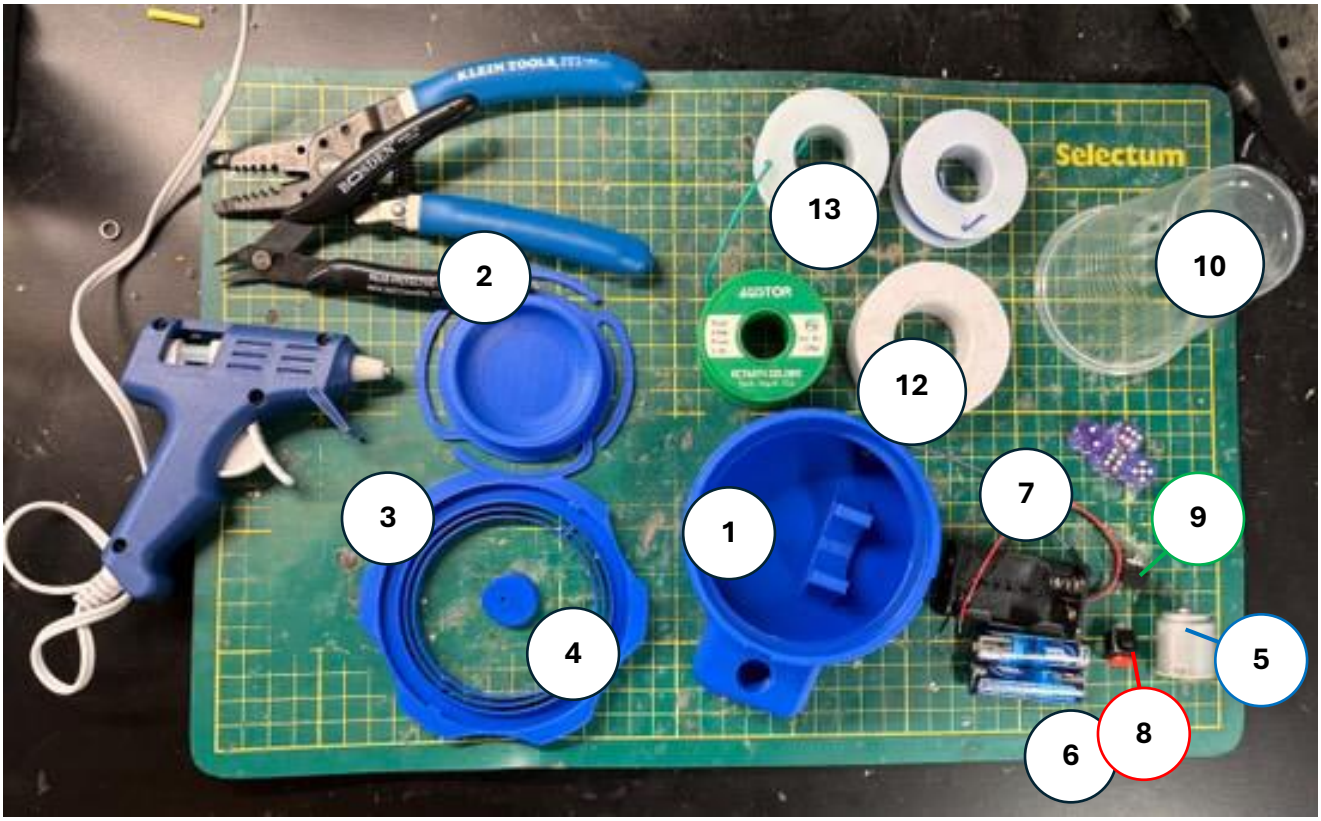
Rumble Plate Assembly Guide

Required Components



Bill of Materials

1. 3D Printed Base
2. 3D Printed Plate
3. 3D Printed Lid
4. 3D Printed Cam
5. 29DM9V-DS Double Shaft DC Motor
6. 2 x AA Batteries
7. AA Battery Holder
8. 14mm Snap-in Round Push Button
9. 3.5mm Jack
10. Clear Plastic Cup
11. Velcro Patches*
12. Self-Adhesive Foam (or more Velcro)
13. Wire
14. Dice

*Materials marked with * are missing from the diagram above.*

Required Tools / Supplies

A. Super Glue (and/or Hot Glue)
B. 3D Printer
C. Soldering Iron
D. Wire Cutters
E. Pliers
F. Extra Wire
G. Solder
H. Knife

Required Personal Protective Equipment (PPE)

