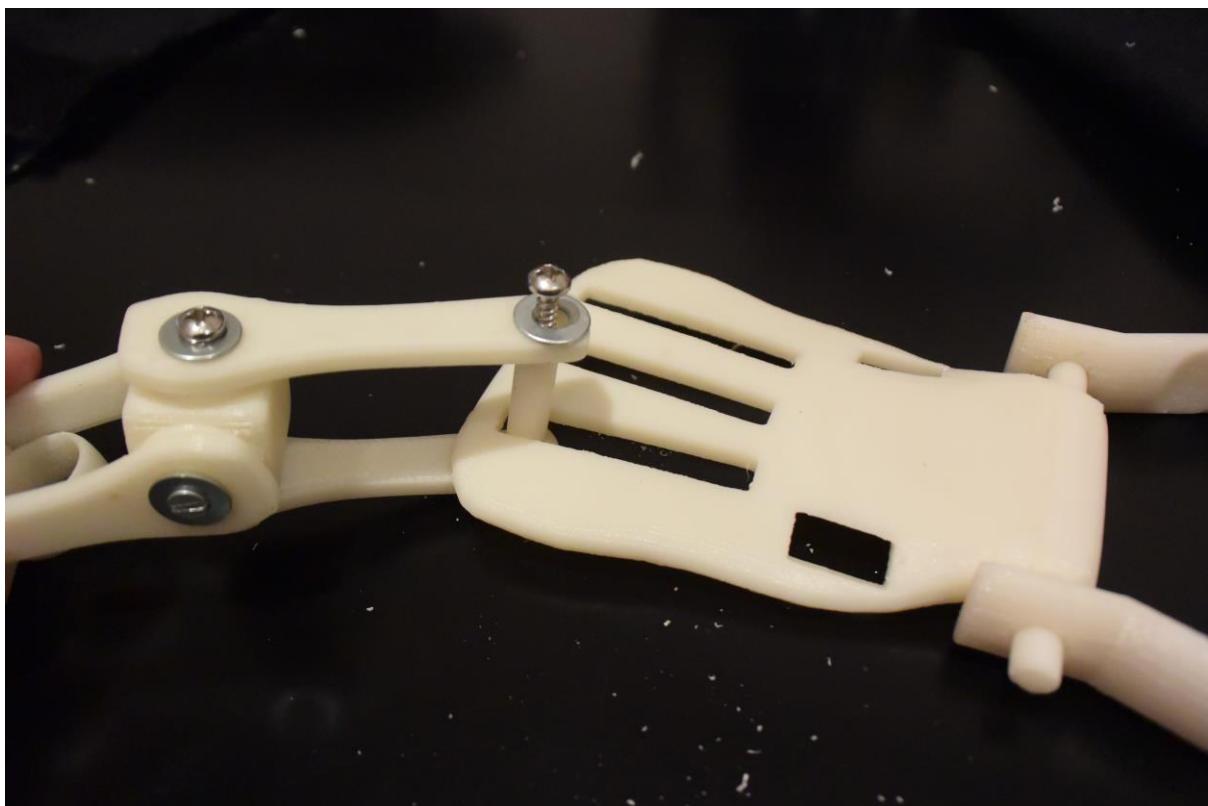


Above is another Ring&Panel_Joint_Link_Pin.stl which we will use to hold the finger to the Back_Hand_Right(or)Left_Hand.stl

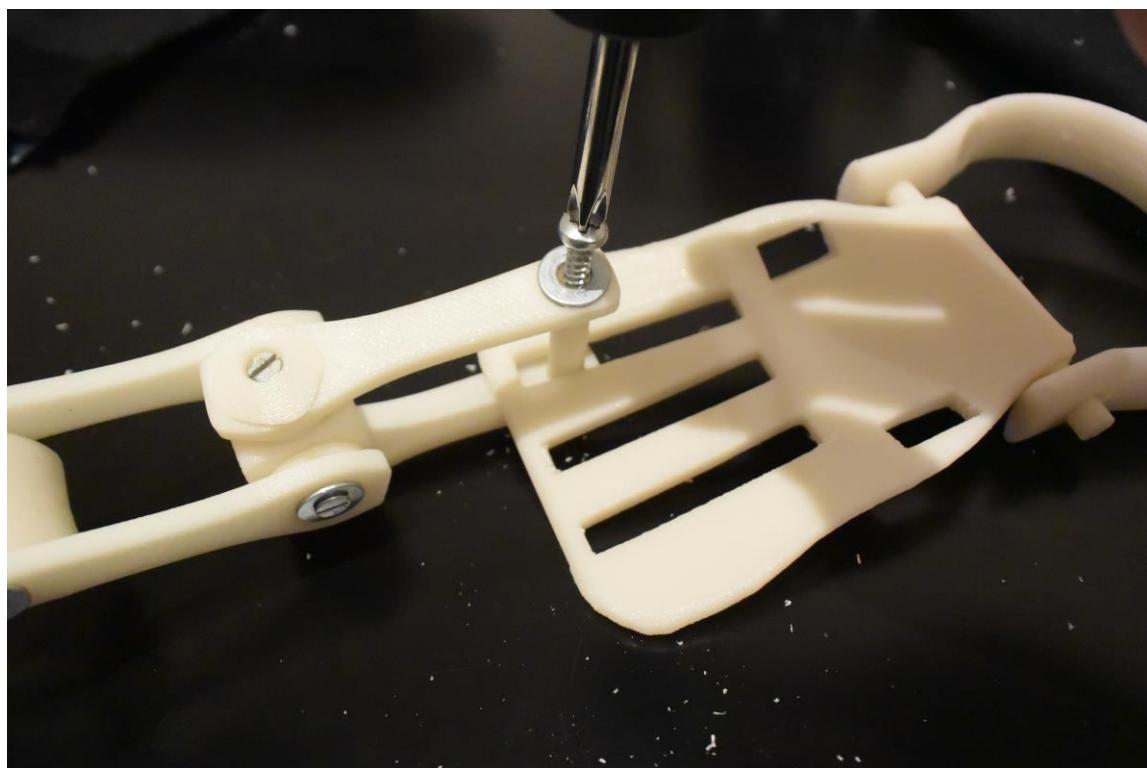
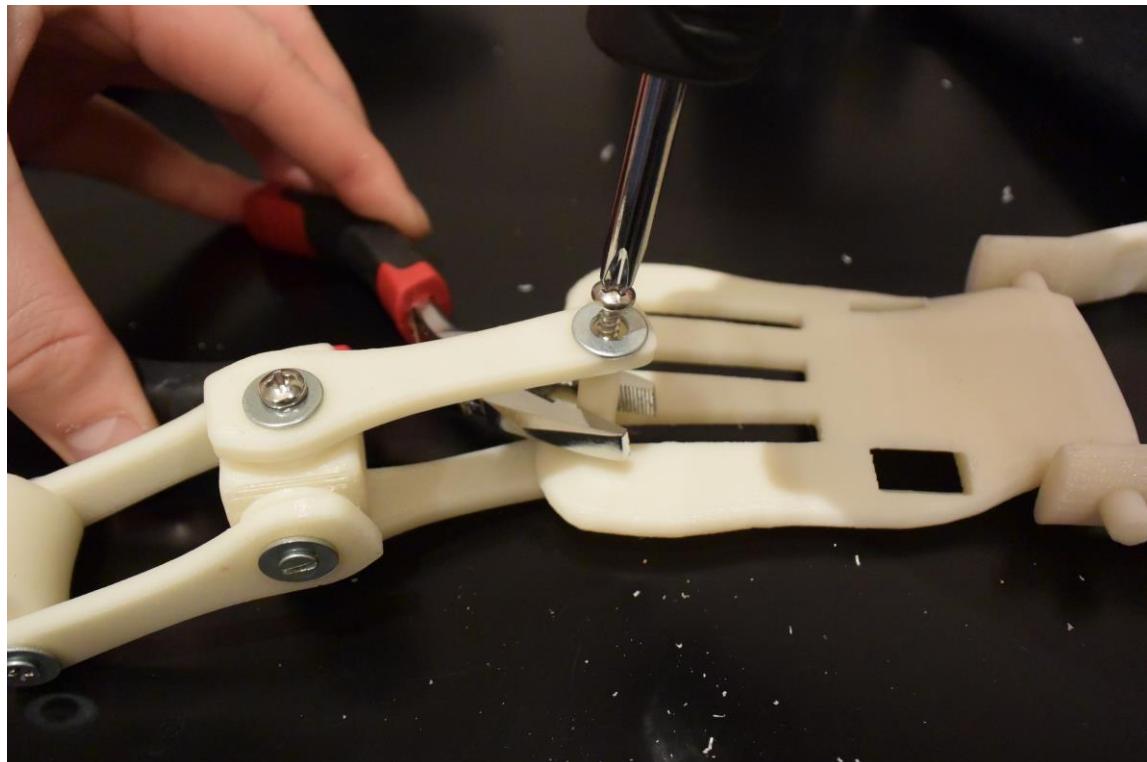
You will need to drill a small hole on each side of the Ring&Panel_Joint_Link_Pin.stl so that you can insert the screws on both sides.





