AUBURN UNIVERSITY

WeBRLAB
WEARABLE & BIO-ROBOTICS

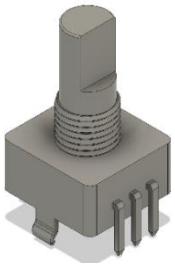
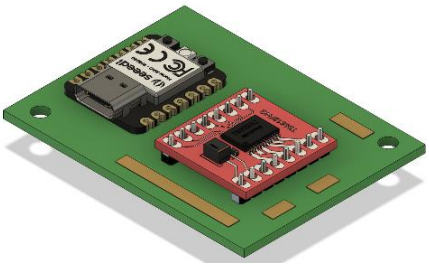
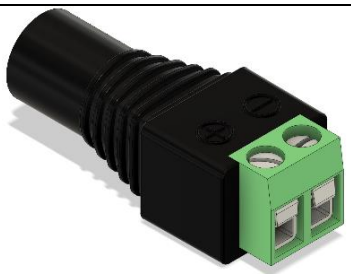
Haptic Paddle Assembly Instructions

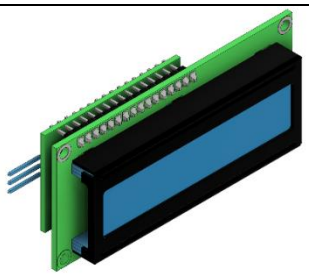
Website: https://ecm.eng.auburn.edu/wp/webr/

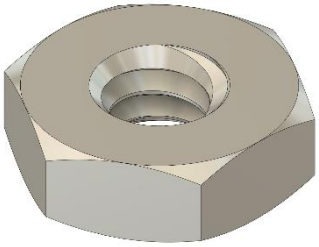
GitHub: https://github.com/JamisonHood/Haptic-Paddle

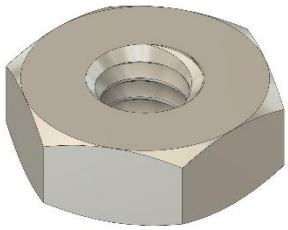
Table of Contents

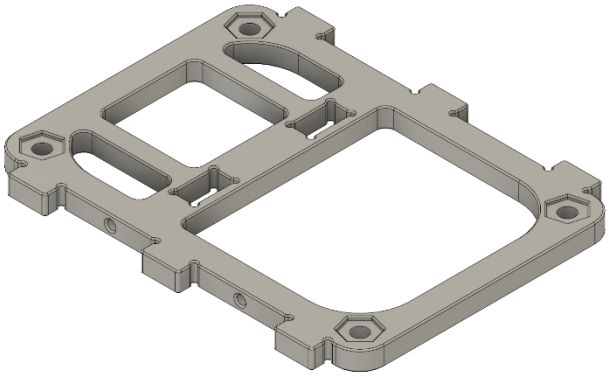
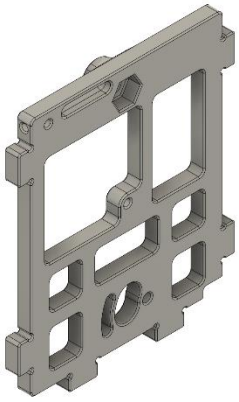
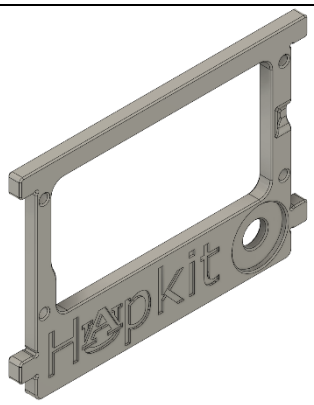
Required Components

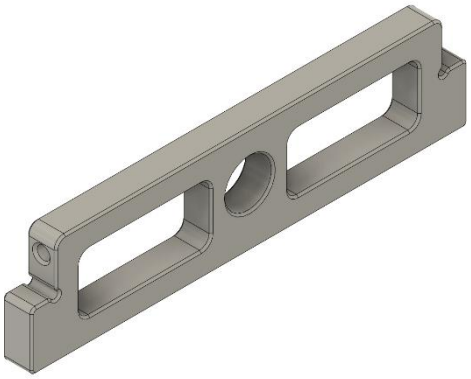
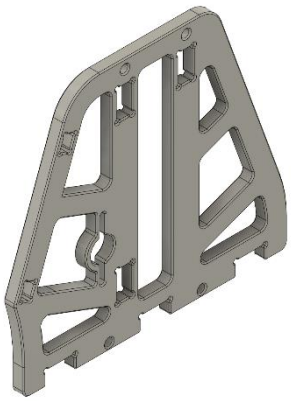
Electronics		
Part Name	Quantity	Image
Rotary Encoder	1	
Encoder Knob	1	
Control Board	1	
Brushed Motor	1	
Barrel Power Connector	1	

LCD Display	1	

Hardware		
Part Name	Quantity	Image
¼ Inch Shoulder Bolt	1	
¼ Inch Sleeve Bushing	1	
10-24 Nut (For Shoulder Bolt)	1	
Rubber Feet	4	