1. Safety Glasses

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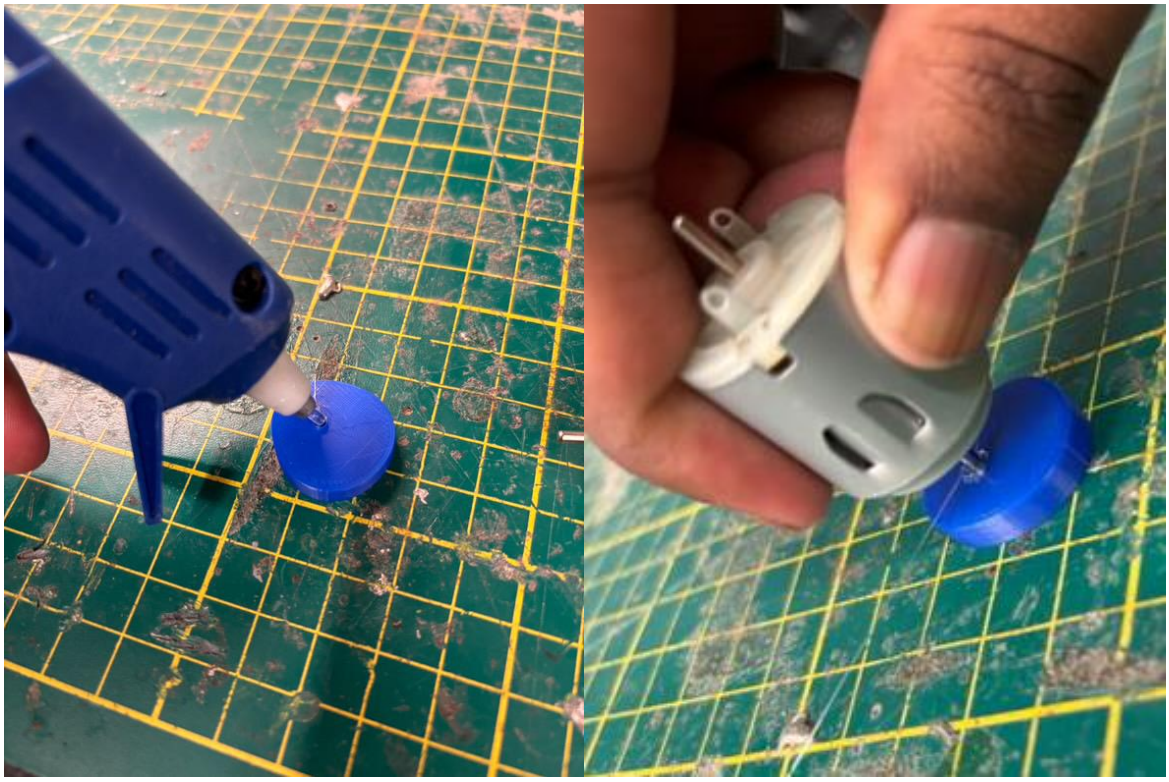
Step 1 of 9 – Setting up for Printing

To print the required 3D printed parts, open each of the STL files in the "Rumble Plate STL" folder in PrusaSlicer. If oriented correctly, the parts can all fit appropriately on a Prusa i3 MK3 print bed.

Step 2 of 9 – Fitting the Cam to the Motor

Using Super Glue or Hot Glue, fix the 3D printed cam to the end of the DC motor – this may be difficult, and may require lots of force to bring the two parts together.

Ensure that you are only Super/hot glueing the 3D printed part, then bringing the axle of the DC motor to that part. Try to keep the glue away from the DC motor as much as possible.



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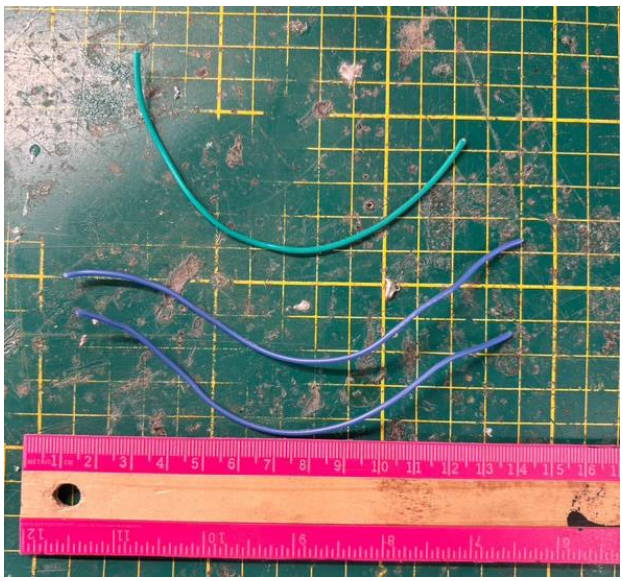
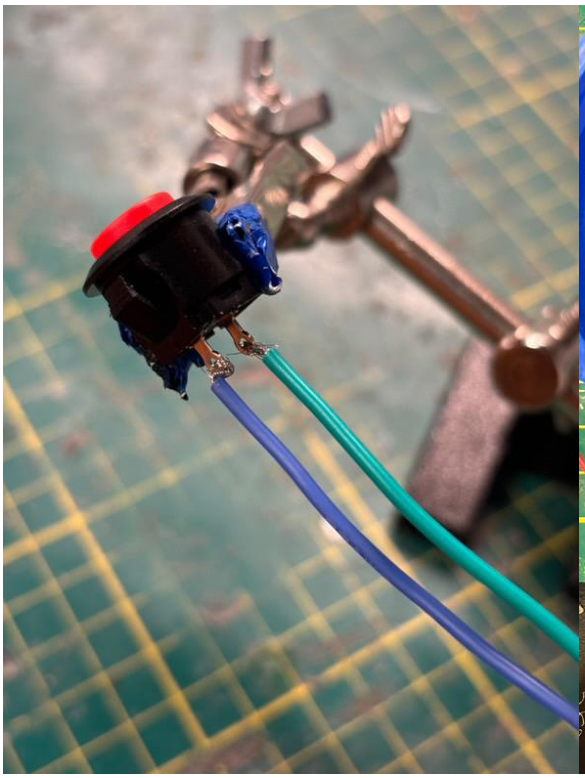
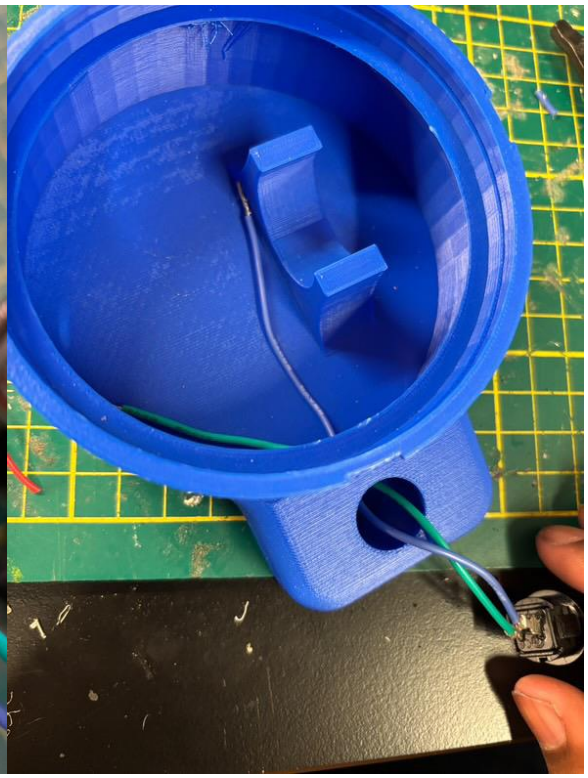
Step 3 of 9 – Soldering the Button