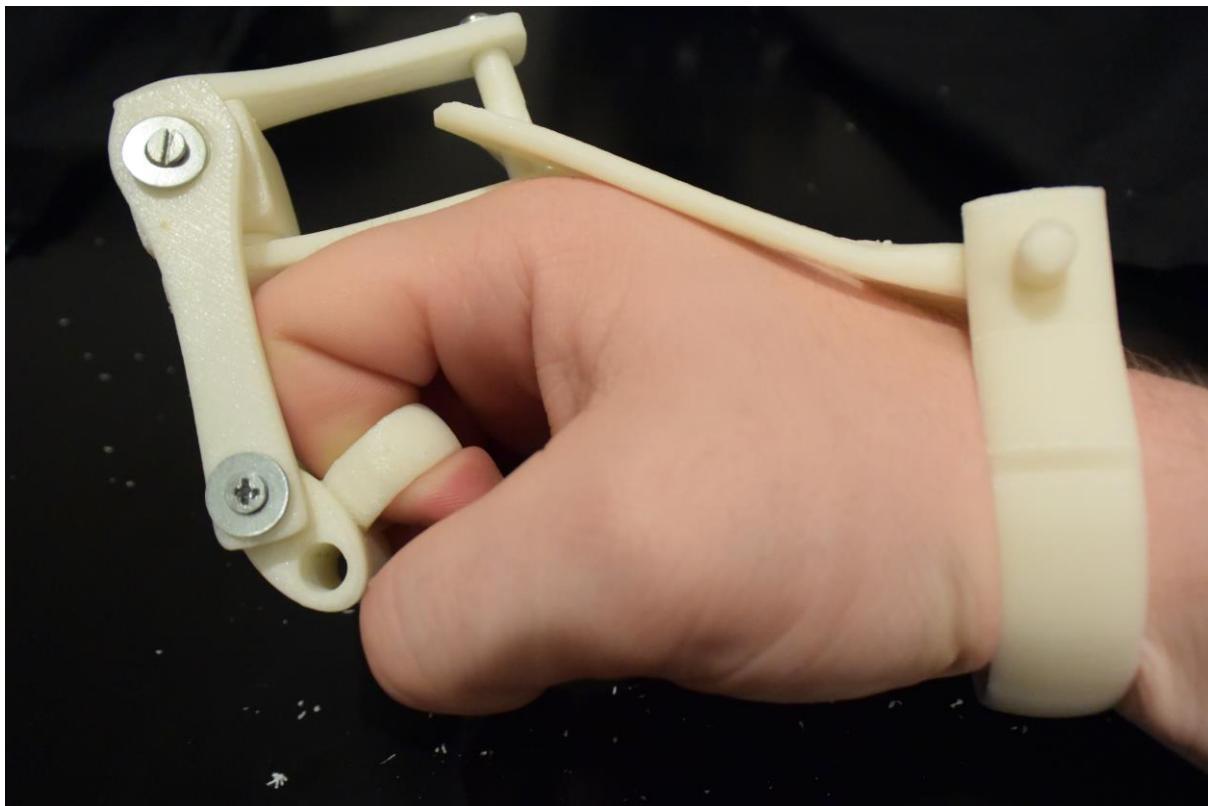
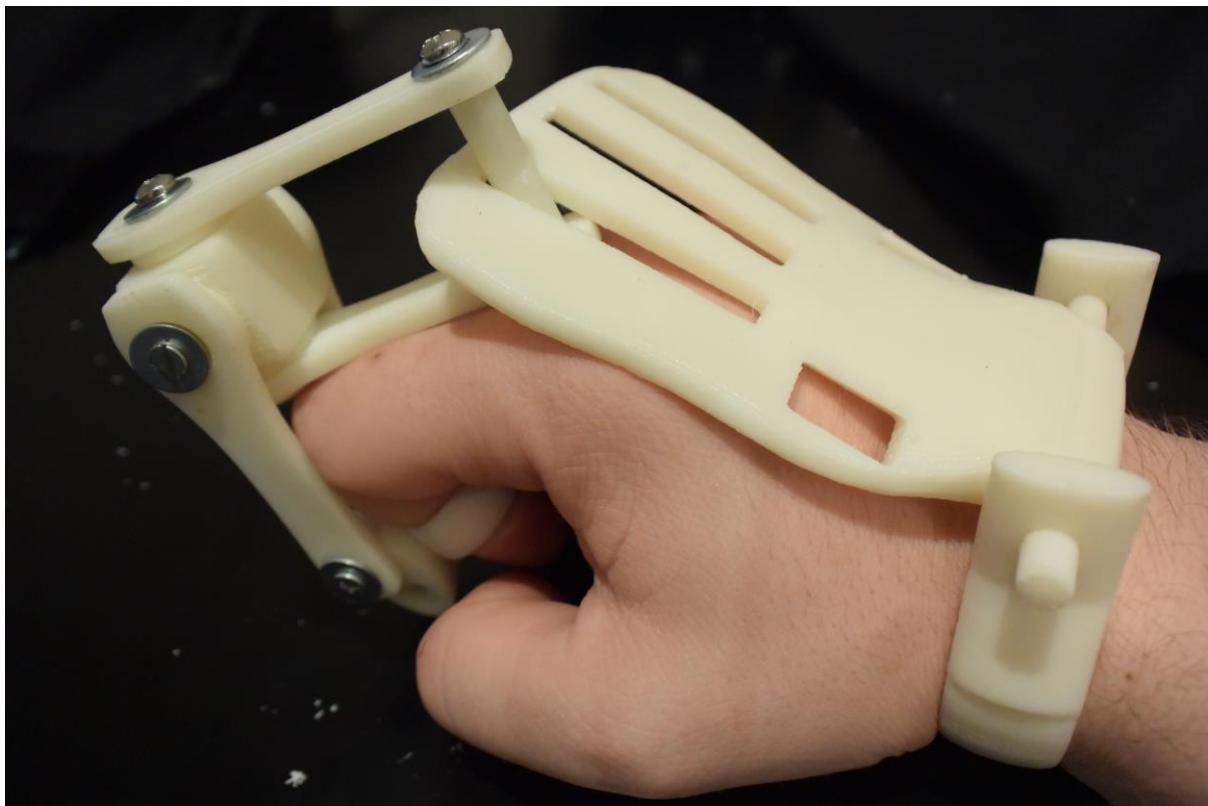


You will need to hold the pin again with the pliers so that you can get the screw in. Once you have done one side flip over and do the other.