8-32 Nut (For Rubber Feet)	4	
Disc Magnet	1	
18-8 Pan Head Screw	16	
Rubber Sleeve	1	

3D printed Components		
Part Name	Quantity	Image
Base Plate	1	
Motor and Electronics Plate	1	
LCD Frame	1	

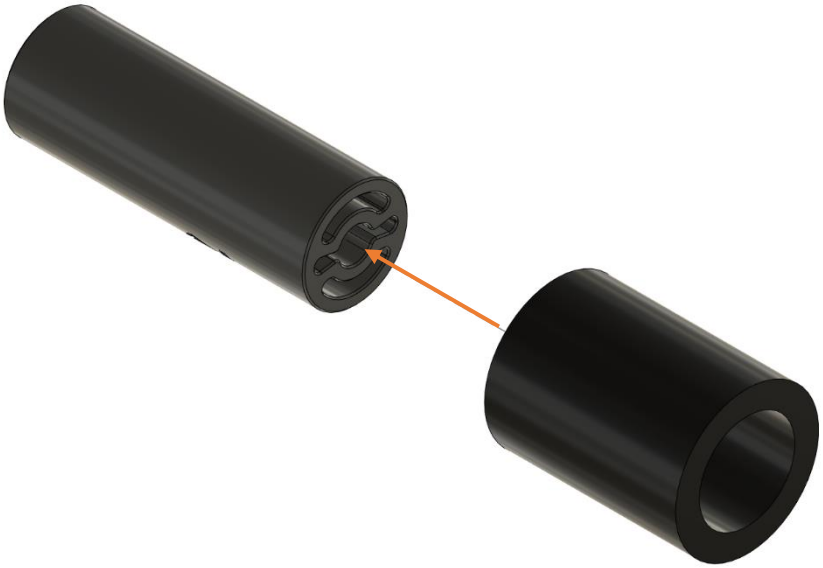
Shoulder Support Plate	1	
Left Side Plate	1	
Right Side Plate	1	
Motor Pulley	1	

Paddle	1	

Assembly Steps

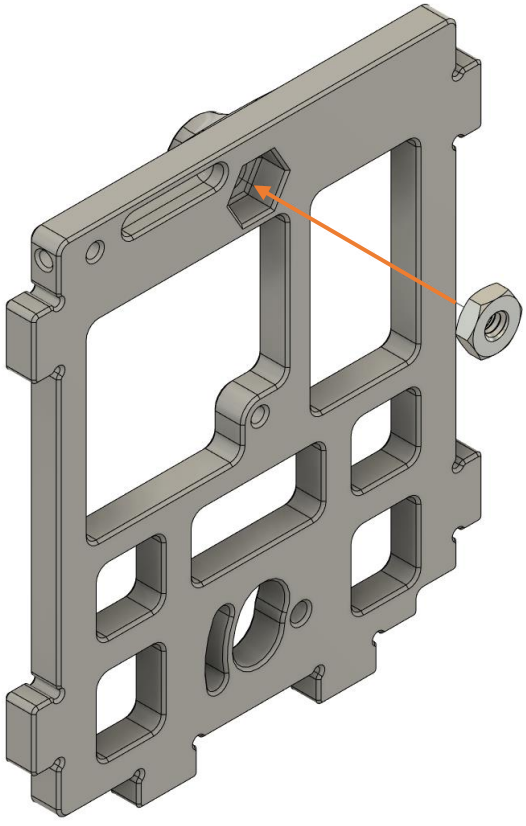
1

Assemble the motor pulley by pressing the rubber sleave over the 3D printed Pulley.



2

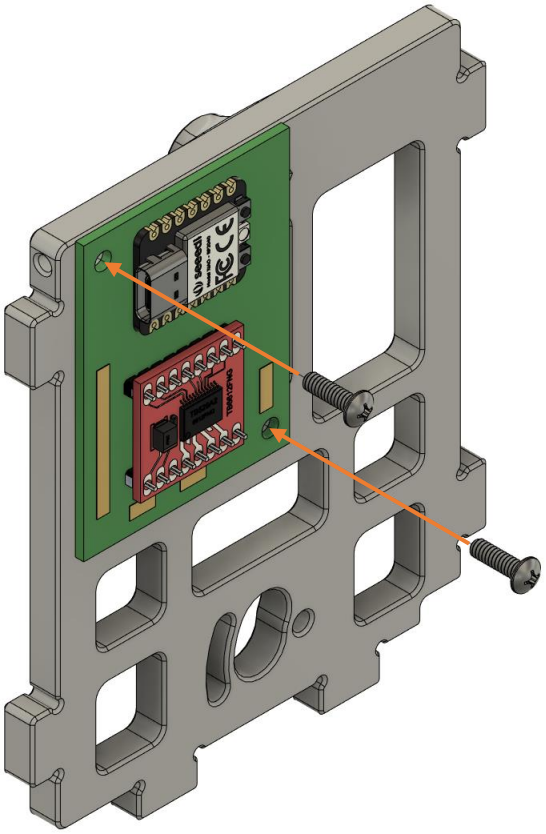
Insert the 10-24 nut into the hexagonal hole in the motor and electronics plate.