Collect three 15cm sections of wire. Ideally, use two different colors to differentiate leads.

Solder the wires onto the leads of the button, then thread the unsoldered ends of the wires through the “tunnel” in the 3D printed base. Ensure that the wires exit the other end of the hole and pull the excess through.





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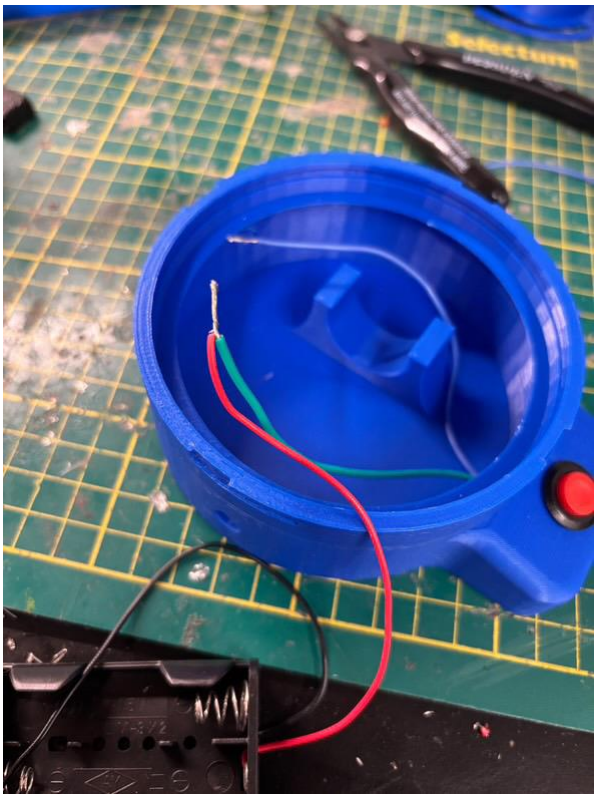
Press the button into place until you hear a “click”. This is what it should look like when the button is soldered and fixed in place.

Step 4 of 9 – Soldering the 3.5mm Jack

Twist one leading wire from the button with one leading wire from the battery holder.