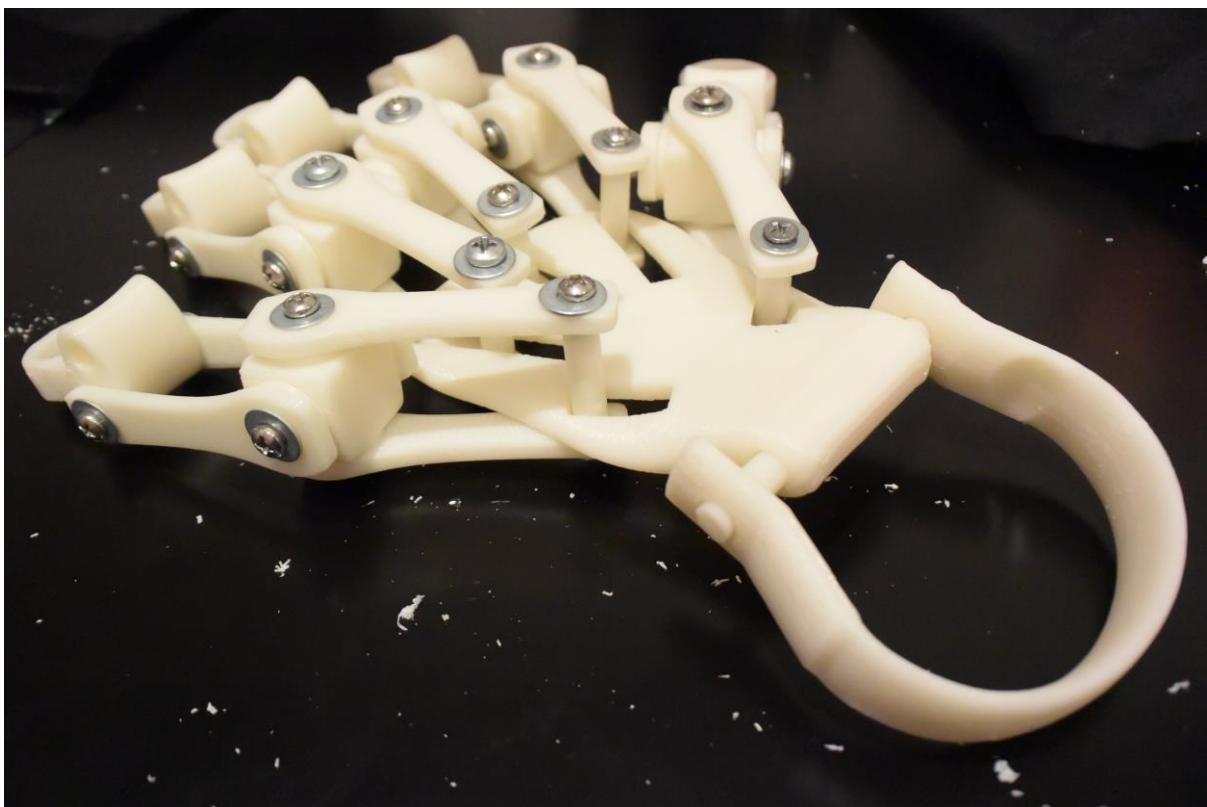
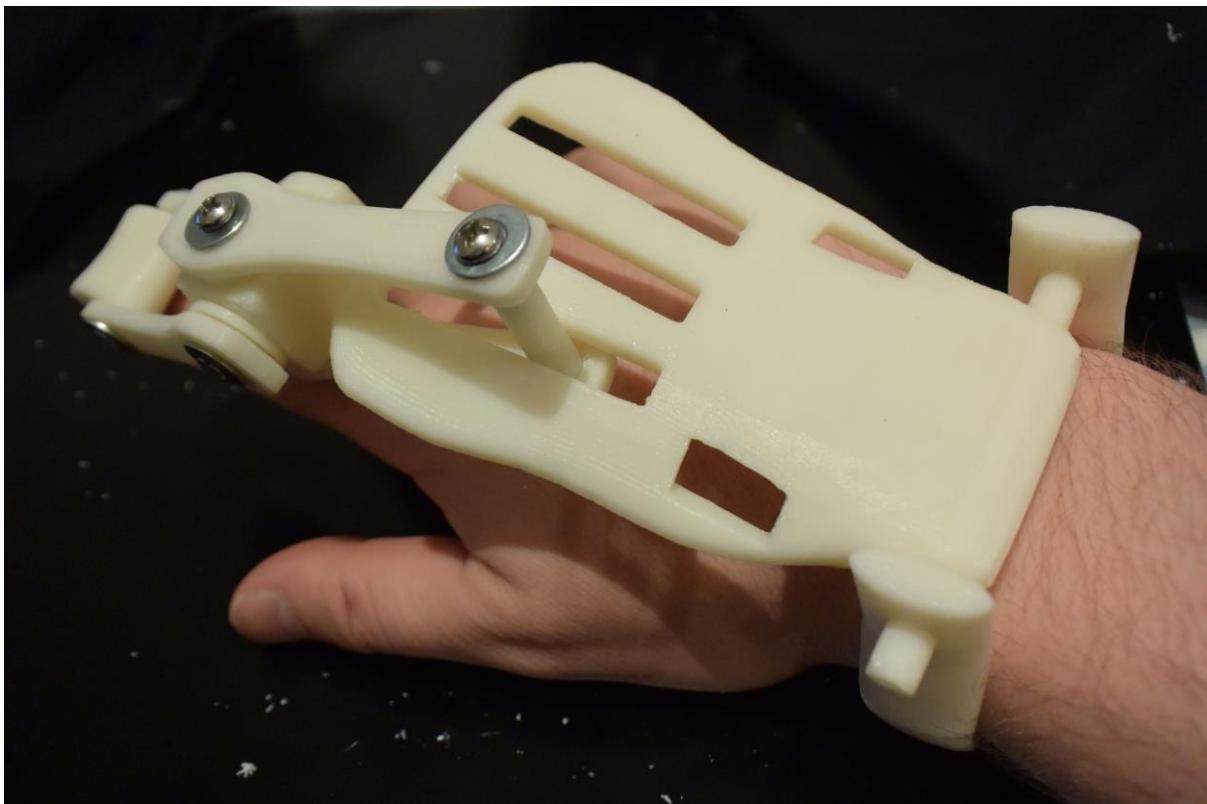


Make sure the Knuckles_Screw_Cover.stl is on the bottom side of the Back_Hand_Left(or)Right_Hand.stl.