3

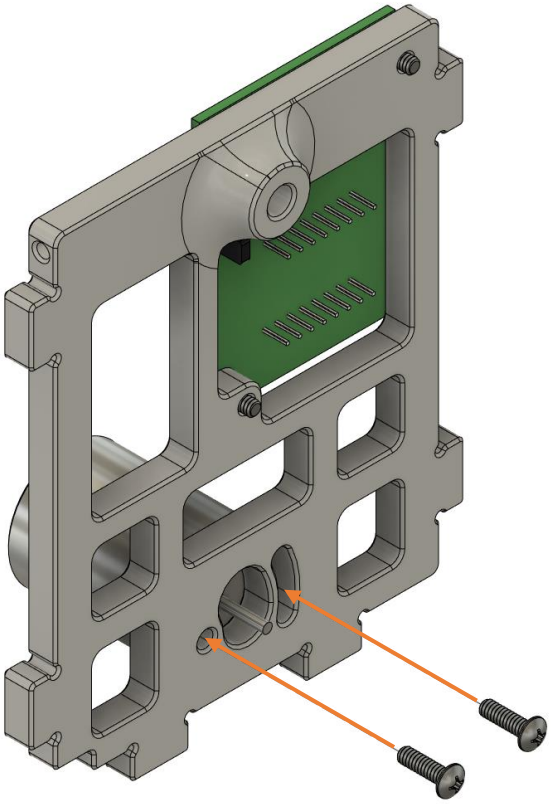
Attach the electronics PCB using 2 #18-8 Screws.

Note: Make sure the #10-24 nut is in place as it will not be accessible after this step.



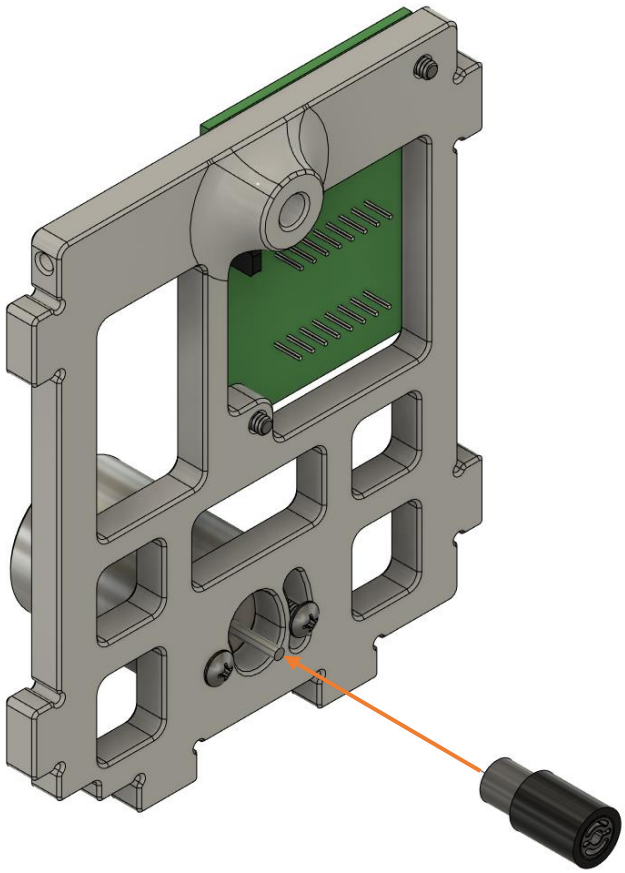
4

Attach the brushed motor using 2 #18-8 screws. Leave the screws loose such that the motor can freely swing in its mount.



