Assembly Instruction
Iron Fist - Mini Arm wrestling Arcade Game

Parts

Shell

Lid

ForeArms

R_Arm 01

R_Arm 02

24 t SpurGear

12 t SpurGear

Led Cover

Torso 01

Torso 02

l_Arm 01

l_Arm 02

Start Button

Pad X 4

Key Cap 01

Head 01

Head 02

Cap 01

Cap 02

Shaft 01

Shaft 02

Key Cap 02

External components


1


2

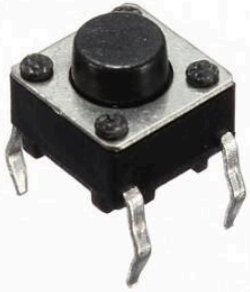

3

4


5


6

7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9


10

1. Arduino Nano **X1**
2. DFMini Player **X1**
3. Cherry MX **X2**
4. SG90 servo **X1**
5. Neopixel stick **X1**
6. 40 mm speaker **X1**
7. SD card (32 GB max) **X1**
8. 6X6X5 push button **X1**
9. BT8X2 self taping screws **X6**
10. M2X8 screw and nuts **X2**
11. M1.4X6 screw **X4**

12. 10X5X4 ball bearing **X1**


11


12

Tools

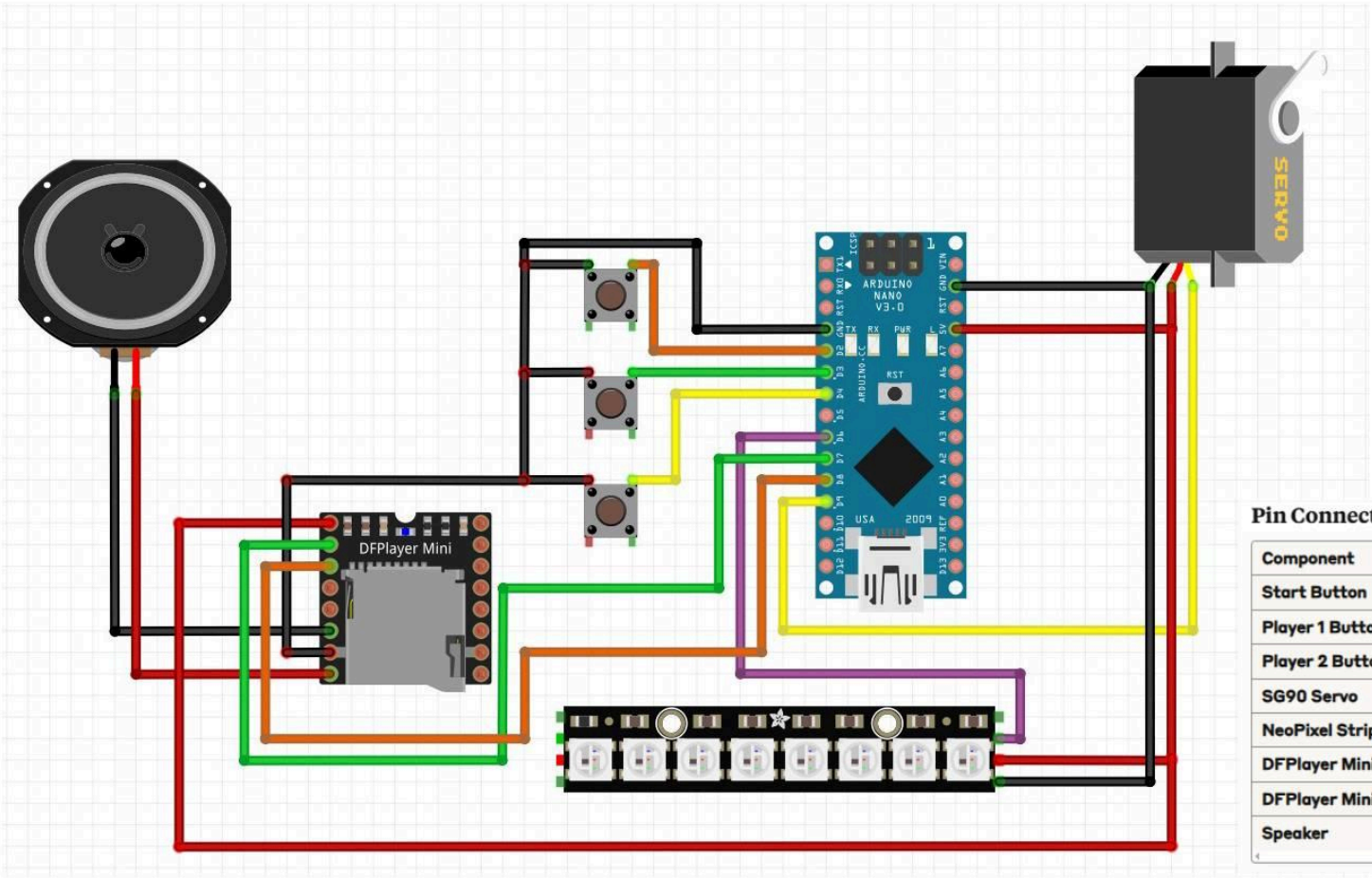
Even though I tried to keep it as simple as possible, this build is not plug and play.
Some simple soldering is essential.

You will therefore need:

-A soldering iron
-Heat shrink tubing
-Wire cutters
-Super glue
-Double side tape
-1.5 Hex ScrewDriver (the one that came with yor bambu printer works well)
-1.5 cross ScrewDriver
-24 AWG wire