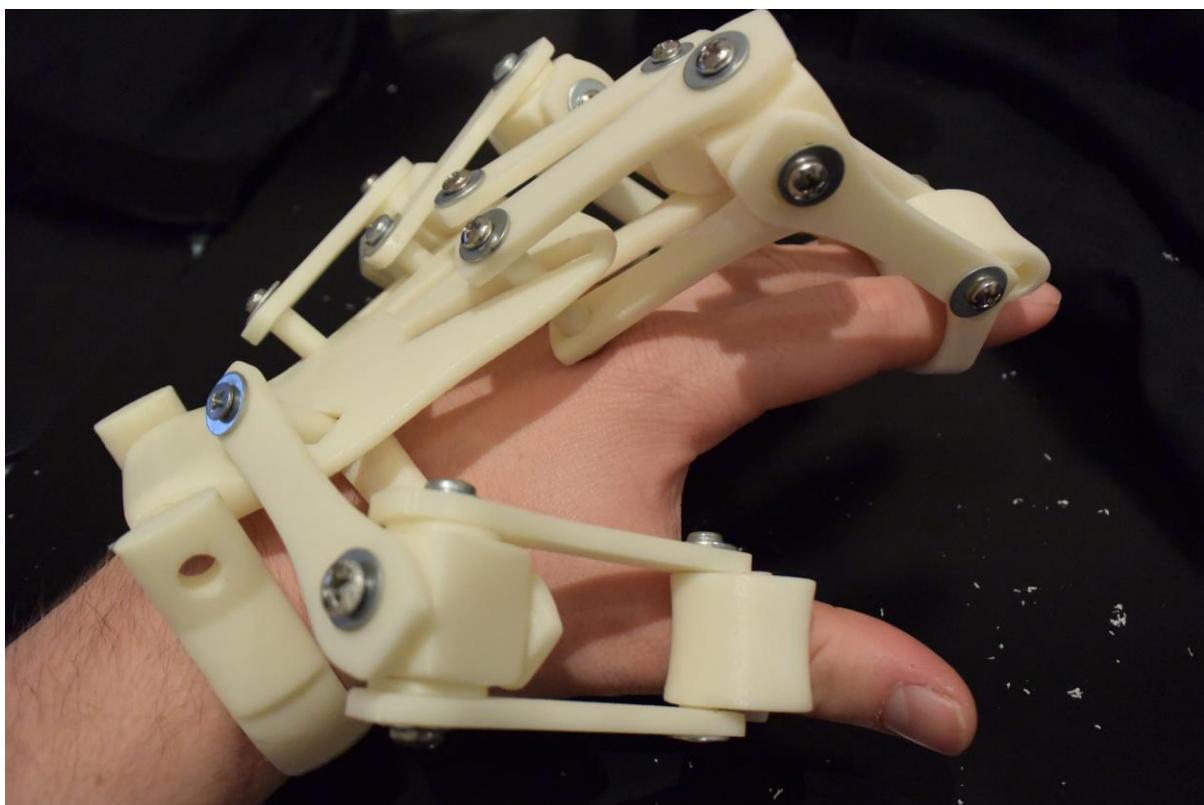


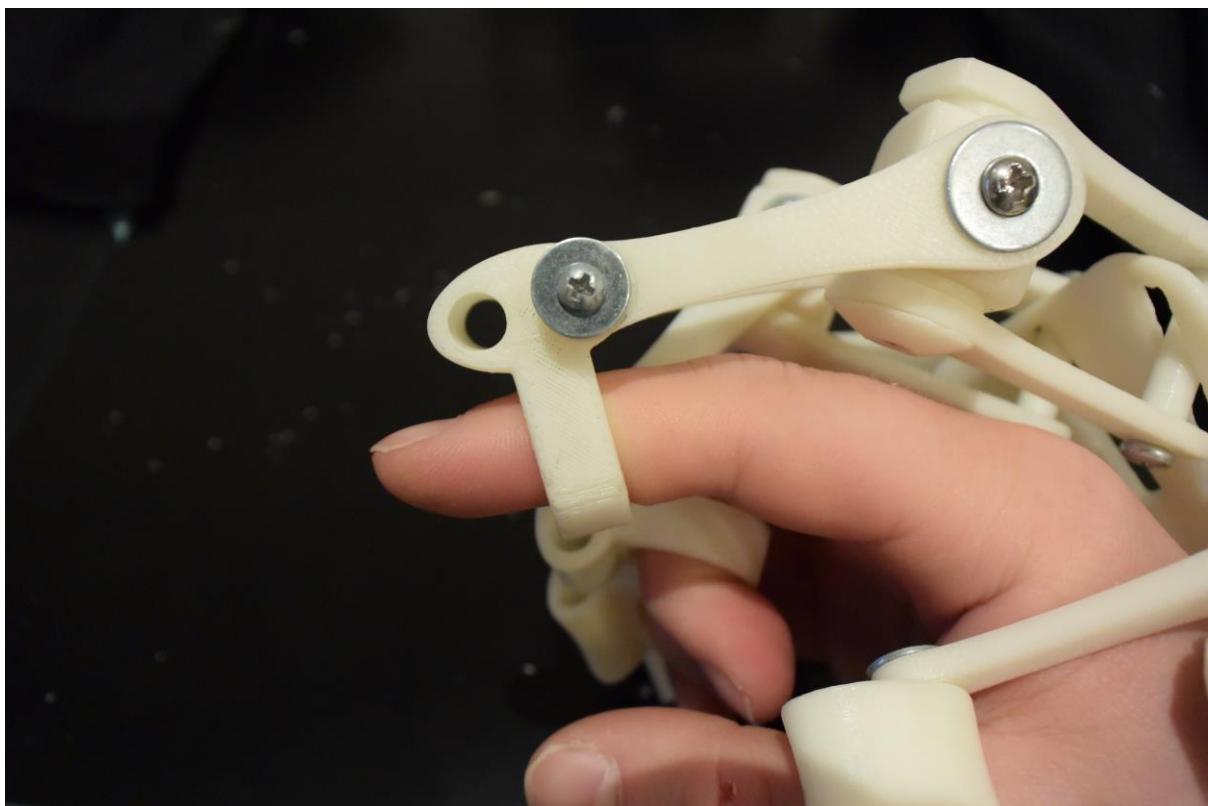


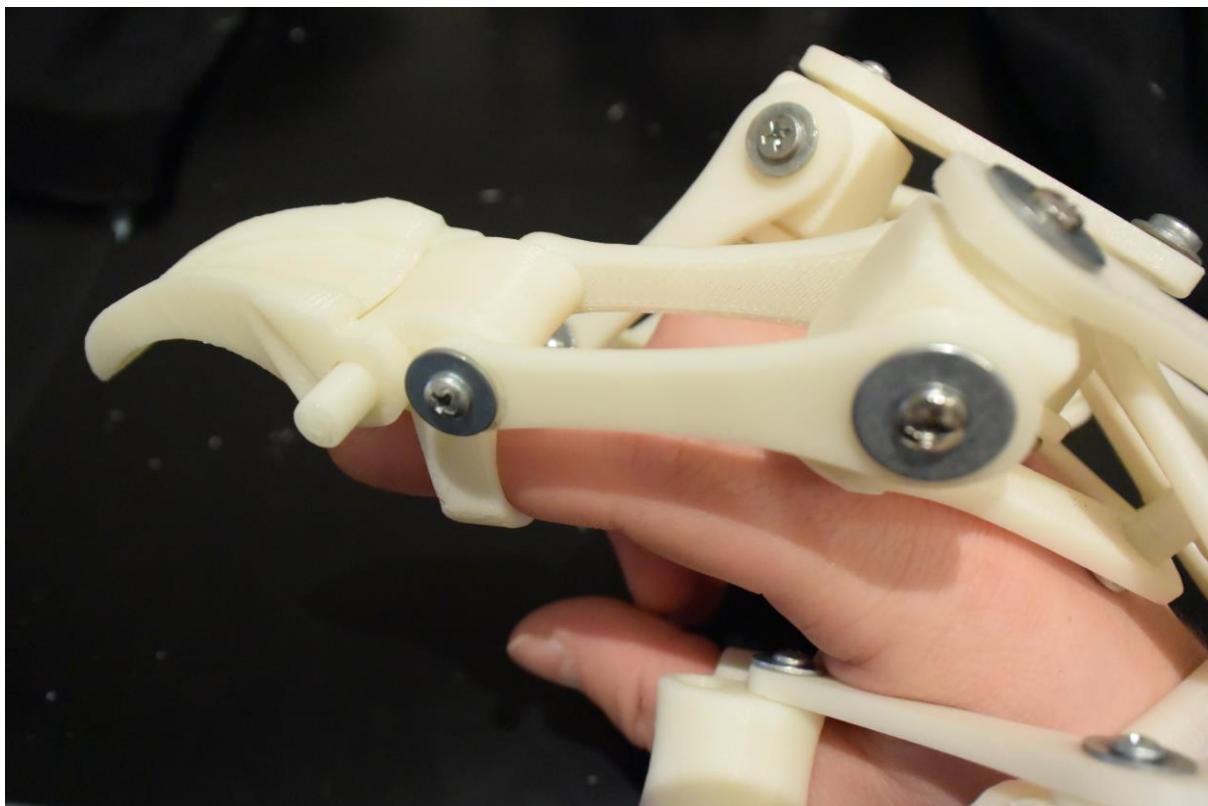
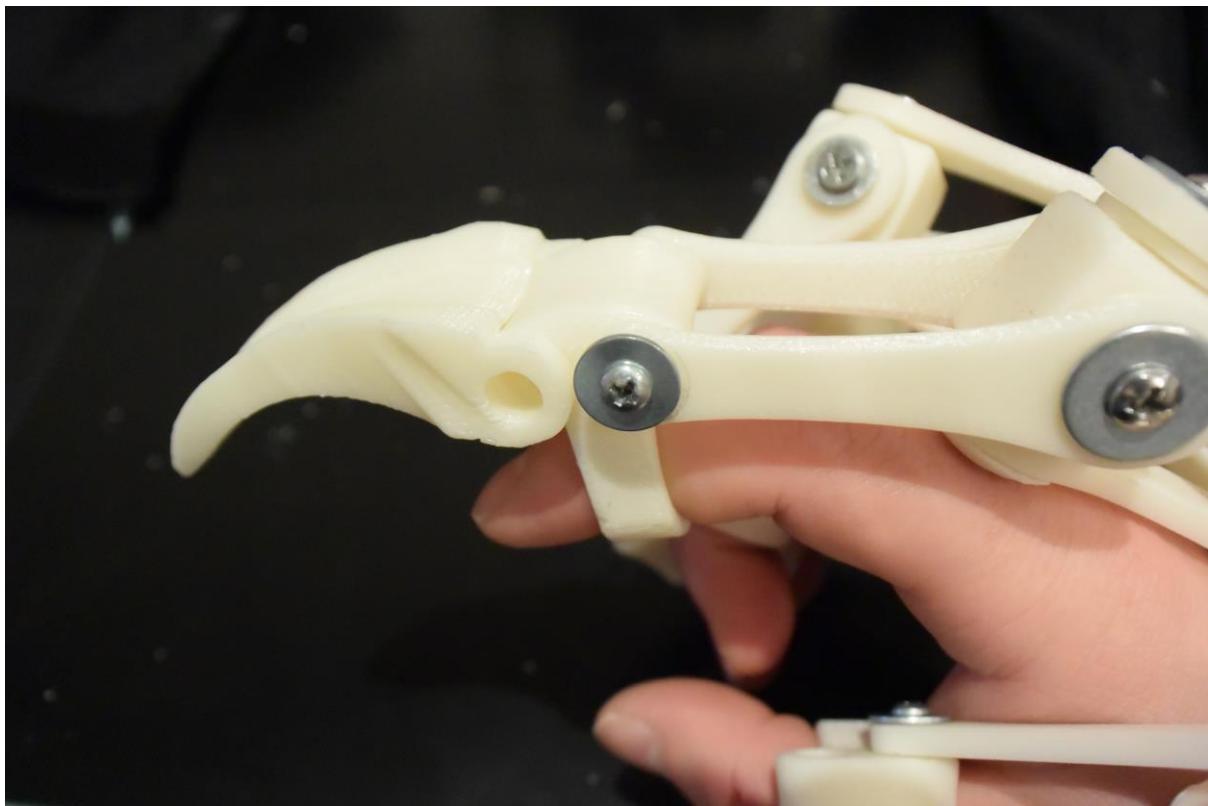
Once you have done one finger you will need to repeat the above steps for the other fingers and remember to change the Ring_Link_Index_Finger.stl to whichever finger attachment you're doing.