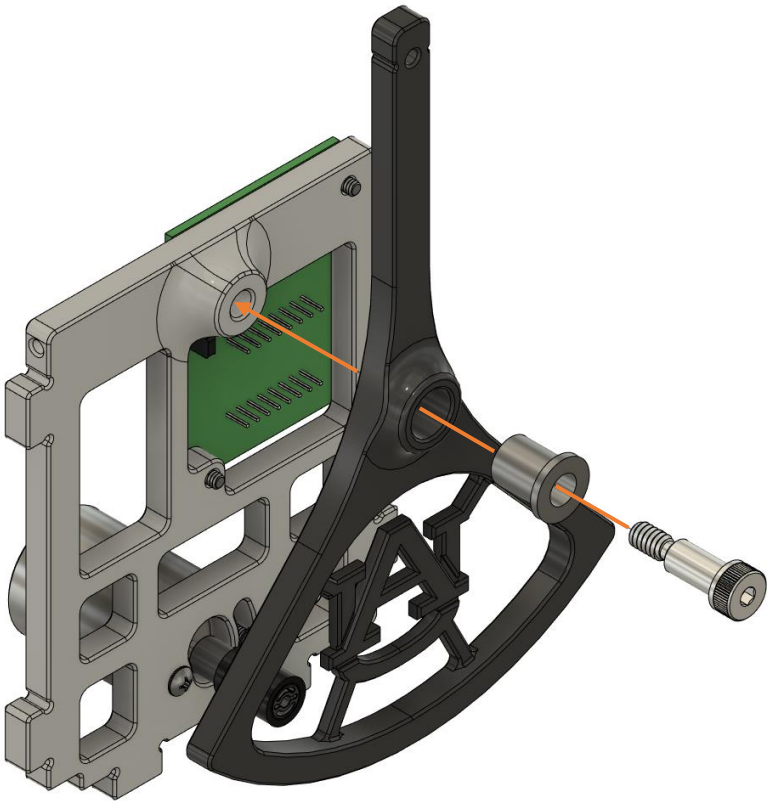
5

Press the assembled motor pulley onto the motor shaft. It should make a tight press fit.



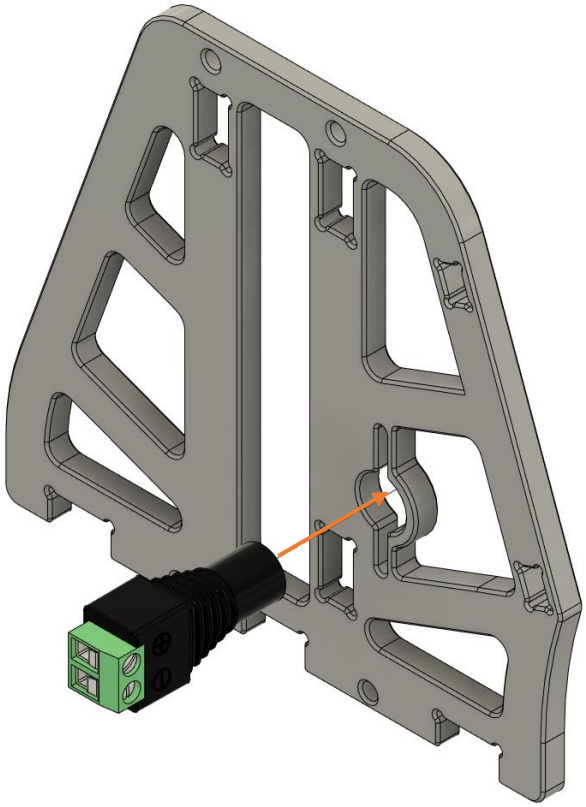
6

Attach the paddle to the assembly using the ¼ inch shoulder bolt and the ¼ Inch Sleeve Bushing. Make sure the paddle can freely rotate on the shoulder bolt.



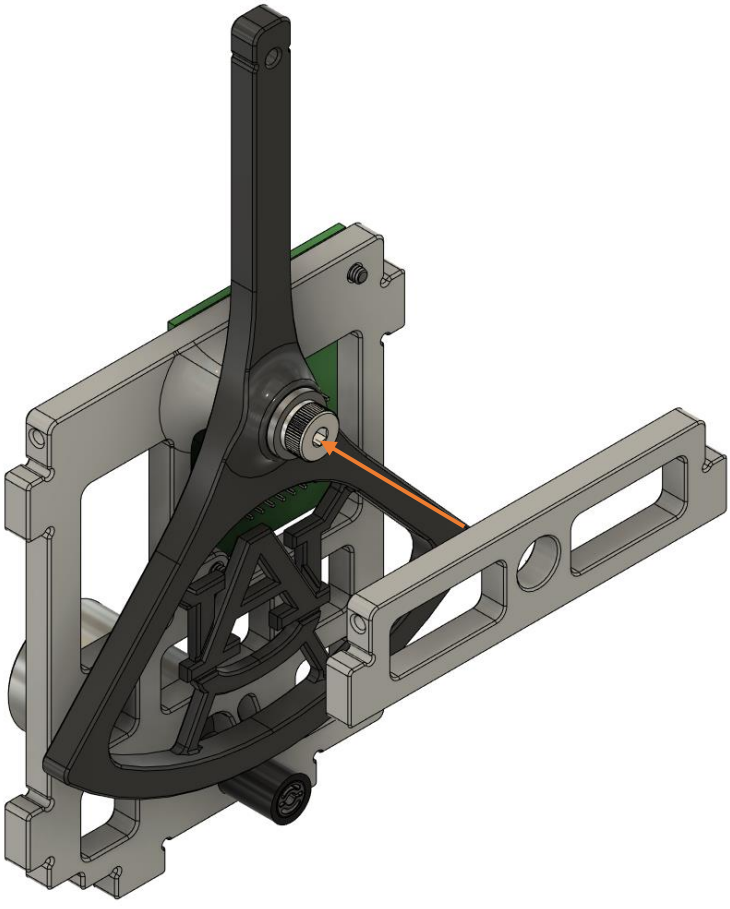
7

Press the power connector into the designated hole on the right-side plate.