Electronics

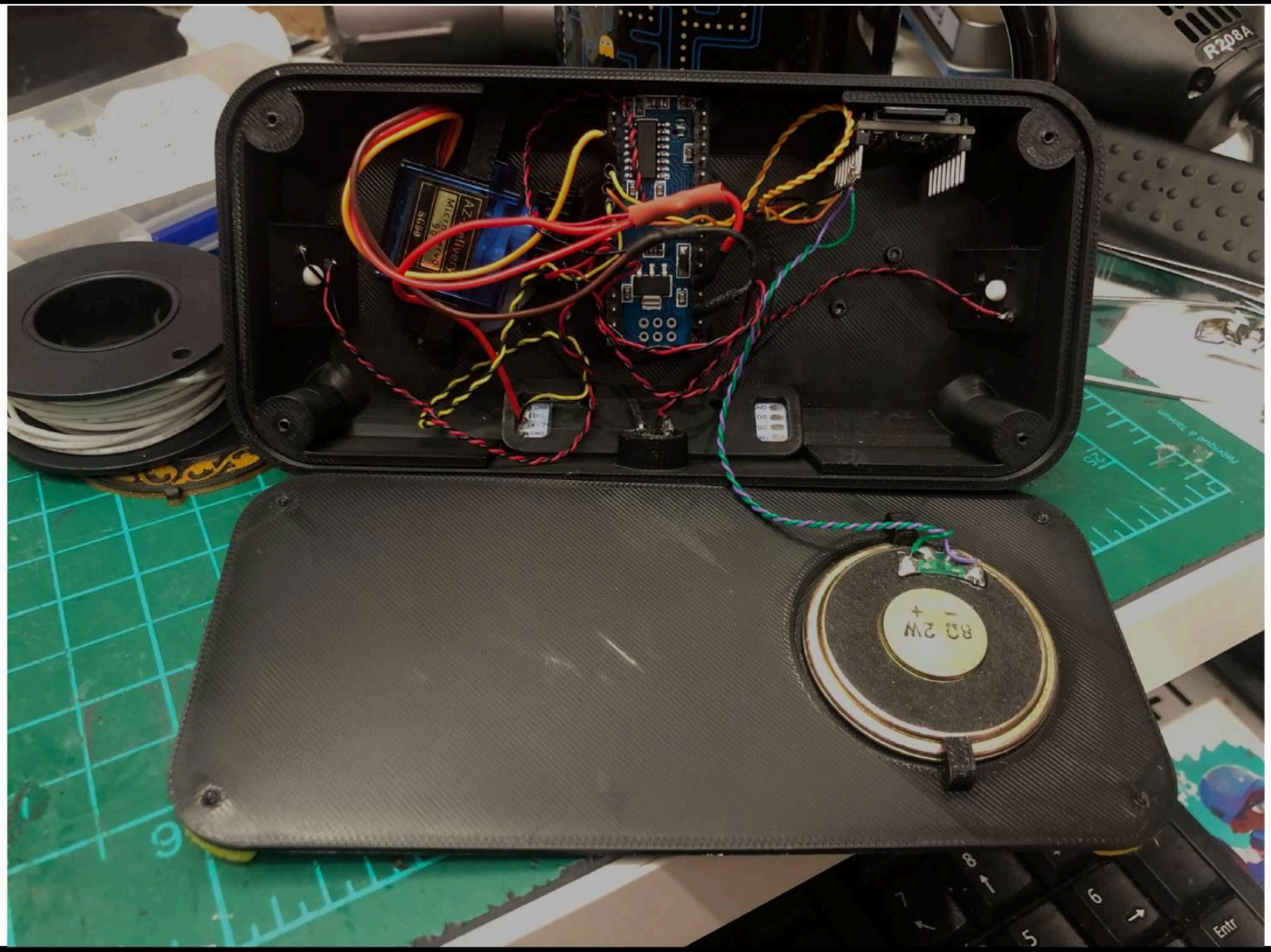
Before starting the assembly, please test the electronic setup to ensure that everything is working correctly.



Pin Connection Table

Component	Arduino Pin	Component Pin	Power	Ground
Start Button	Pin 2	Signal	-	GND
Player 1 Button (Cherry MX)	Pin 3	Signal	-	GND
Player 2 Button (Cherry MX)	Pin 4	Signal	-	GND
SG90 Servo	Pin 9	Signal (Orange)	5V (Red)	GND (Brown)
NeoPixel Strip	Pin 6	Data In	5V	GND
DFPlayer Mini	Pin 7 (RX)	TX	5V	GND
DFPlayer Mini	Pin 8 (TX)	RX	-	-
Speaker	-	-	DFPlayer SPK+	DFPlayer SPK-