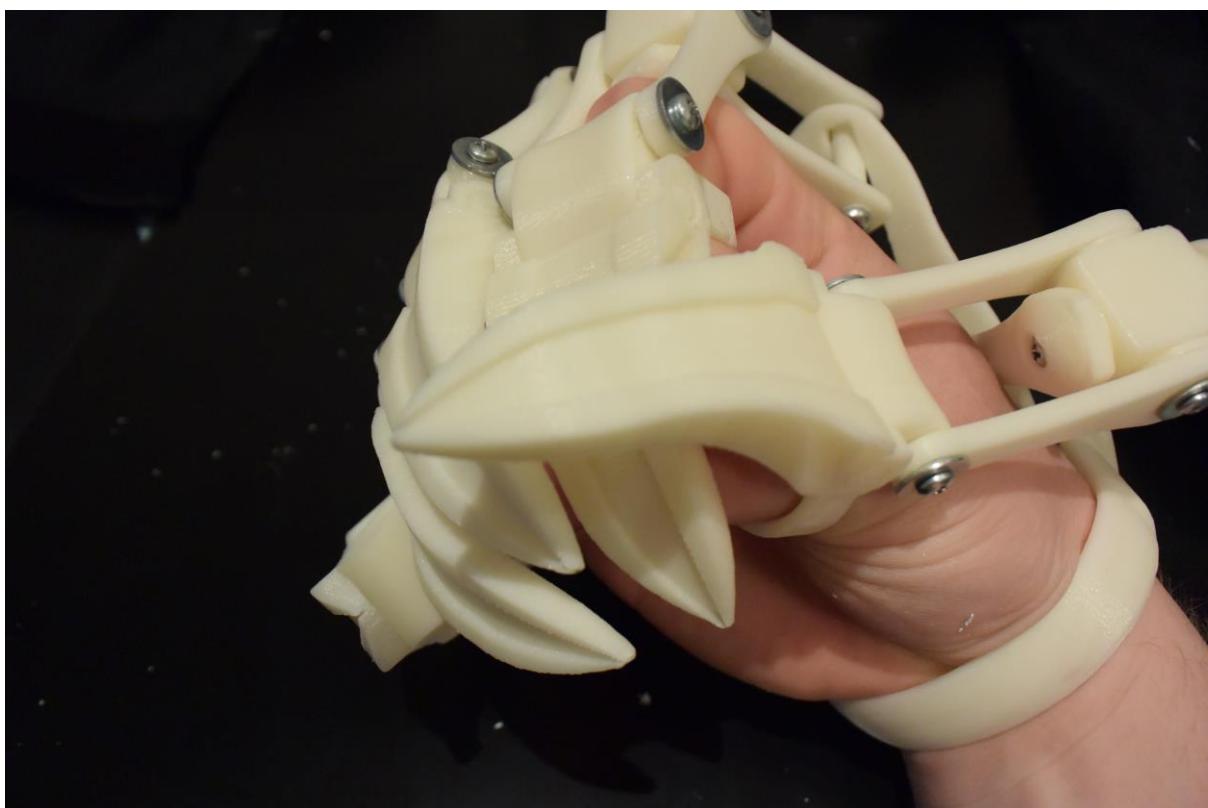
**Once you have printed the hand you can print finger and shield attachments.
(See Below)**



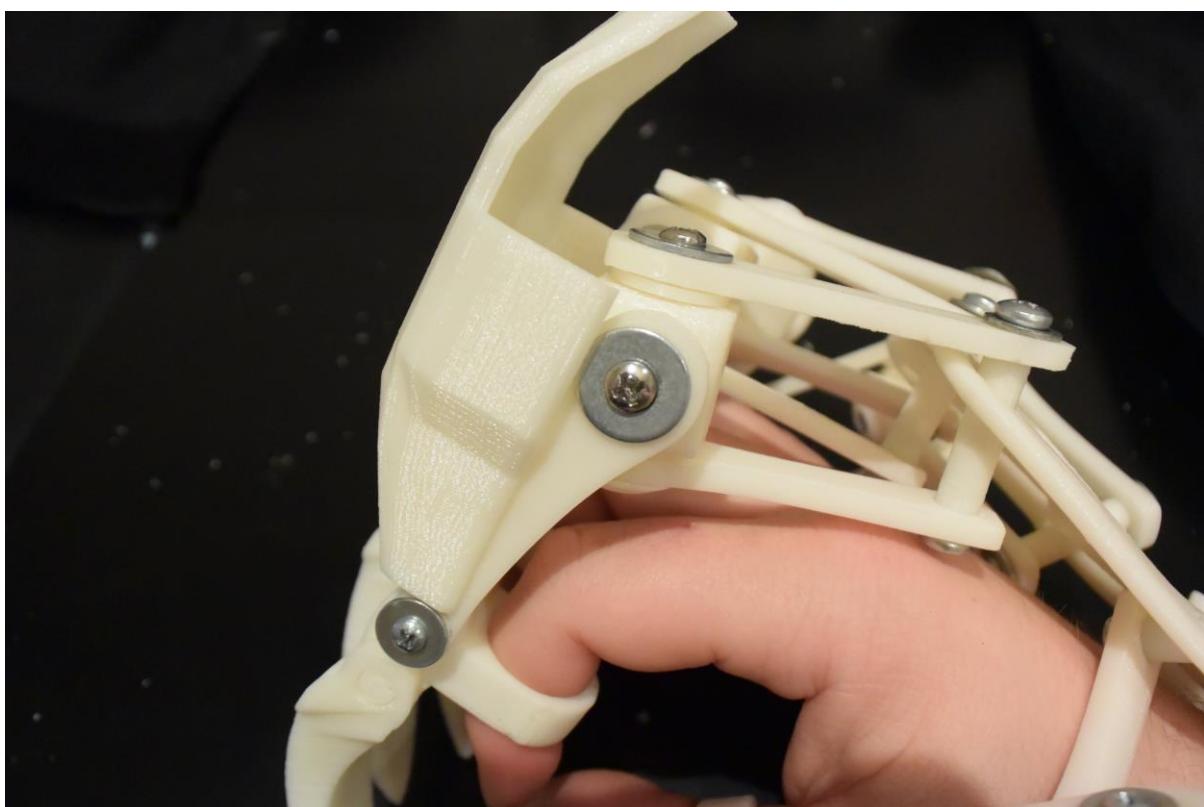
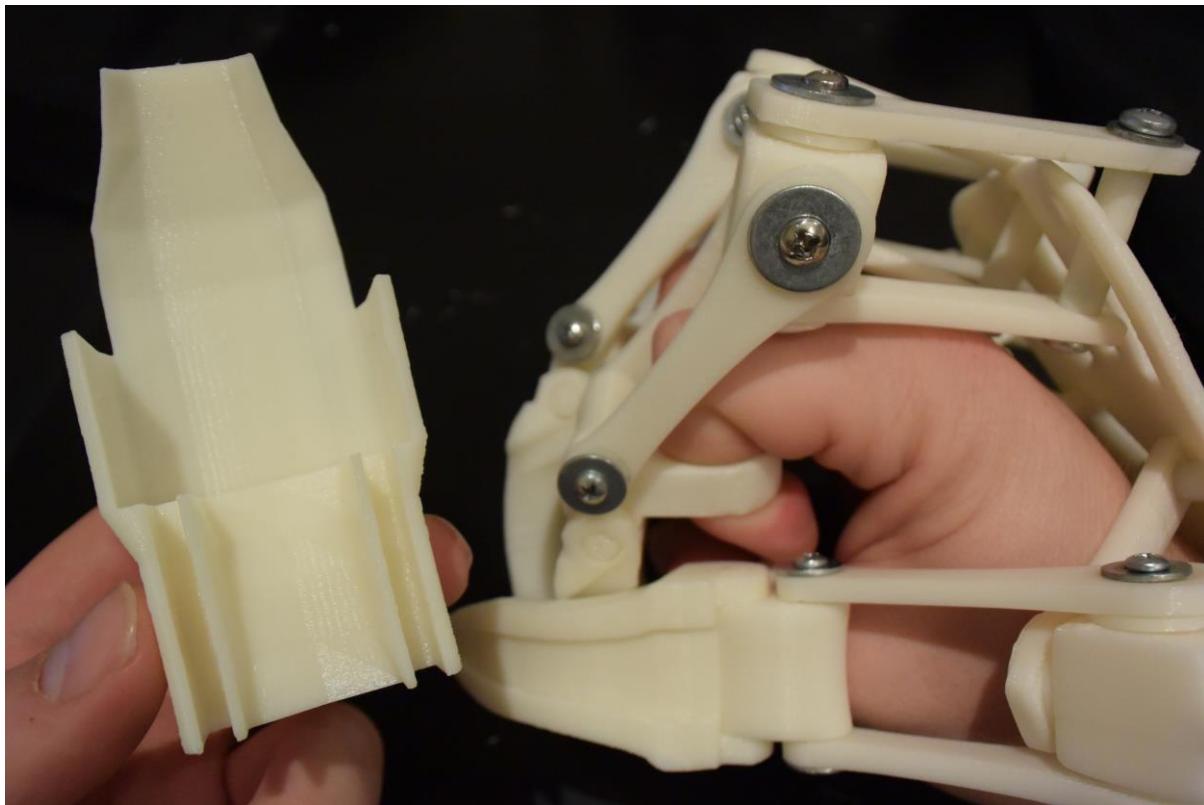