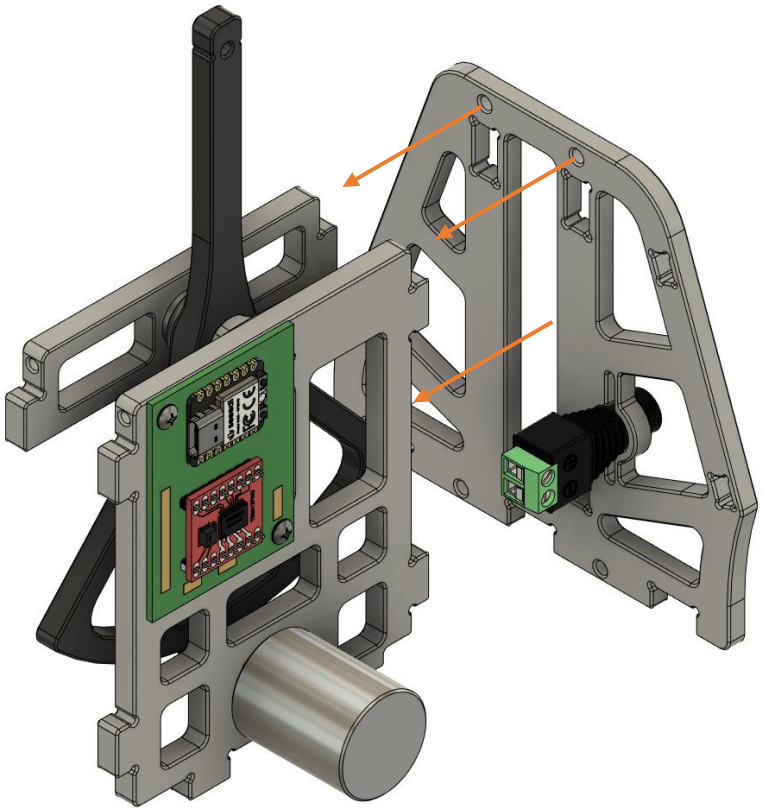
8

Press the support plate over the head of the shoulder bolt.



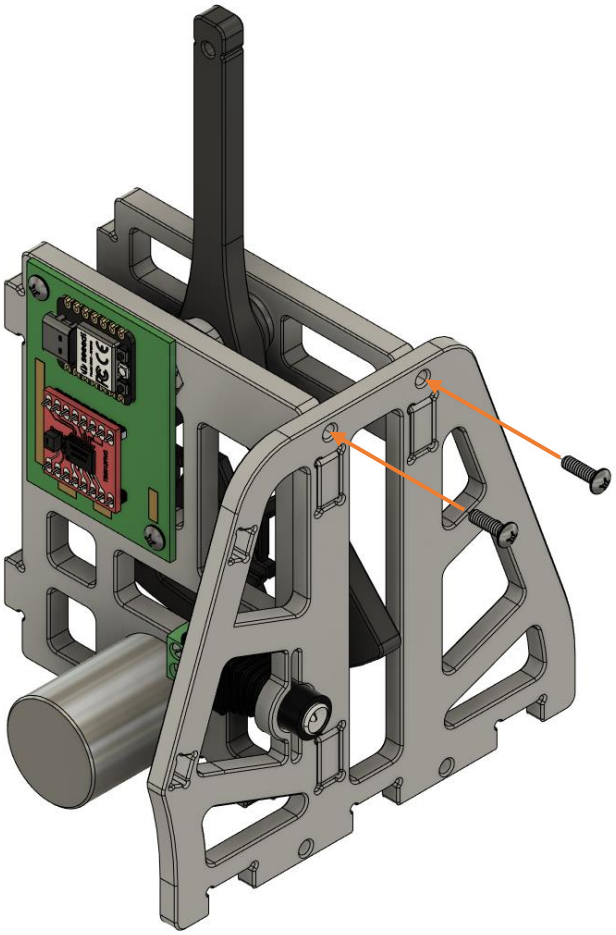
9

Align the tabs of the assembly with the slots located on the right-side plate.



