

Our pupillometry wheel set-up requires five custom parts made from Aluminum 304 and Aluminum 6061-T6. These components fit securely to the optical posts we purchased from Thorlabs. We ordered them from eMachineShop, using the following files:

- Heading.step / Heading_mod_five_eighths.step
- HeadPlateTop.step
- RotaryEncoderAdapter.step
- HeadPlateHolderThreaded.sldprt
- HeadPlateBottomThreaded.sldprt

	Material	L x W x H (Inches)	Tolerance (Inches)
Rotary Encoder	Aluminum 304	0.590" x 0.157" x 2.559"	+/- 0.005"
Head Plate Holder		1.184" x 0.595" x 0.667"	
Head Plate Holder Top		2.755" x 0.118" x 1.181"	
Head Plate Holder Bottom		4.330" x 0.118" x 1.181"	
Head Ring	Aluminum 6061-T6	0.475" x 0.472" x 0.130"	

Table 1. The dimensions of each machined component in inches.

	Material	L x W x H (Centimeters)	Tolerance (Centimeters)
Rotary Encoder	Aluminum 304	1.498 x 0.398 x 6.50	+/- 0.0127
Head Plate Holder		3.007 x 1.511 x 1.694	
Head Plate Holder Top		6.997 x 0.299 x 2.999	
Head Plate Holder Bottom		10.998 x 0.299 x 2.999	
Head Ring	Aluminum 6061-T6	1.206 x 1.198 x 0.330	

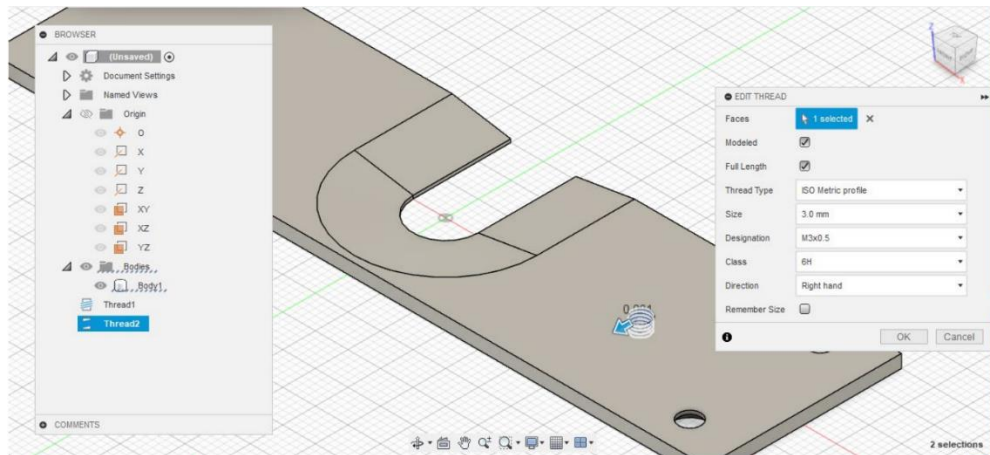
Table 2. The dimensions of each machined component in centimeters.

	Itemized Cost
Rotary Encoder	\$28.43
Head Plate Holder (Set of 2)	\$60.44
Head Plate Holder Top	\$39.14
Head Plate Holder Bottom	\$51.01
Head Ring	\$5.16

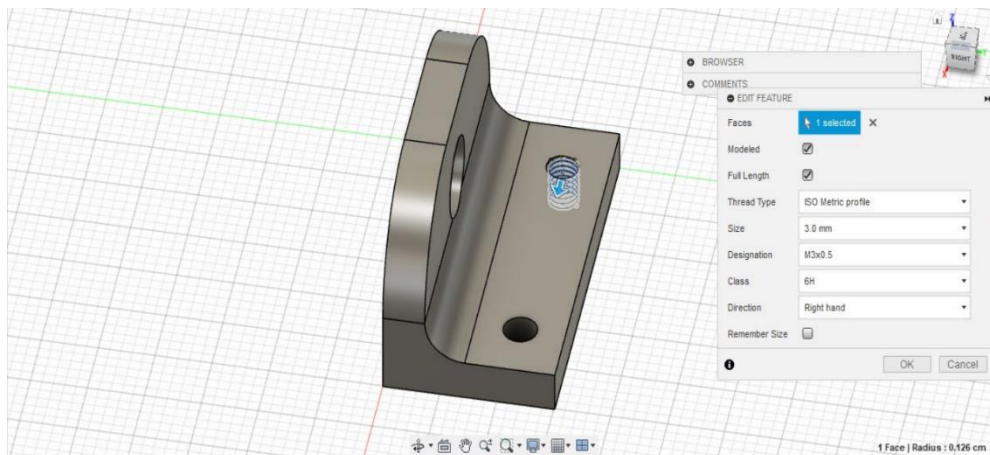
Table 3. The eMachineShop quotes for the five custom components, obtained in June 2023.

When submitting a quote through eMachineShop for custom CNC machining, you will be asked to "Specify threading and tolerances in a PDF, PNG or JPG". The following screenshots from

Fusion 360, with the accompanying description, will ensure that the two components are properly threaded.



The two holes closest to the center of the plate of the “HeadPlateBottomThreaded.sldprt” file are each internally threaded with size 3 mm threads (ISO Metric profile, thread tolerance 6H, right hand direction).



The two 0.396 cm diameter holes along the base of the “HeadPlateHolderThreaded.sldprt” file are each internally threaded with size 3 mm threads (ISO Metric profile, thread tolerance 6H, right hand direction).