Electronics

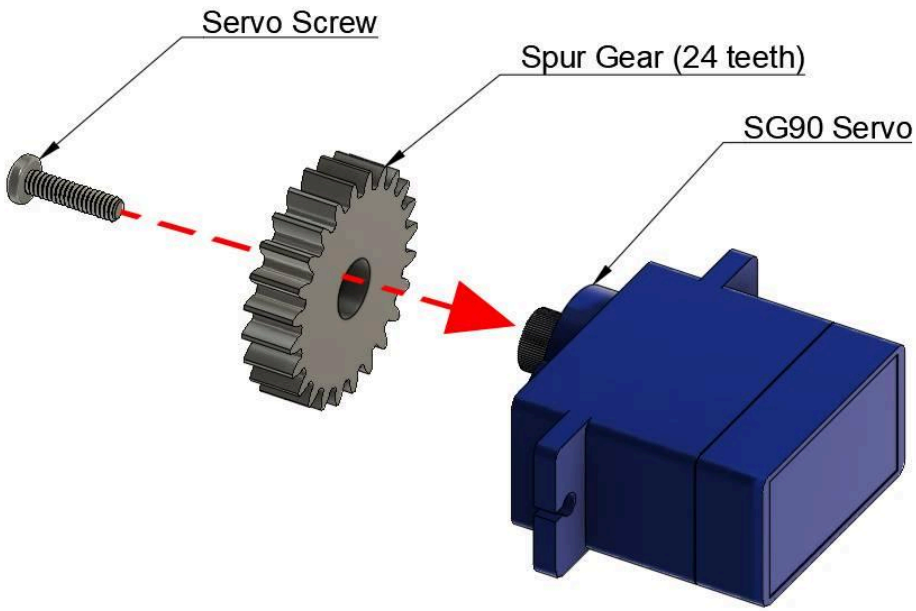


Software

Please find the software in the dedicated gitHub repository

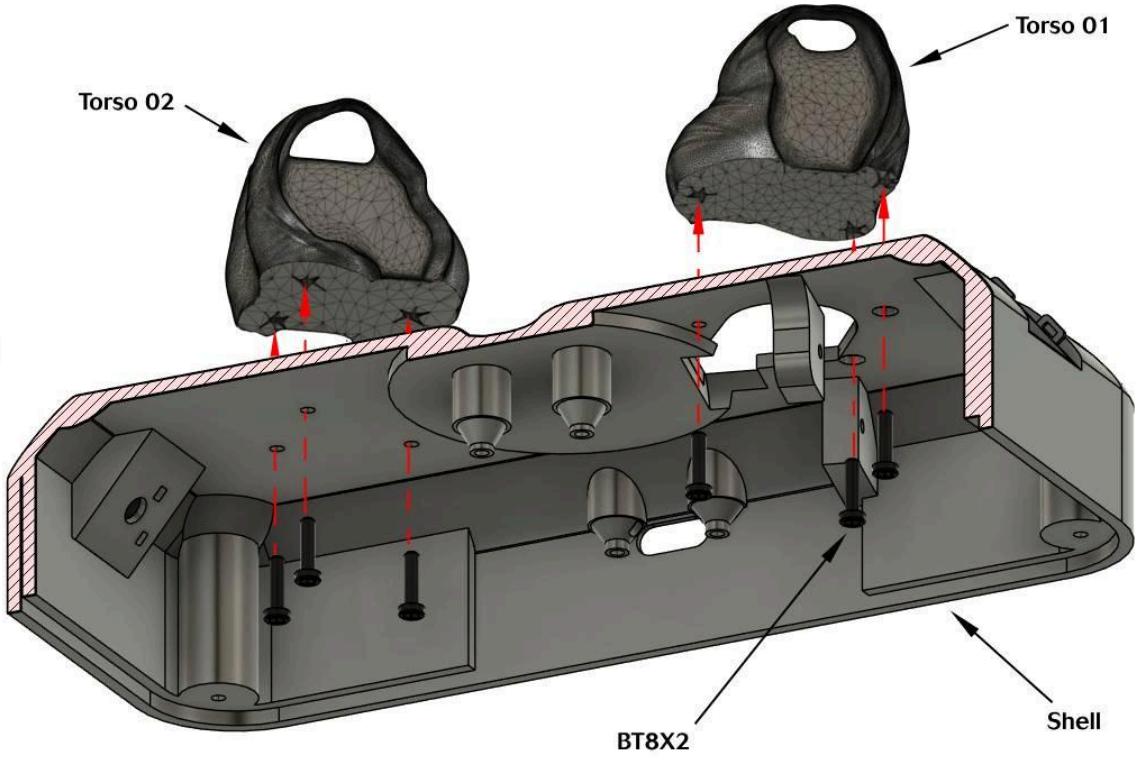
https://github.com/GuybrushTreep/IronFist

Assembly



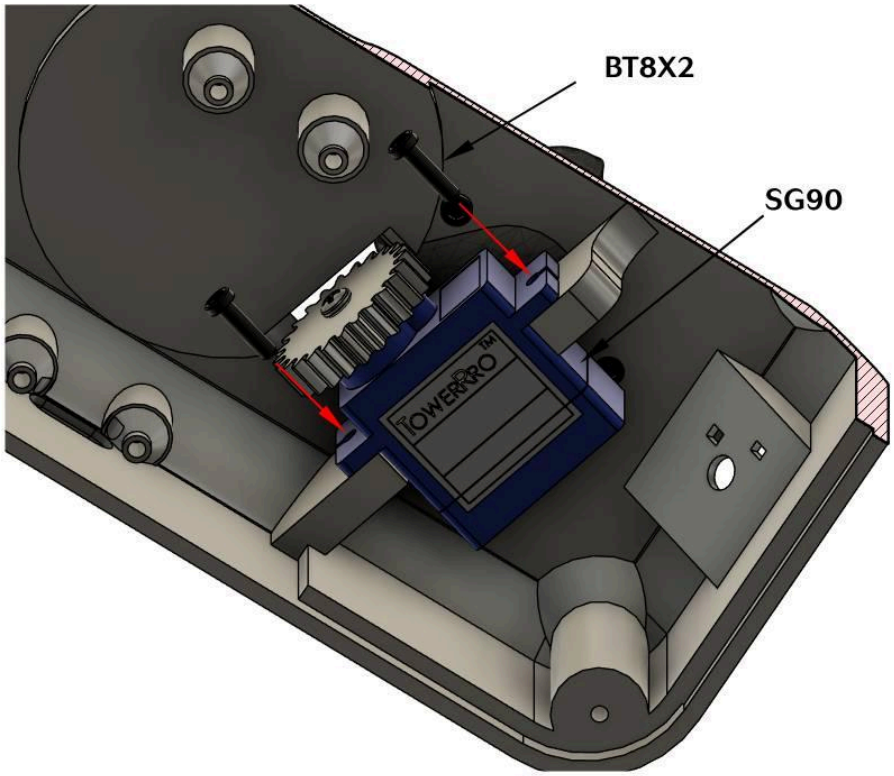
Screw the 24-tooth gear onto the servo shaft using the provided screw.

Assembly



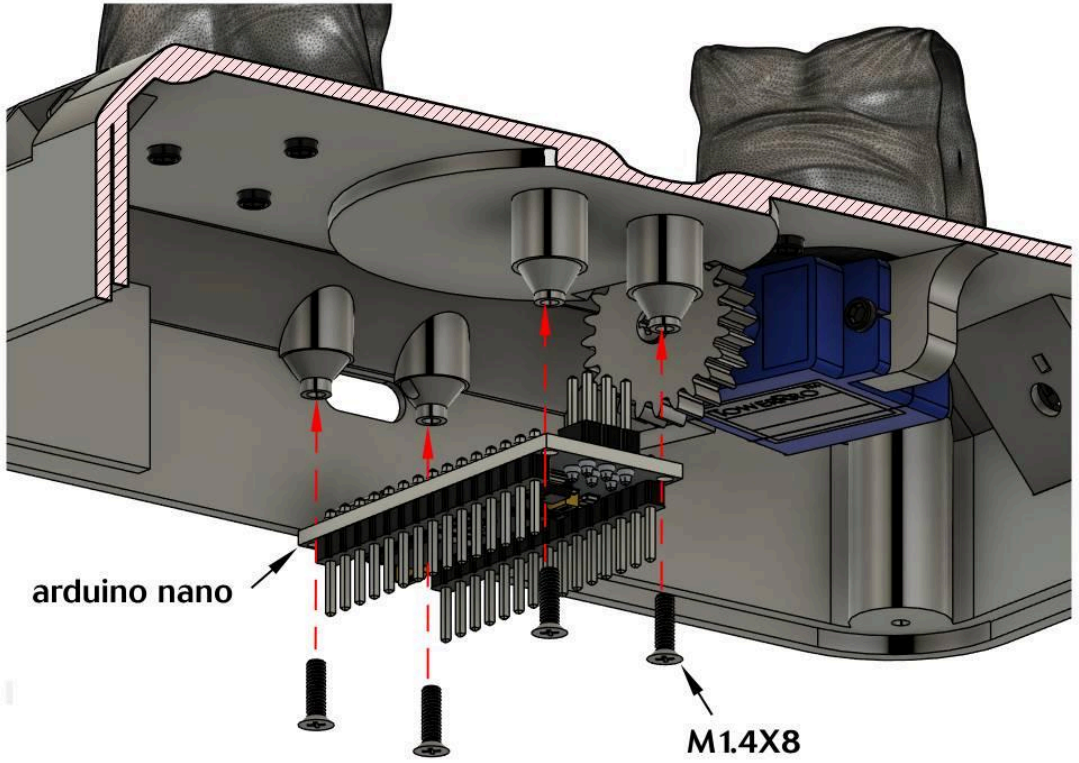
Screw the torso onto the shell using the BT8X2 self-tapping screws.