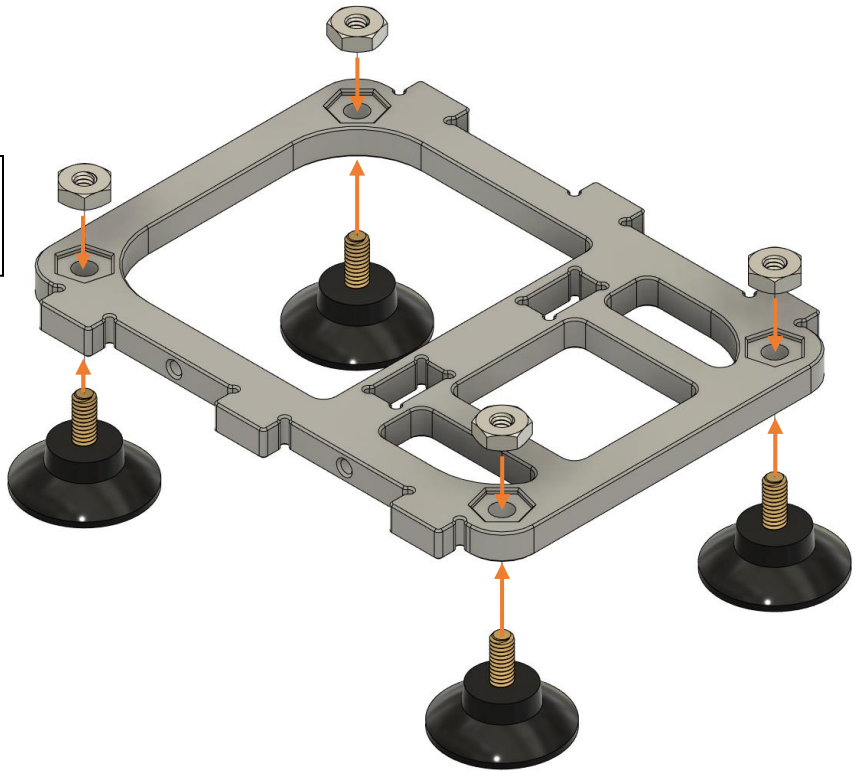
10

Attach the right-side plate using 2 #18-8 screws.



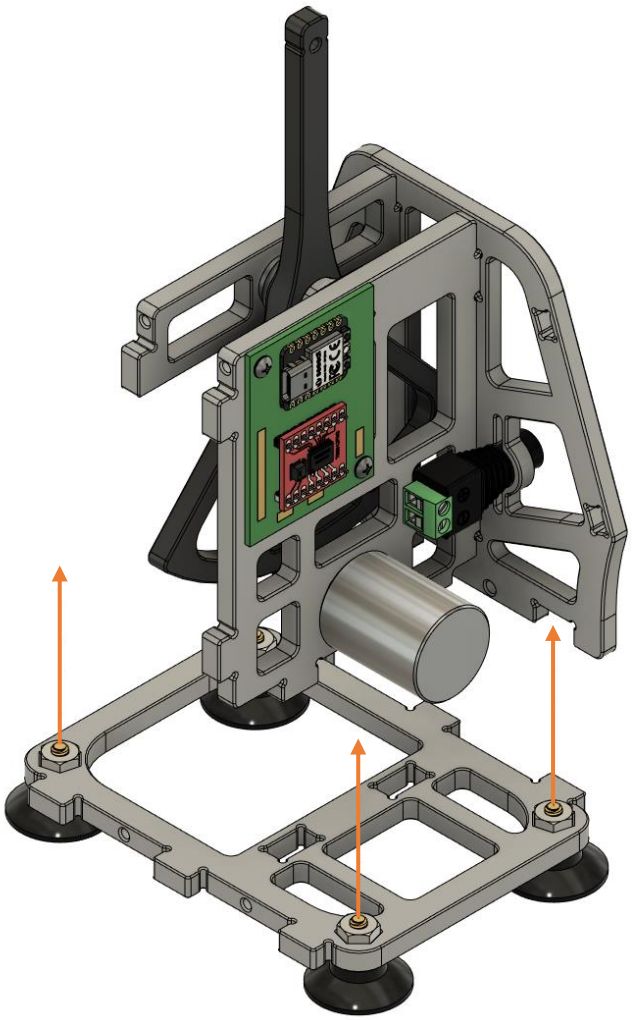
11

Assemble the base plate using the 4 rubber feet and #8-32 nuts.



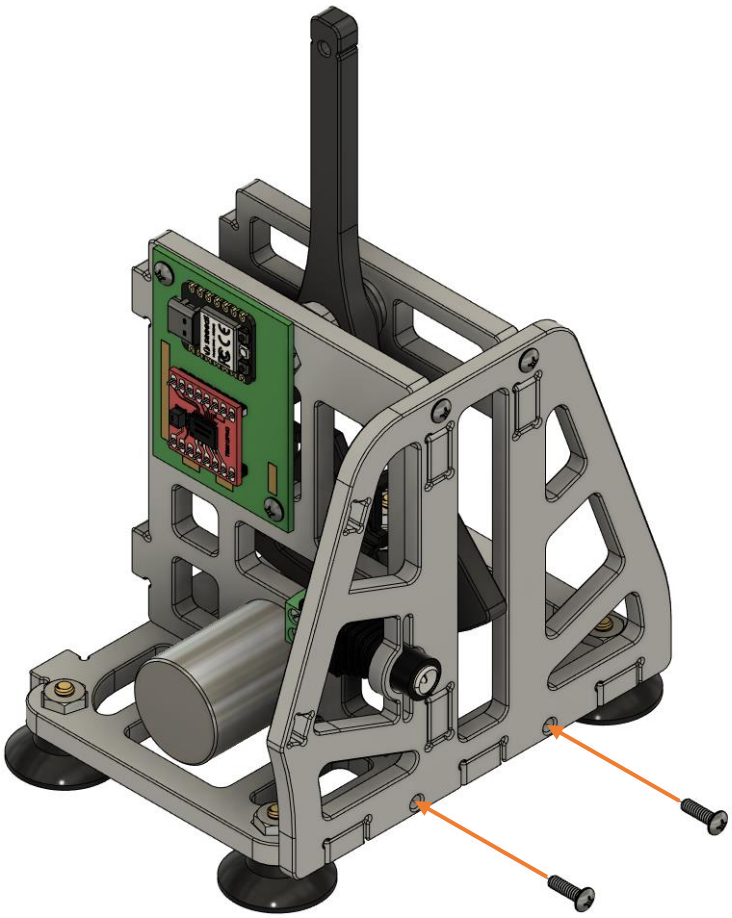
12

Align and attach the base plate to the rest of the assembly.