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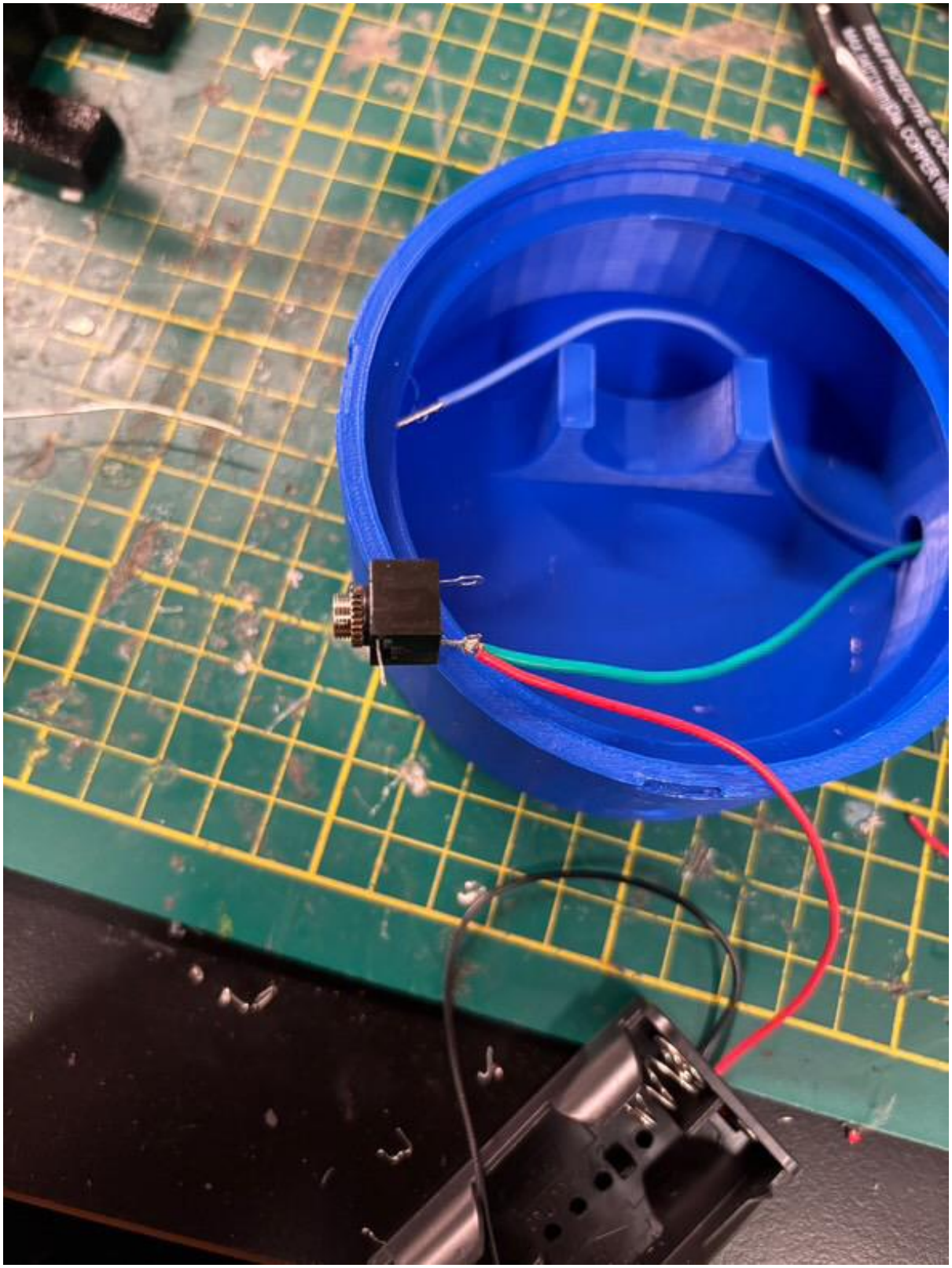
Solder these twisted wires with one lead from the 3.5mm jack.



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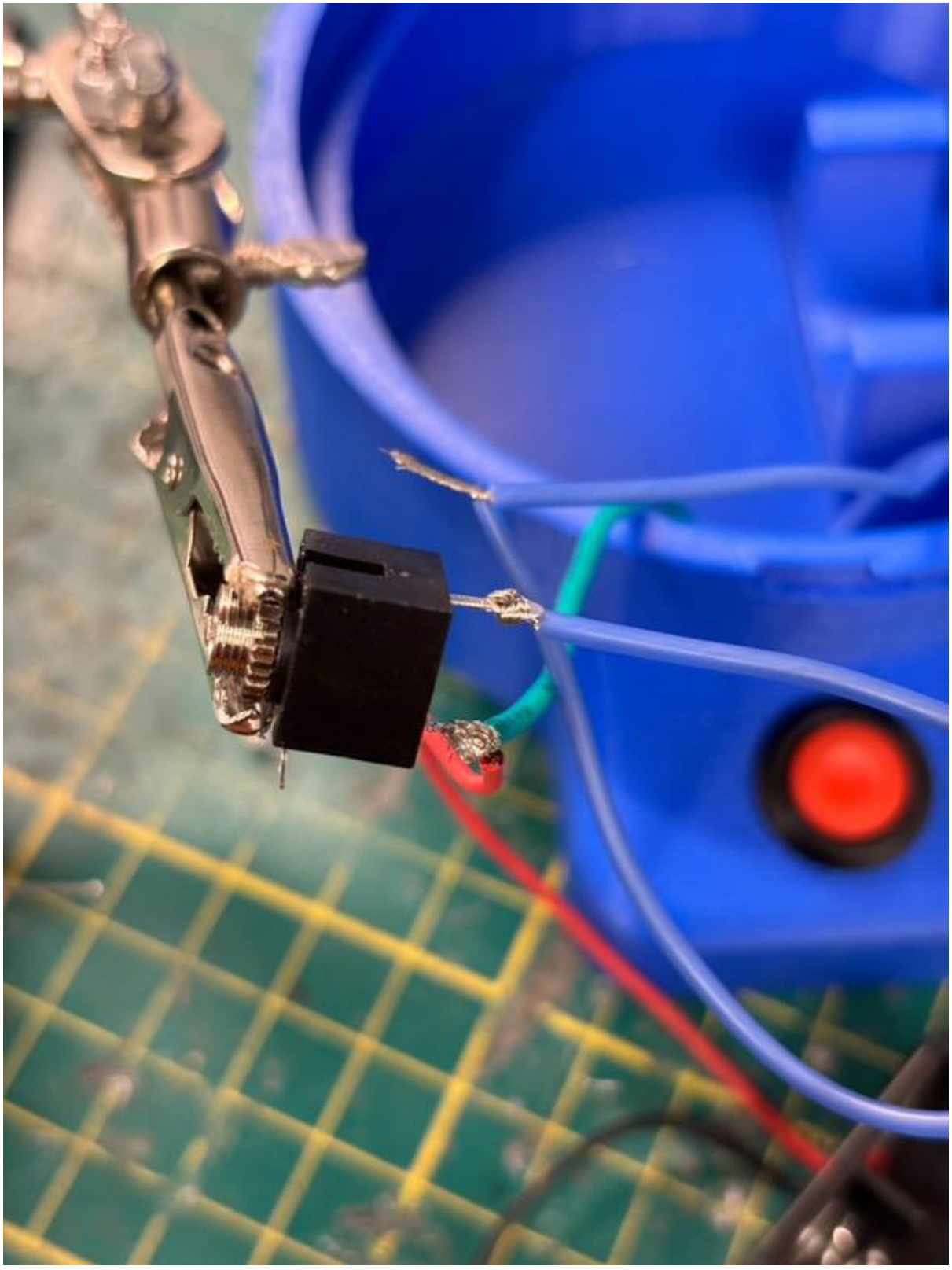
Take the third 15cm section of wire and twist it with the remaining leading wire from the button. Take the untwisted end of this new wire and solder it to the other lead on the 3.5mm jack.