Assembly



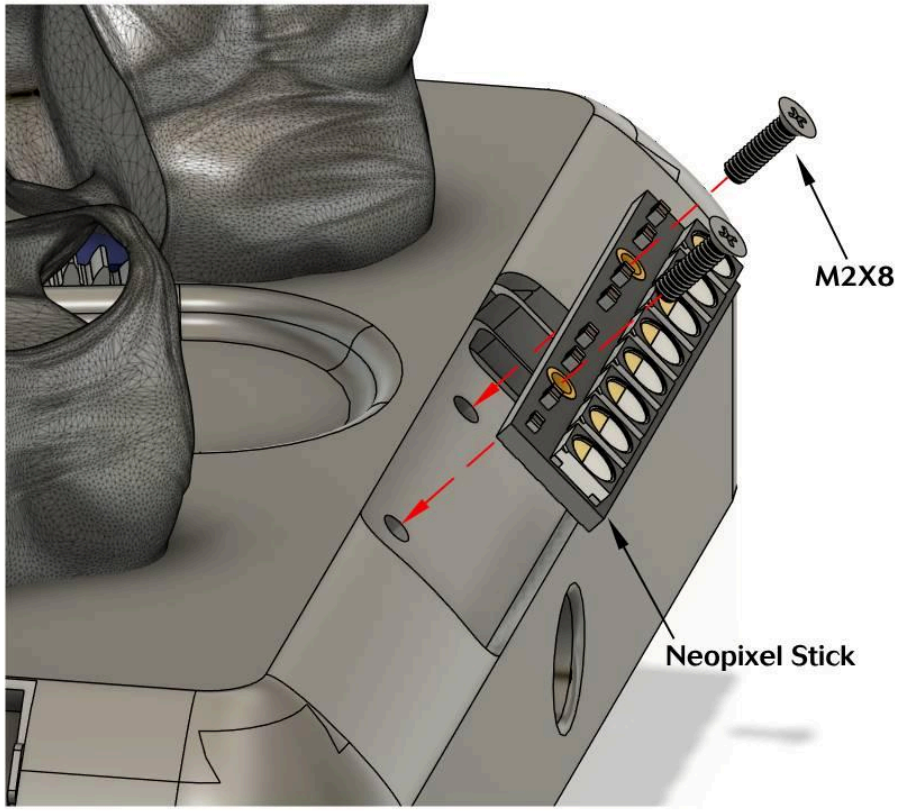
Screw the SG90 servo to the shell.

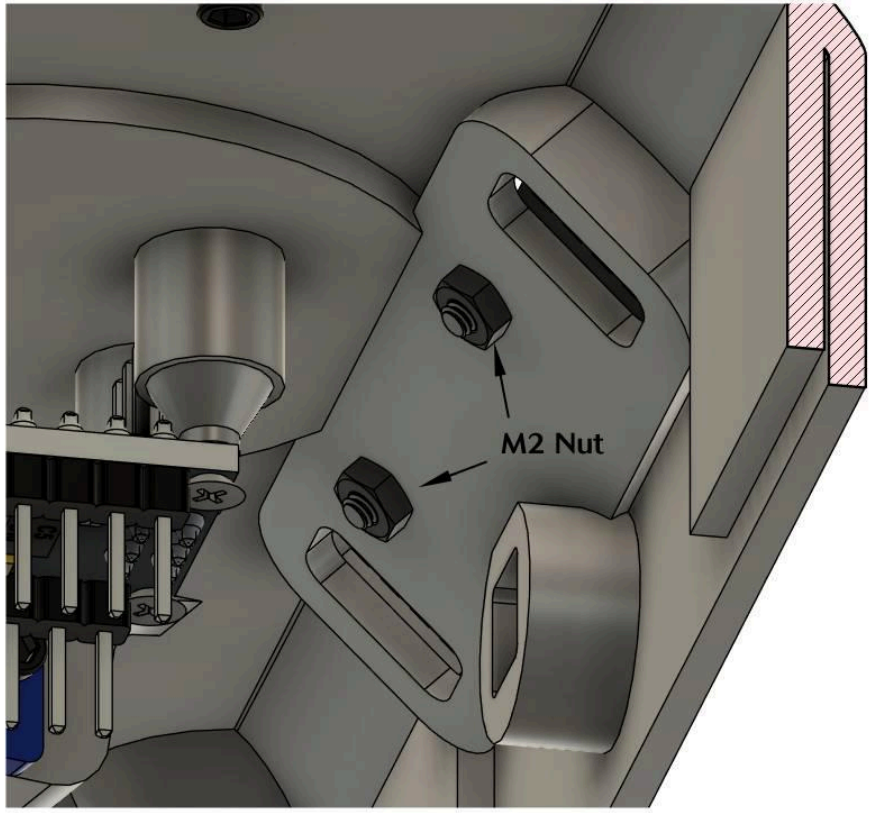
Assembly



"Screw the Arduino Nano onto the shell using M1.4X8 screws.