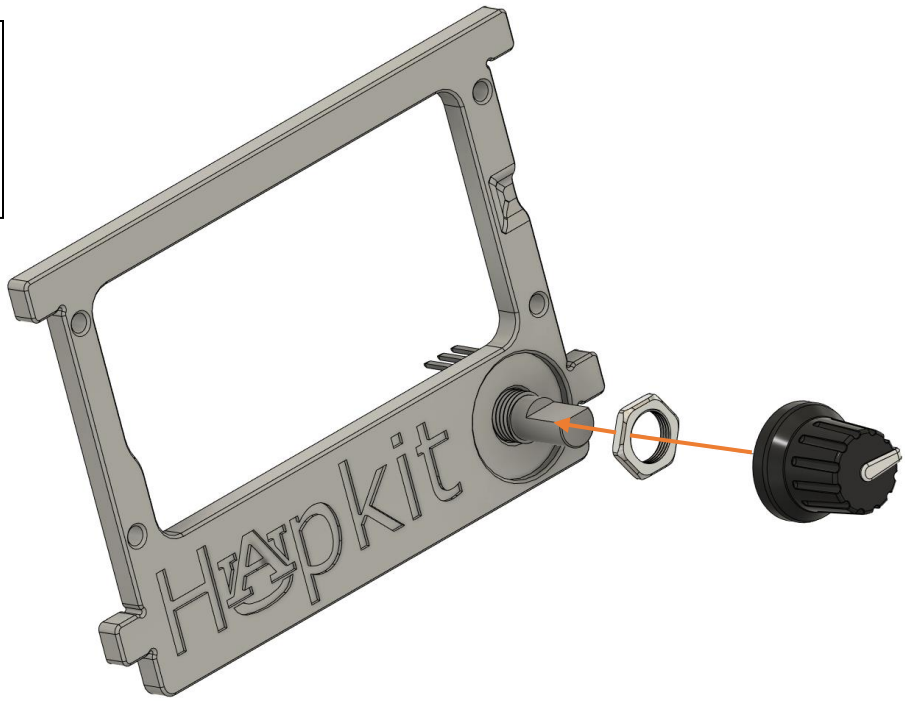
13

Secure the base plate using 2 #18-8 screws.



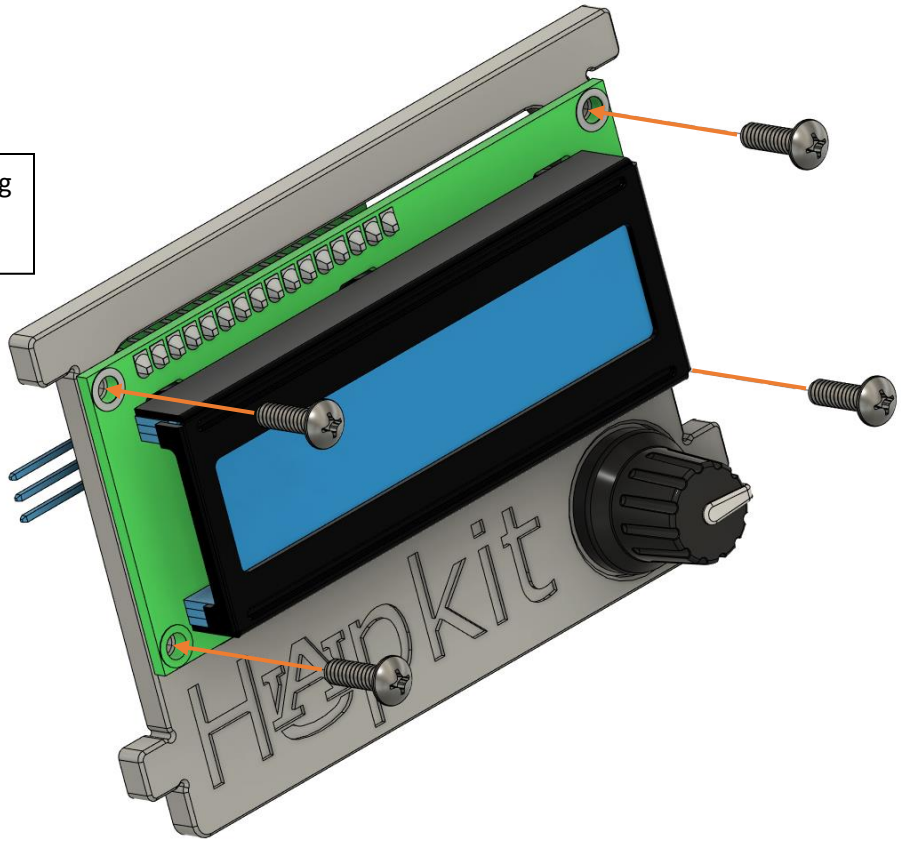
14

Attach the encoder to the LCD frame using the included encoder nut. Then press the encoder knob onto the encoder.