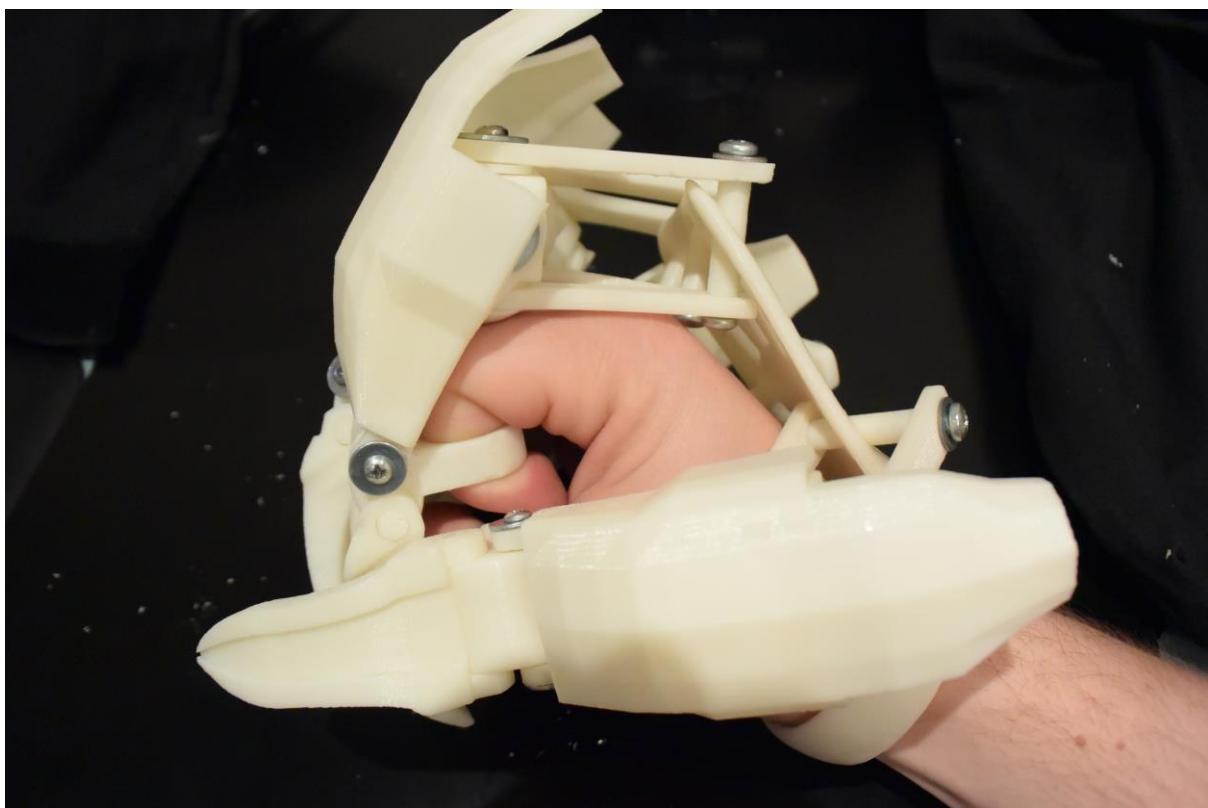
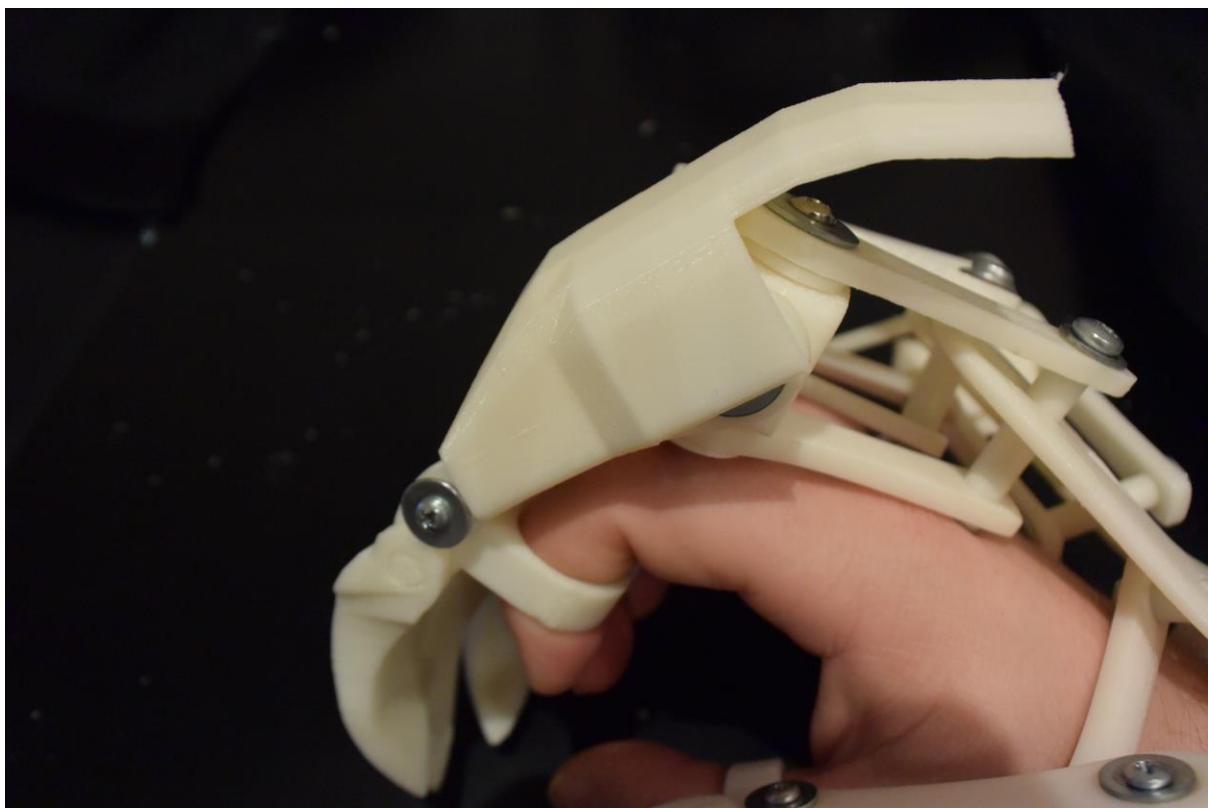