Assembly

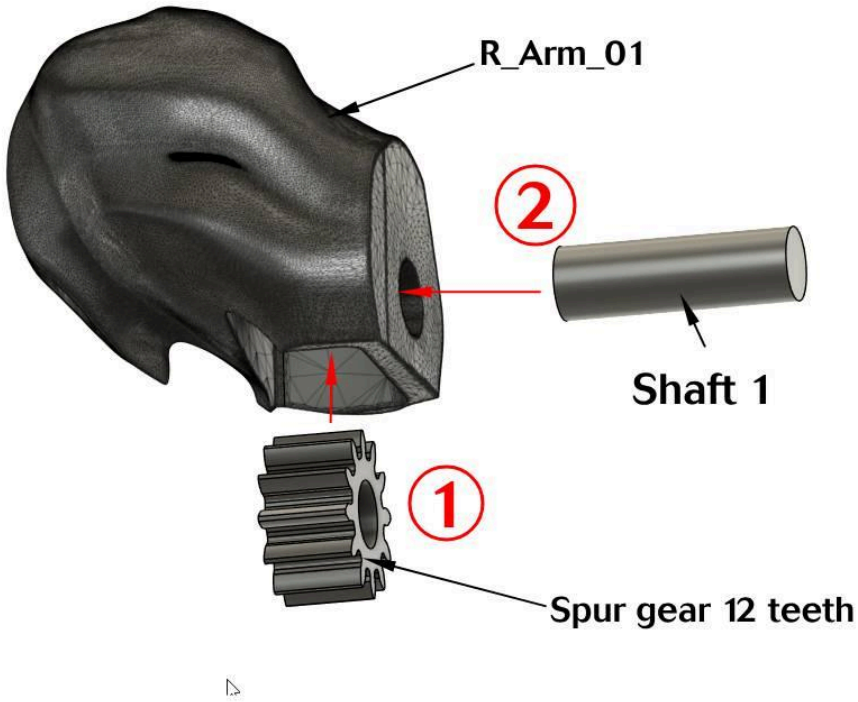




Screw the NeoPixel stick using two M2X8 screws and nuts or double sided tape

You can now connect the neopixel stick to the arduino

Assembly

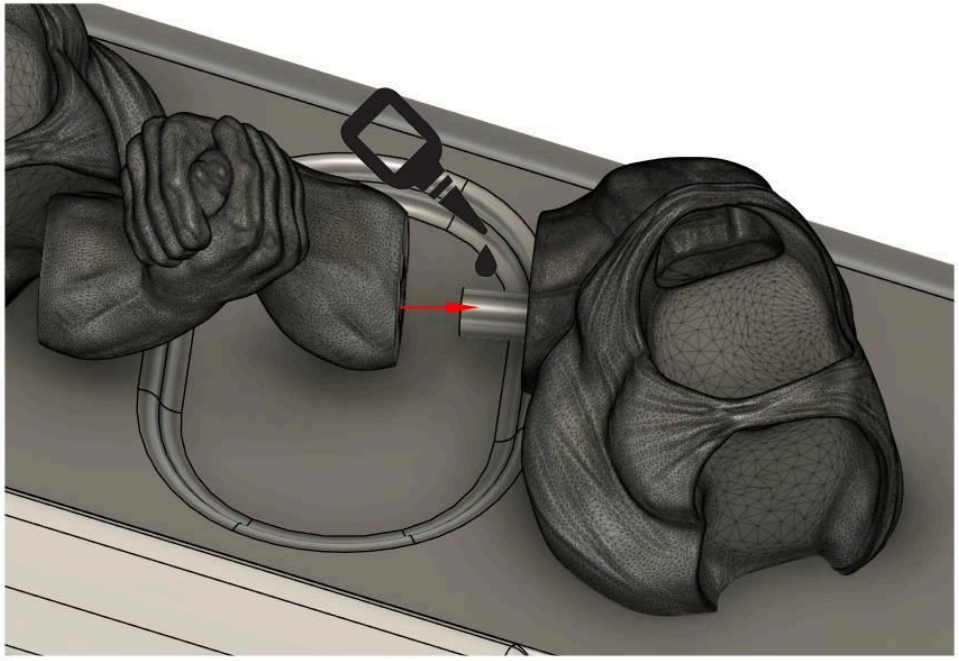


First insert the gear into the arm housing, then insert shaft 1 by gluing it in place

Assembly

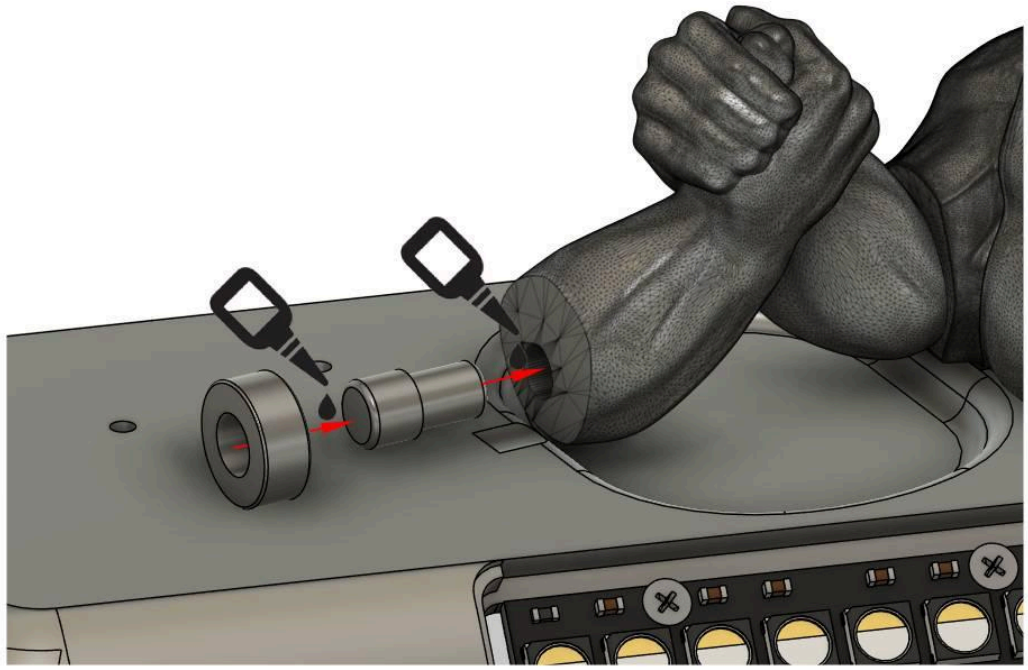
Before this step, make sure the servo is in its neutral position.

Glue the R_Arm_01 to the torso 01



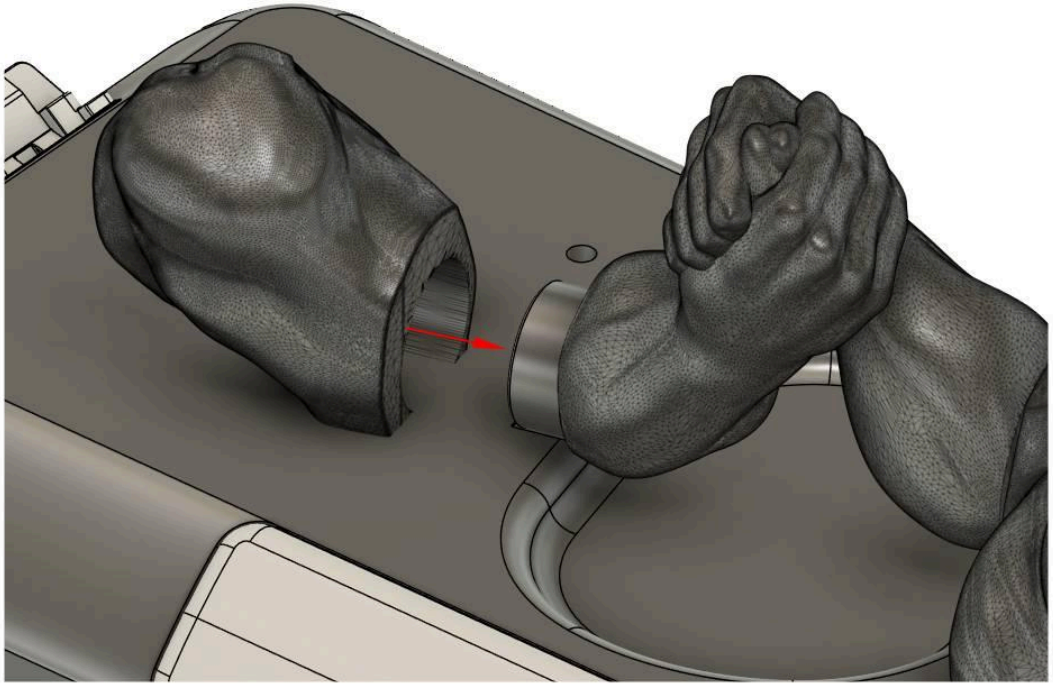
Then glue the forearm 01 onto the shaft, leaving some clearance (0.5mm) between the parts.