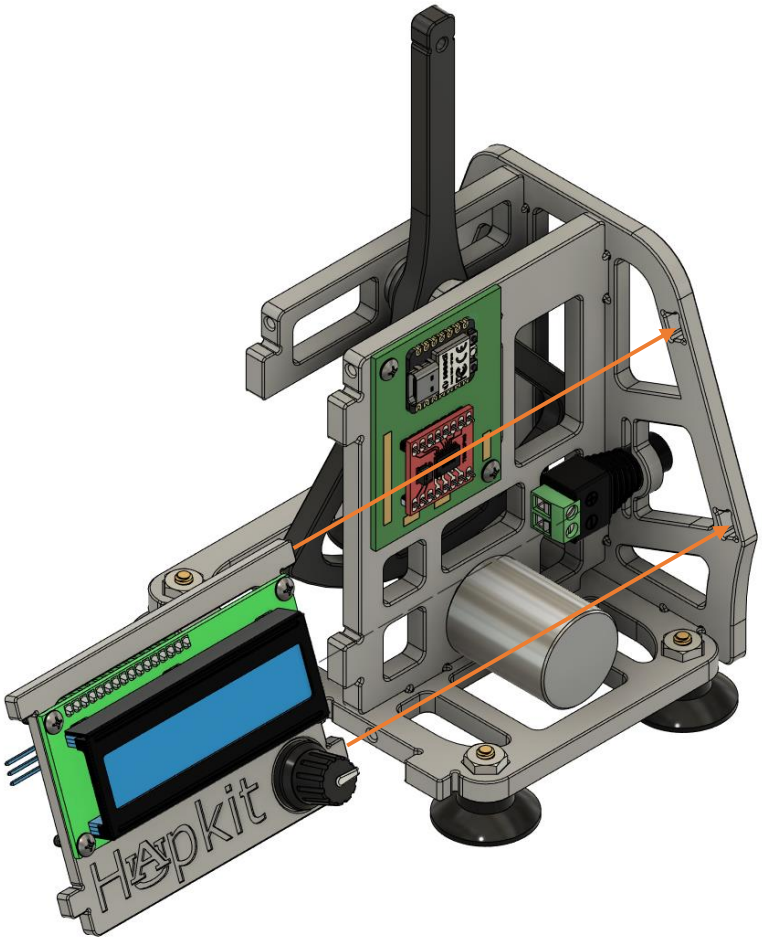
15

Attach the LCD to the LCD frame using 4 #18-8 screws.



16

Press the tabs of the LCD assembly into the corresponding slots on the right-side plate.



17

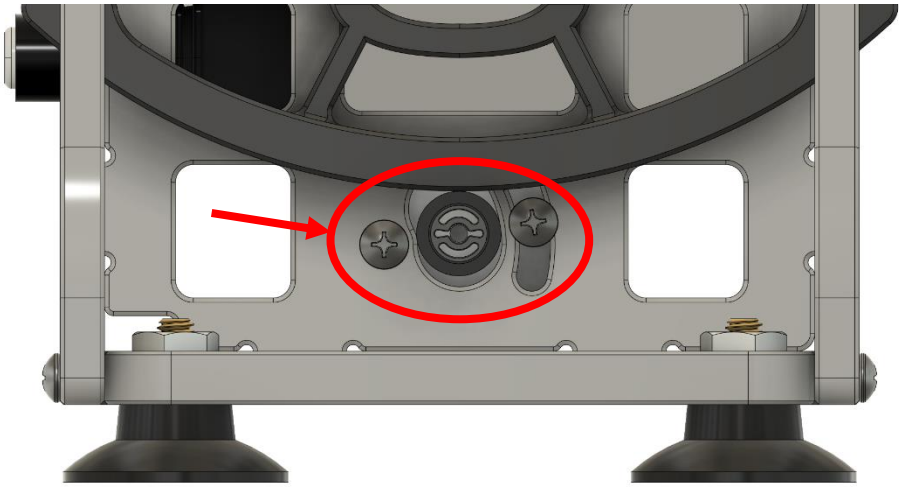
Align the left-side plate with each of the tabs located on the assembly.

18

Secure the left-side plate using the remaining 4 #18-8 screws.

19

Rotate the motor counter-clockwise such that the pulley makes contact with the radius of the paddle. Tighten the 2 motor screws to lock the motor in place. Make sure that the motor rotates when the paddle moves. There shouldn't be an excessive amount of resistance when rotating the paddle.



20

This is what the final assembly should look like.