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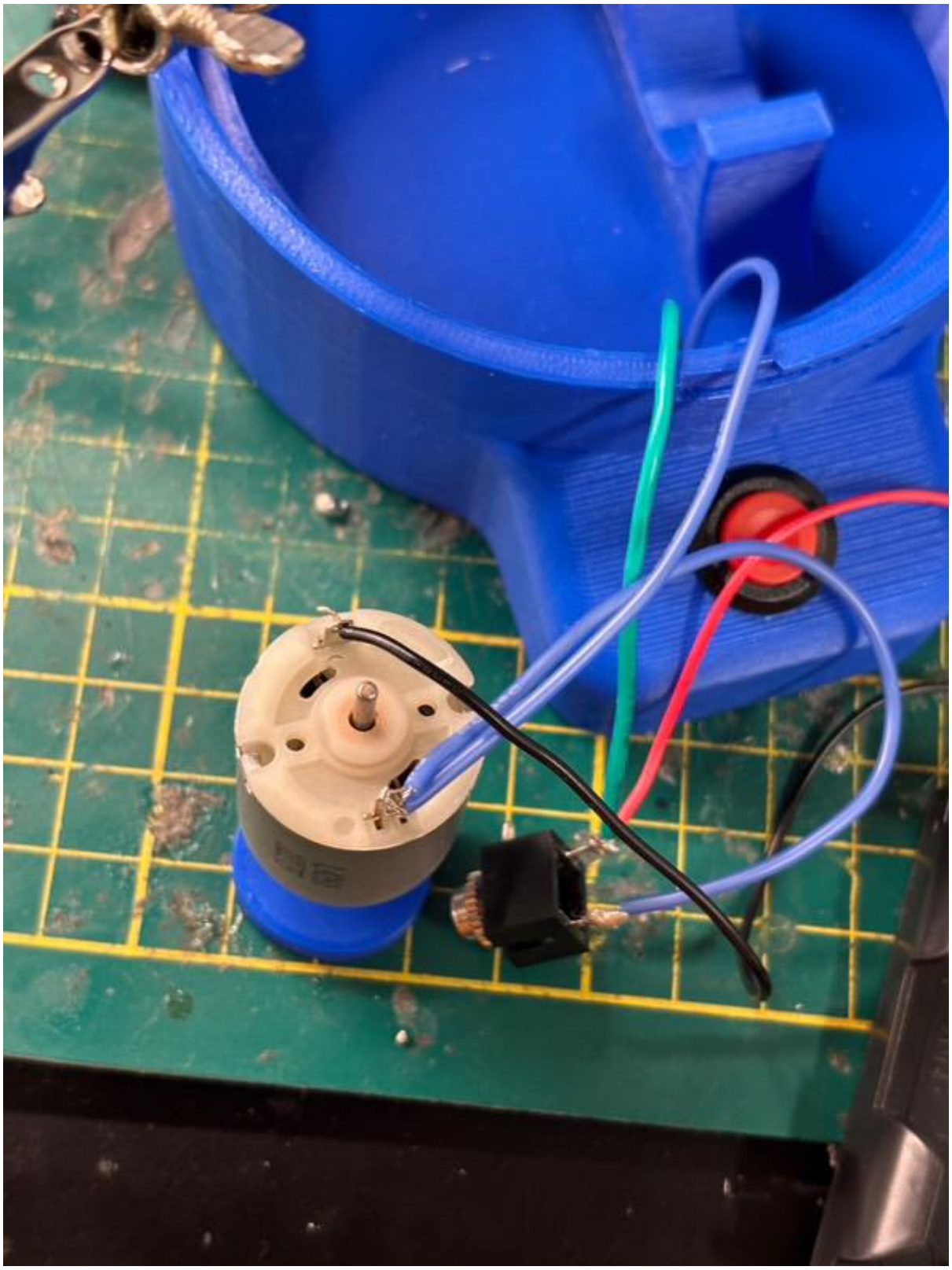
Step 5 of 9 – Soldering the DC Motor

Take the twisted pair of wires from the previous step and solder them on one of the motor's leads. Be careful not to drop debris or drip solder into the motor itself. Solder the remaining leading wire from the battery case with the second motor lead.