Assembly



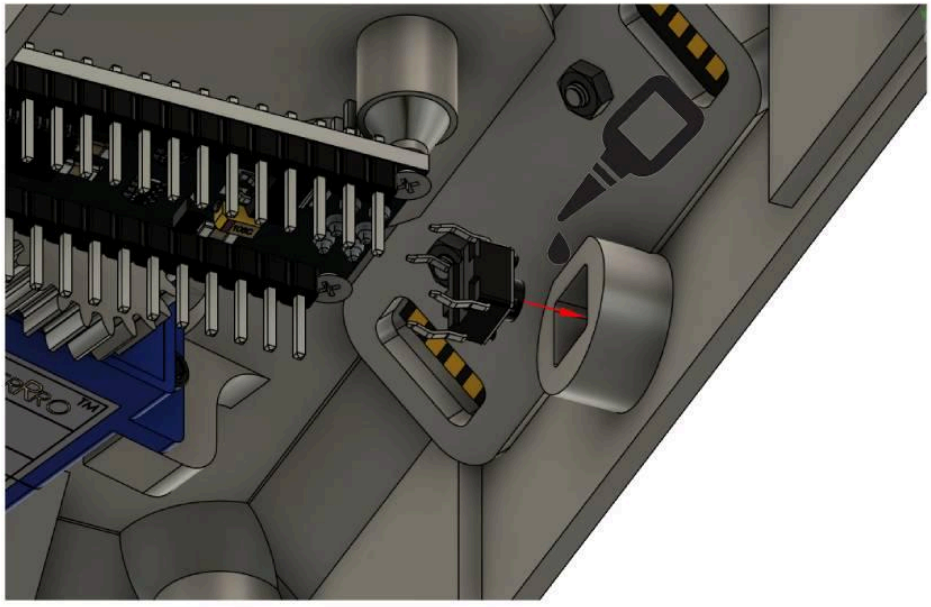
Insert and glue shaft 2 into the forearm, then insert and glue the bearing onto the shaft.

Assembly



Insert the R_Arm_02 onto the bearing, then glue it to the torso 02.

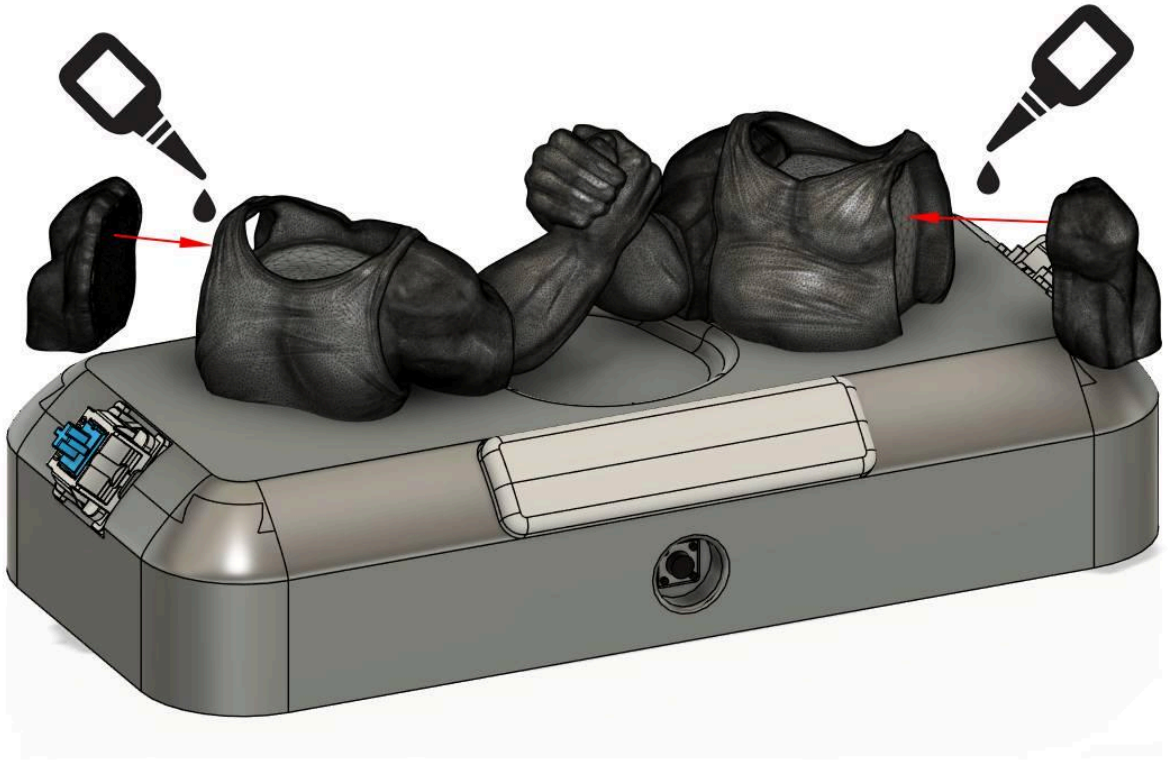
Insert the two Cherry MX switches into the shell.



Then insert and glue the push button.