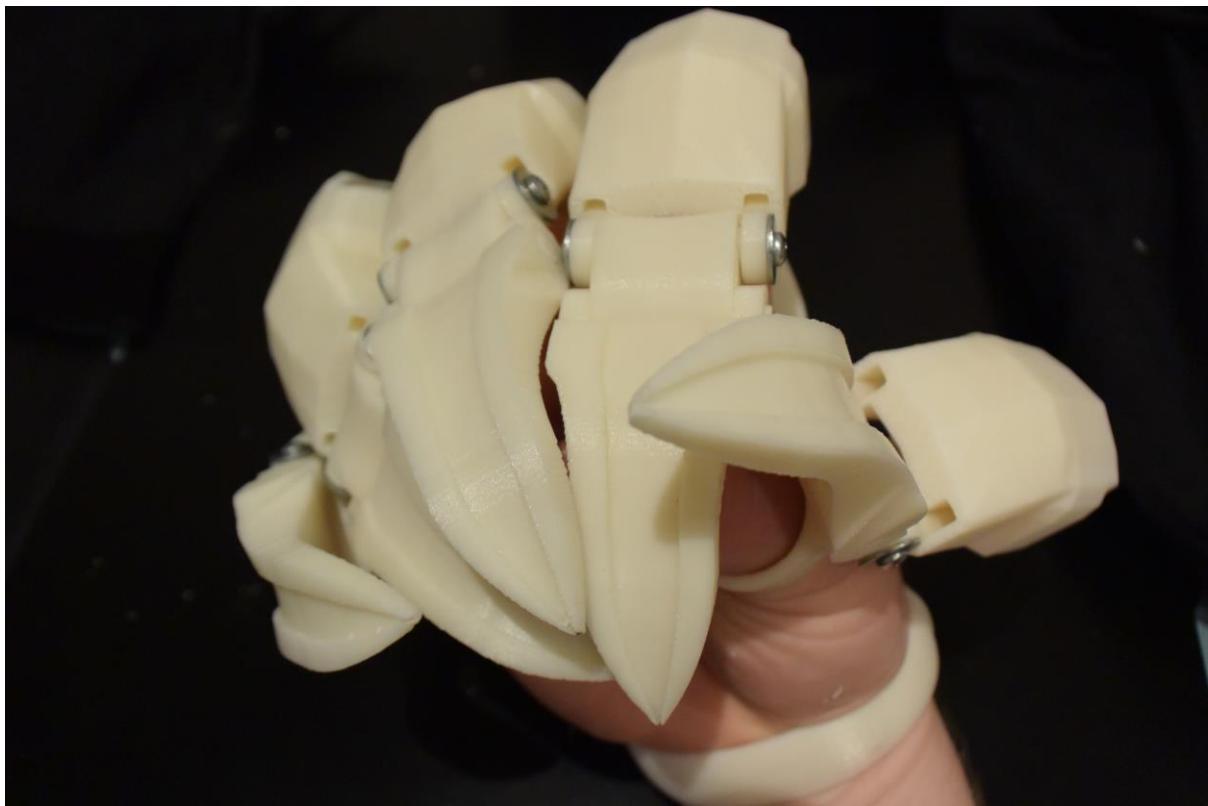
Use the Finger_Attachment_Link_Pin.stl which should be small enough to fit in and be taken out easily. If it gets stuck use another pin to push it out.



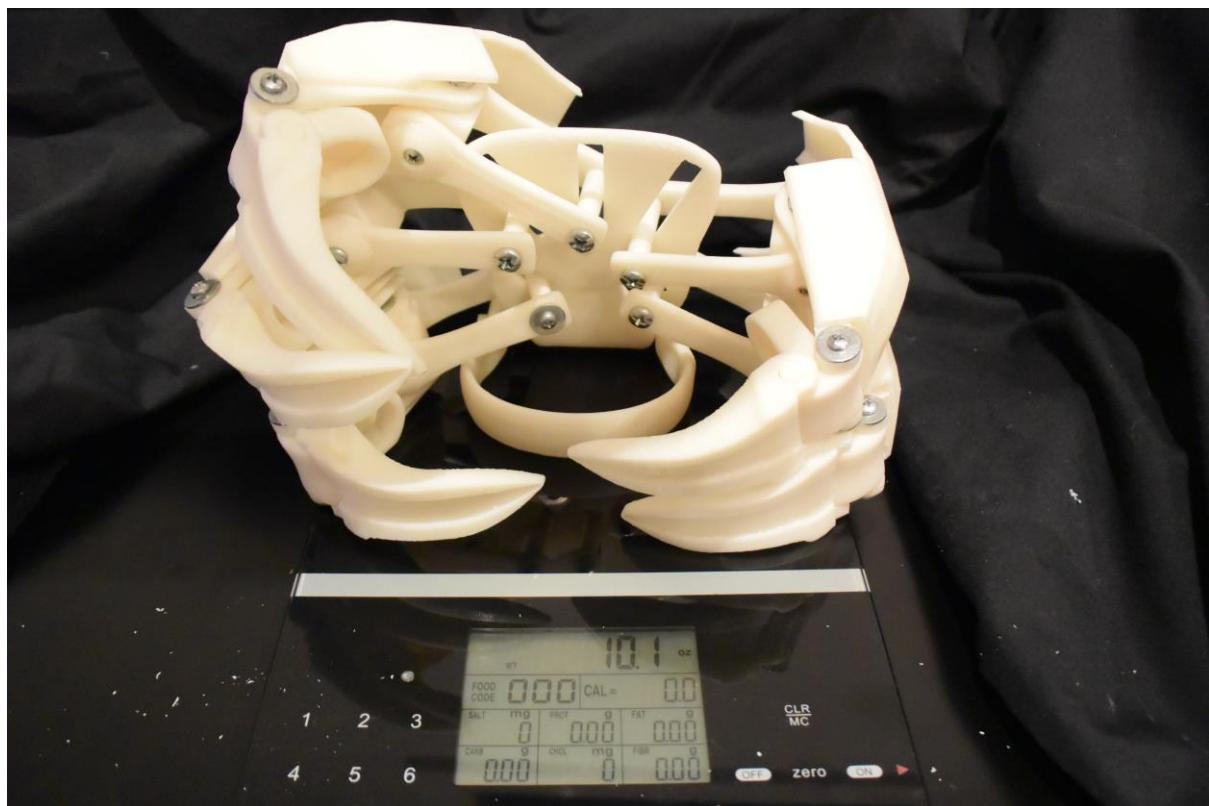
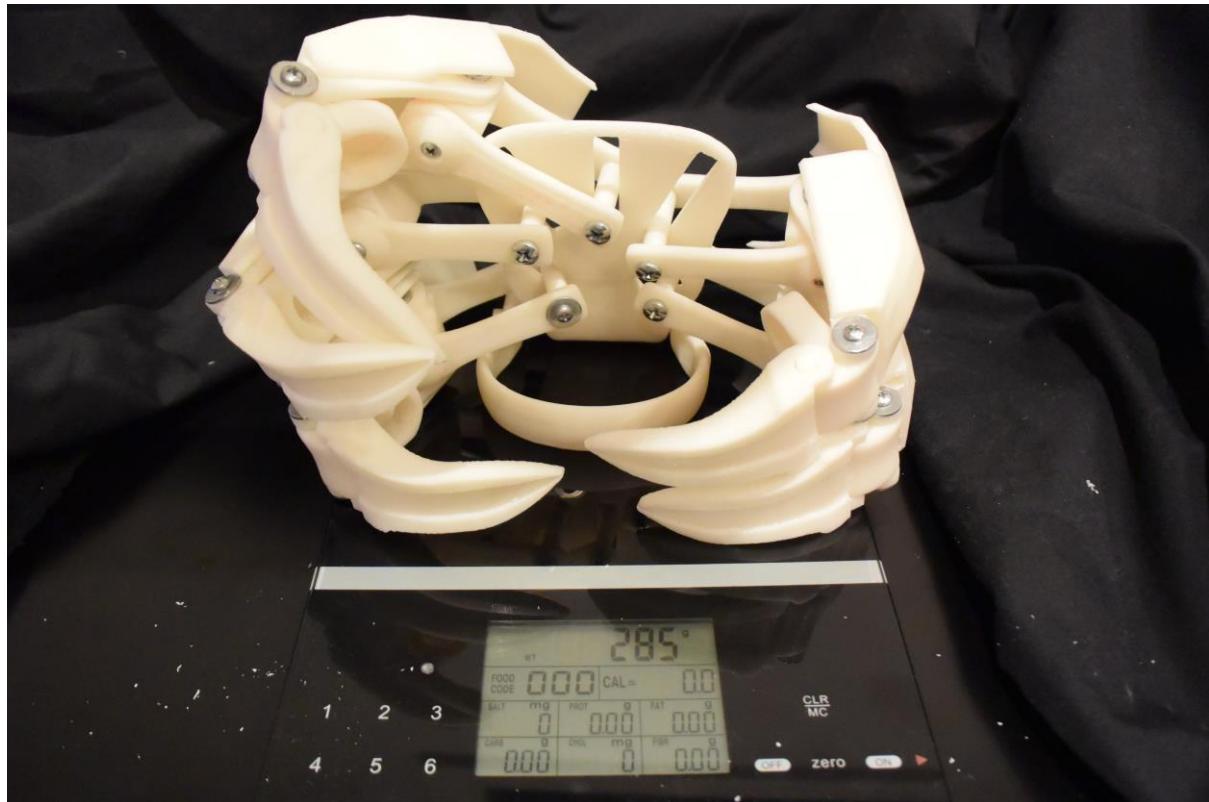
Below is the Shield_Attachment_Type_1.stl which can be attached and detached without any screws.