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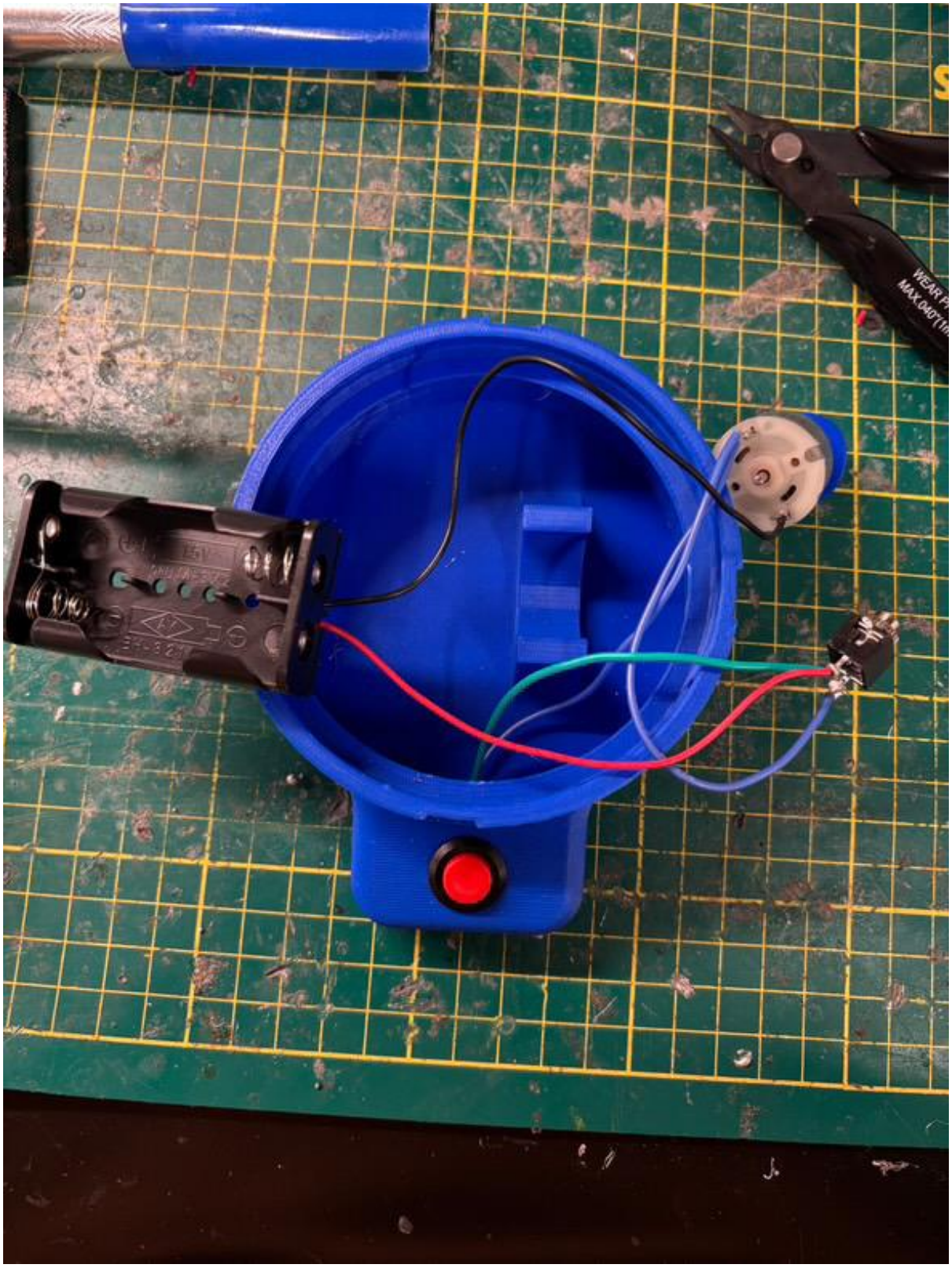
This is what all of the electronic components should look like when soldered.