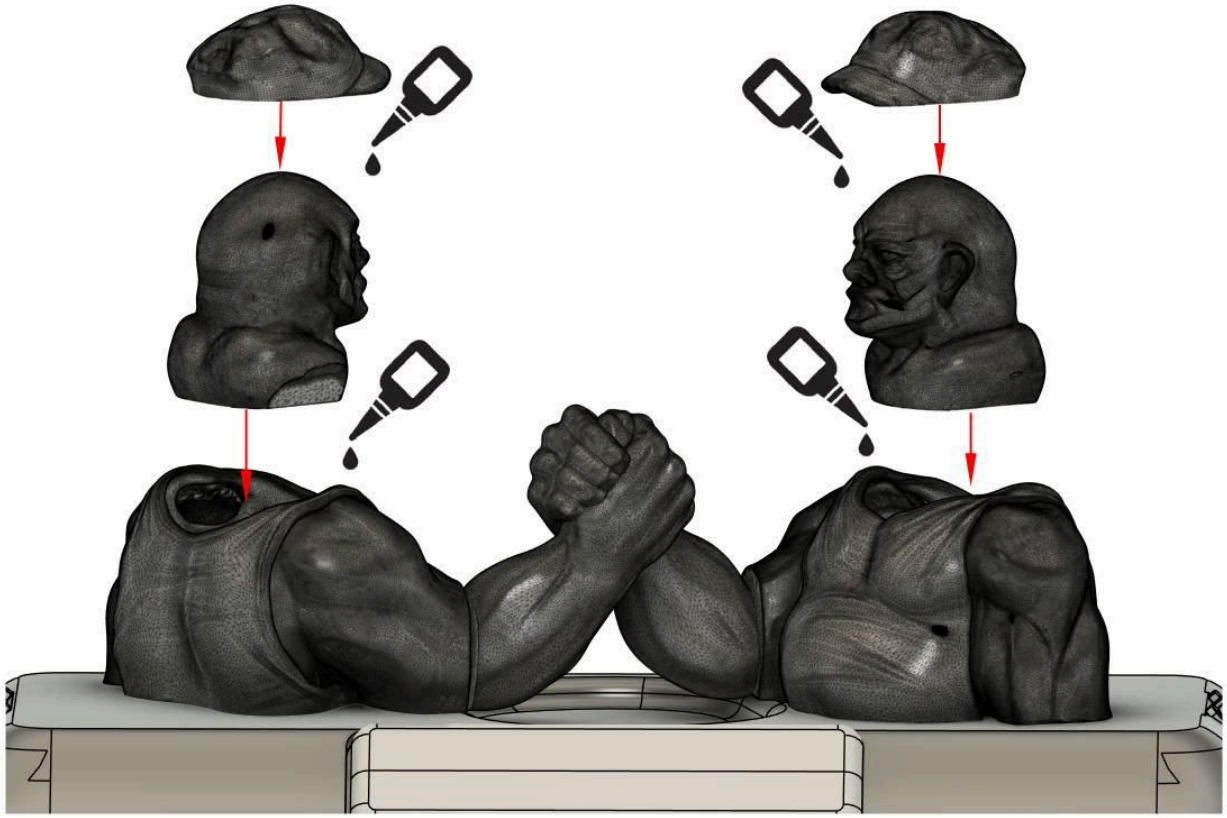
You can now solder the buttons and connect them to the Arduino

Assembly



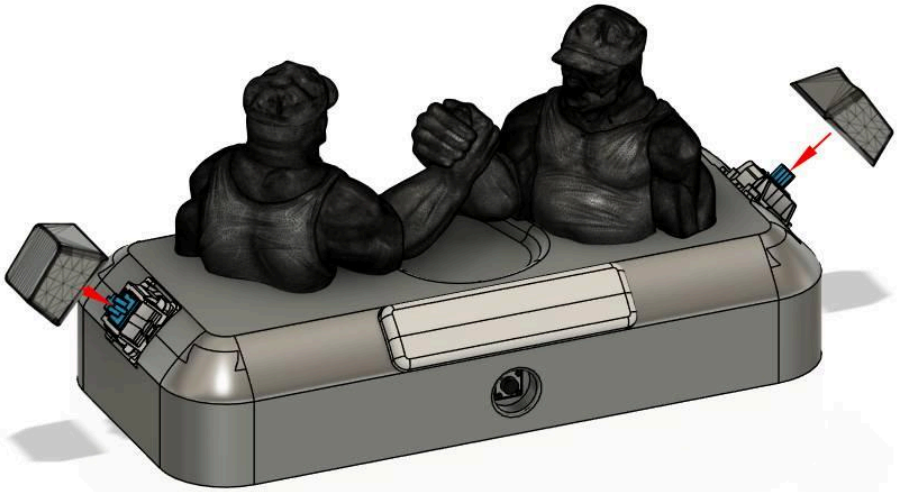
Glue the LED diffuser, then glue the two left arms.

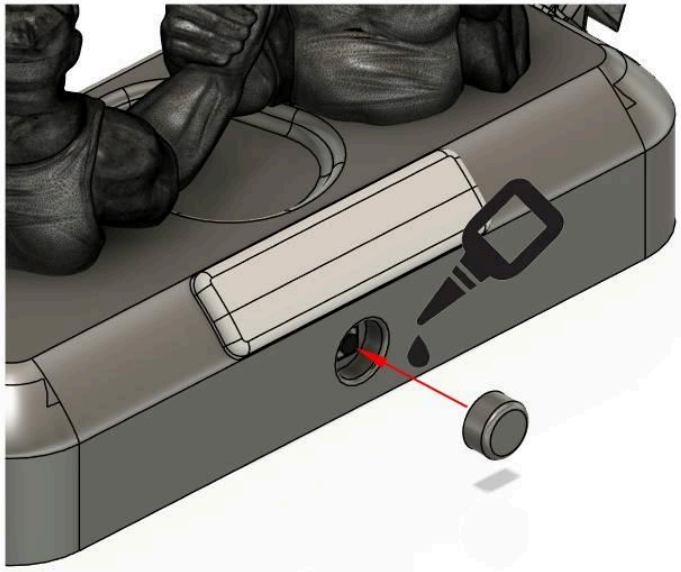
Assembly



Glue the caps onto the heads, then glue the heads onto the torsos.