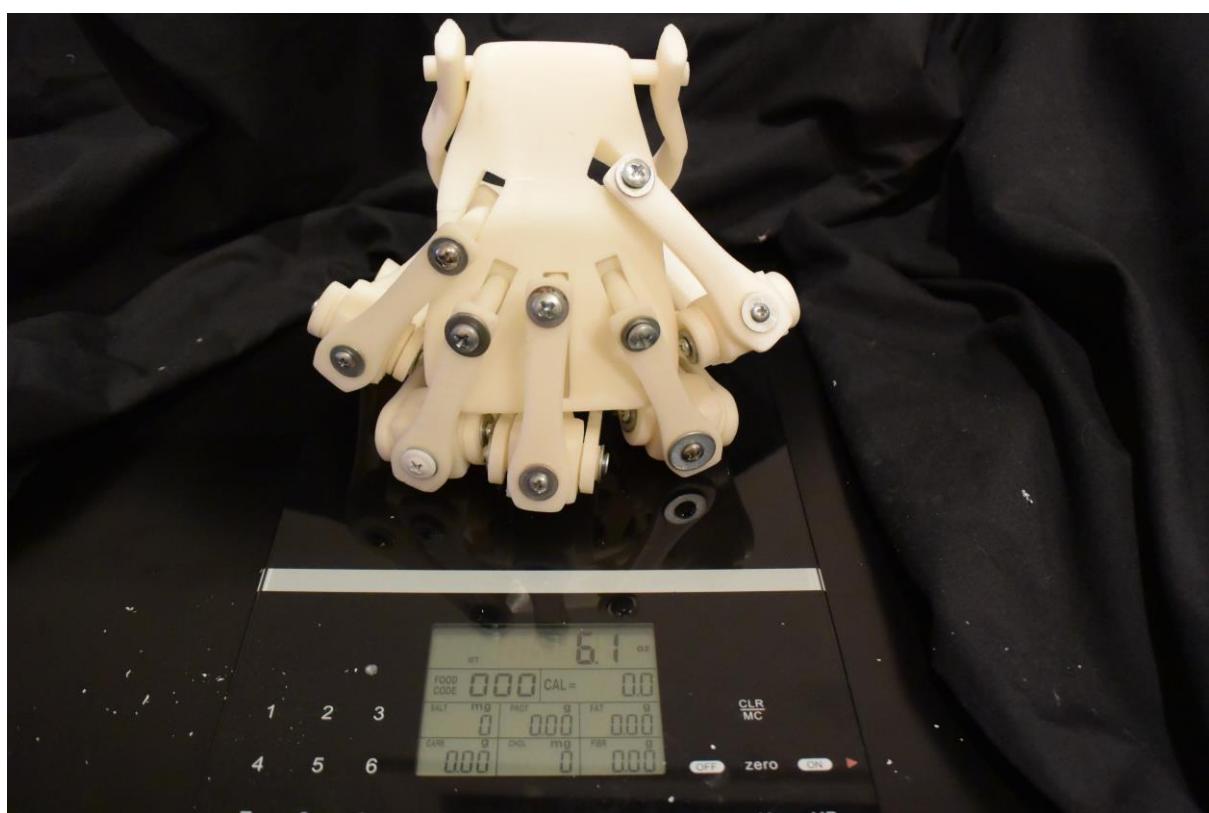
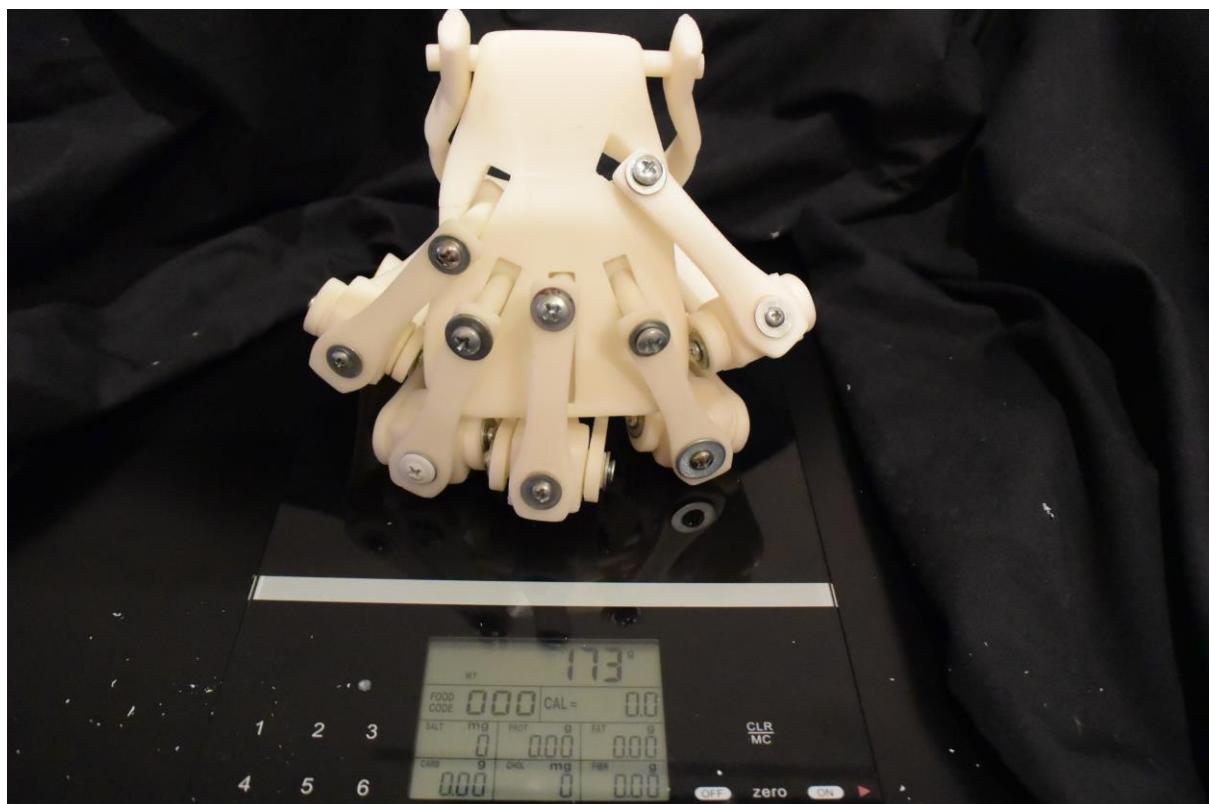




The exoskeleton hand with attachments weighs 285grams or ~10.1ounces.



The exoskeleton hand without attachments weighs 173grams or ~6.1ounces.



*****Disclaimer – 3D Print It will not be liable for personal injury resulting from negligent use of this product. Please use the 3D Printed Exoskeleton with care and do not cause harm to others. Do not distribute the 3D Printed Exoskeleton STL files. The files that you have bought are for your personal use only.**