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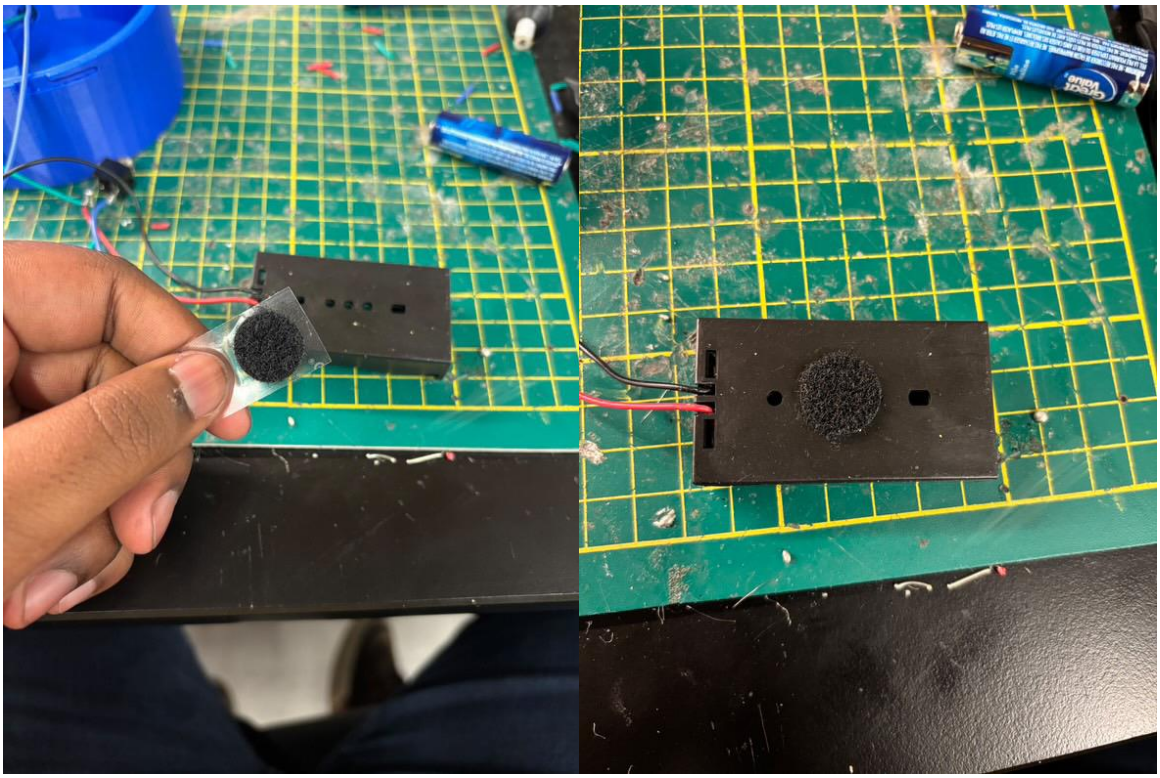
Step 6 of 9 – Installing the Hardware

Place a Velcro sticker onto the back of the battery case. An additional one is optional for a more secure fit. When possible, use the hooks or the more rigid part of the Velcro to the 3D prints itself. Place the battery holder in the 3D printed base



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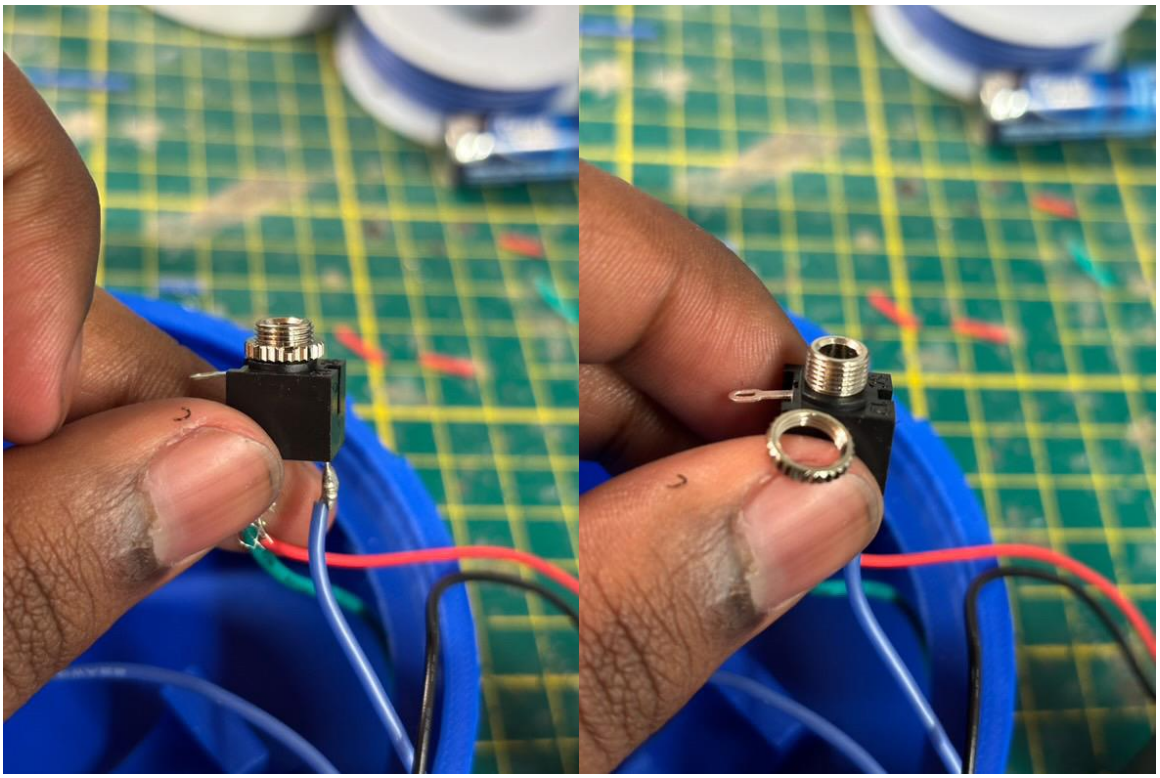
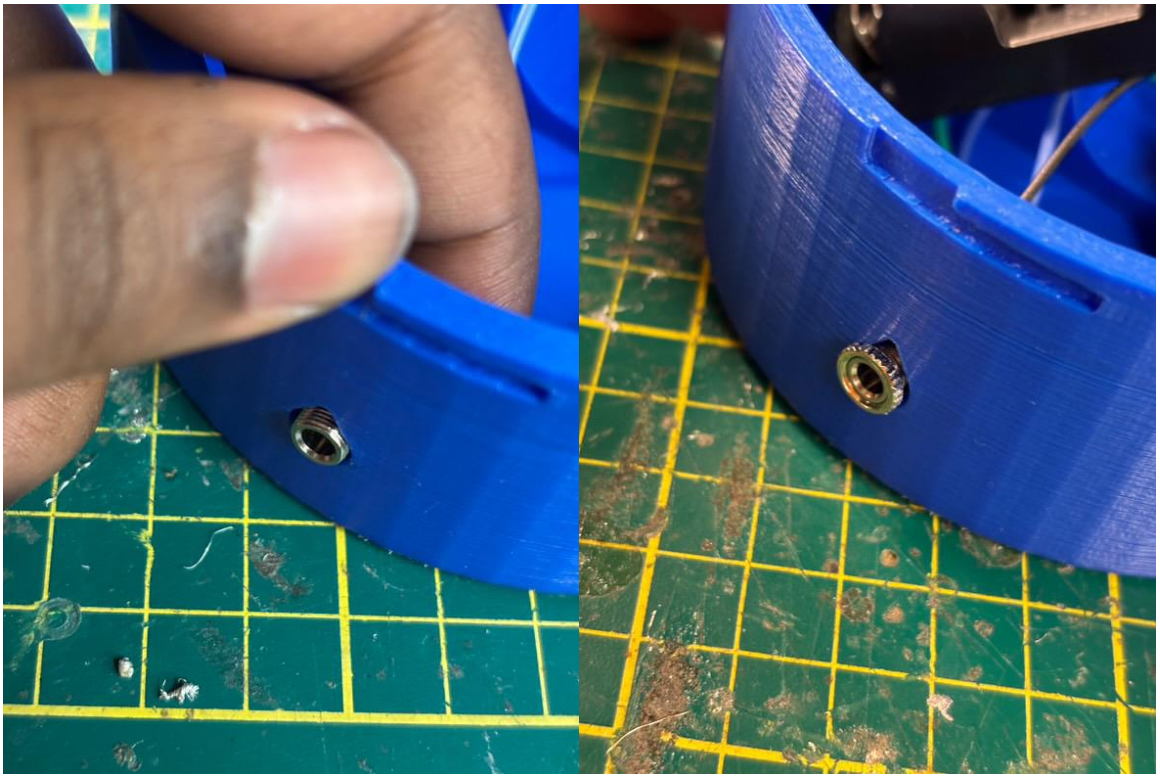
Step 7 of 9 – Installing the 3.5mm Jack