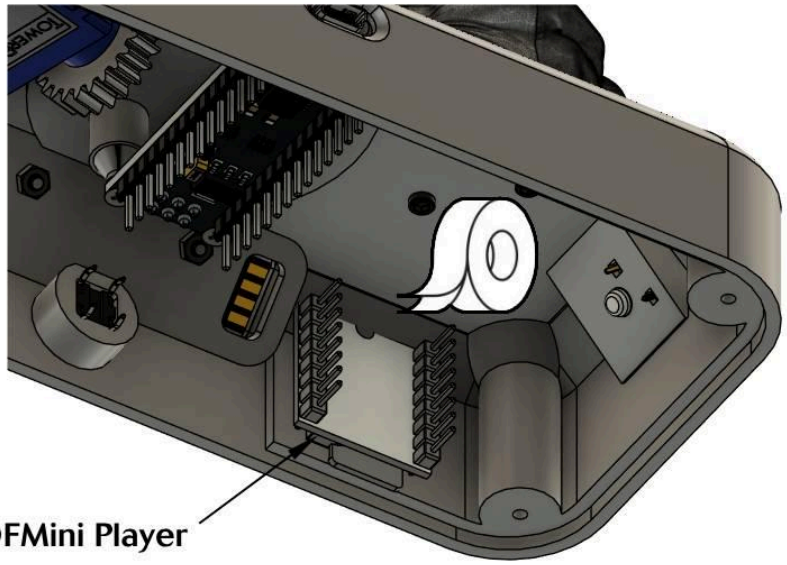
Assembly



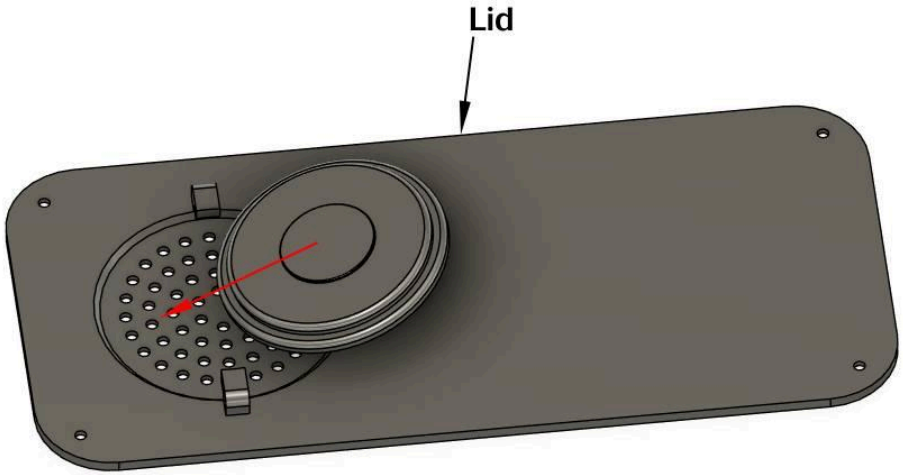


Insert the keycaps onto the Cherry MX switches, then glue the start button onto the push button.

Assembly

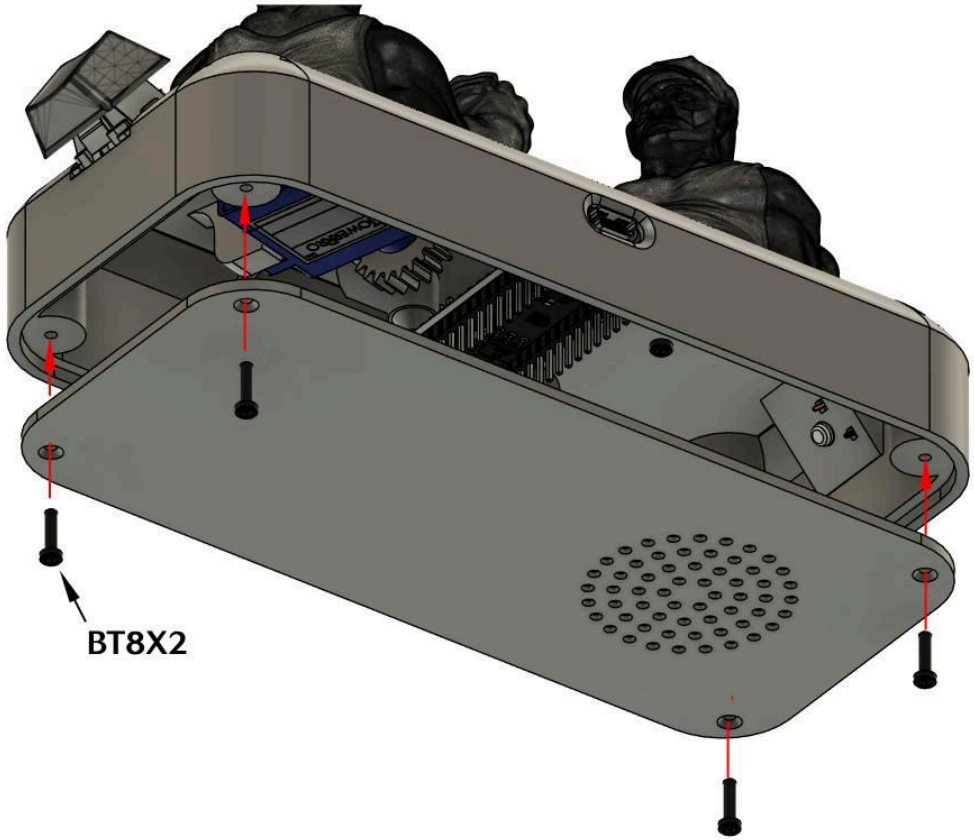


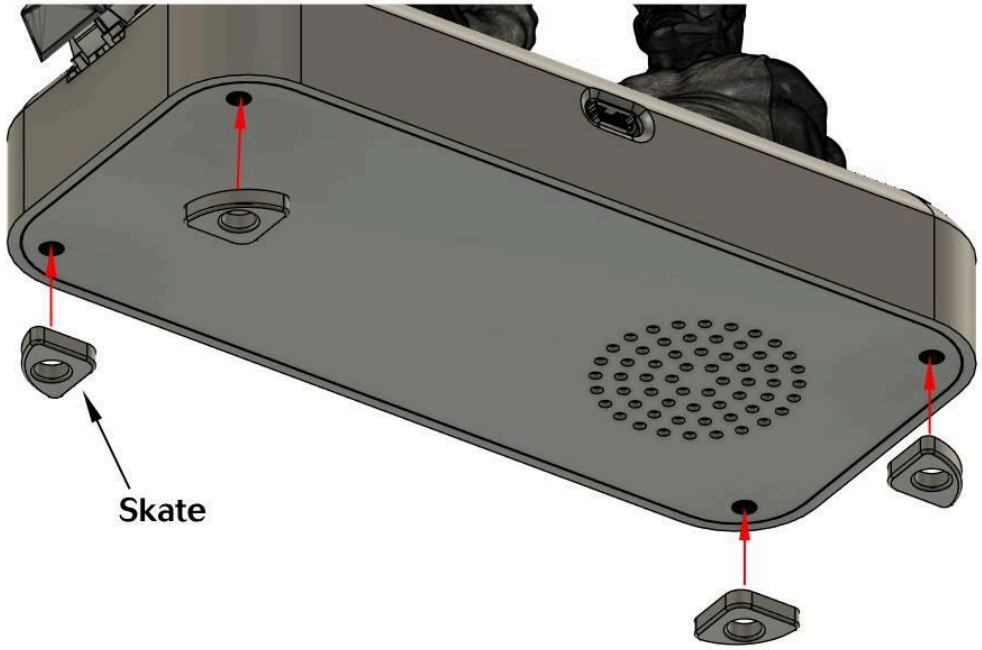
Attach the DFMini player using double-sided tape.



Slide the speaker into its housing on the cover

Assembly





Screw the cover to the shell using 4 BT8X2 screws, then glue the TPU pads.