Take the 3.5mm jack and remove the screw-on ring. From inside the 3D printed base, find the teardrop cut out and place the threaded portion of the jack through the hole. With the ring on the outside of the 3D printed base, screw the two pieces together.





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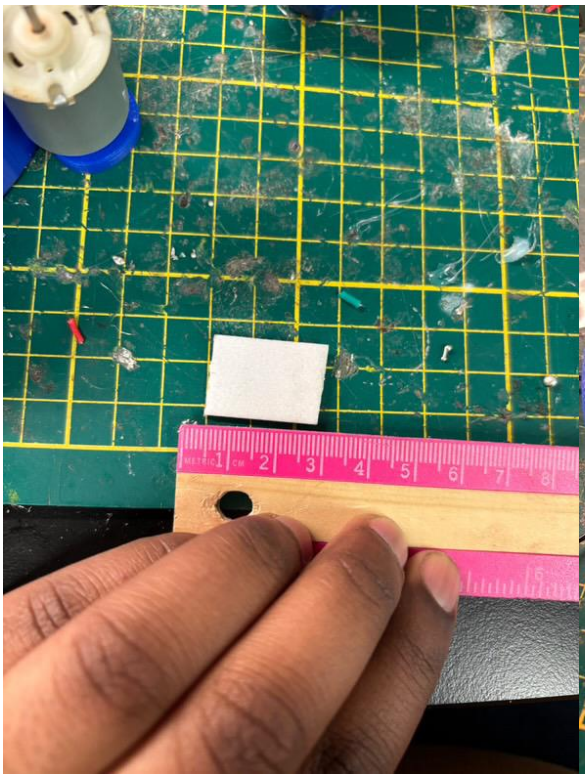
Step 8 of 9 – Installing the DC Motor

Using the self-adhesive foam tape or the soft half of Velcro patches, cut out a 3cm portion and line the fitting for the DC motor. If using self-adhesive foam tape or other double-sided adhesives, be sure to peel the film off before installing the motor.



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Slide the motor into the fitting and press firmly to ensure the adhesives are set properly. Be sure to check that the cam is not touching the battery holder, floor of the 3D printed base, or the fitting for the motor. Adjust as necessary.

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Step 9 of 9 – Putting it all Together

Place the curved rumble plate on top of the base, adding the dice of your choice and a clear plastic cup to cover it all. Place the lid on top, and screw it all together!

Be sure to remove the lid cut-outs as appropriate to fit the clear plastic cup of your choosing!