

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

	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 1. 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.

	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"	

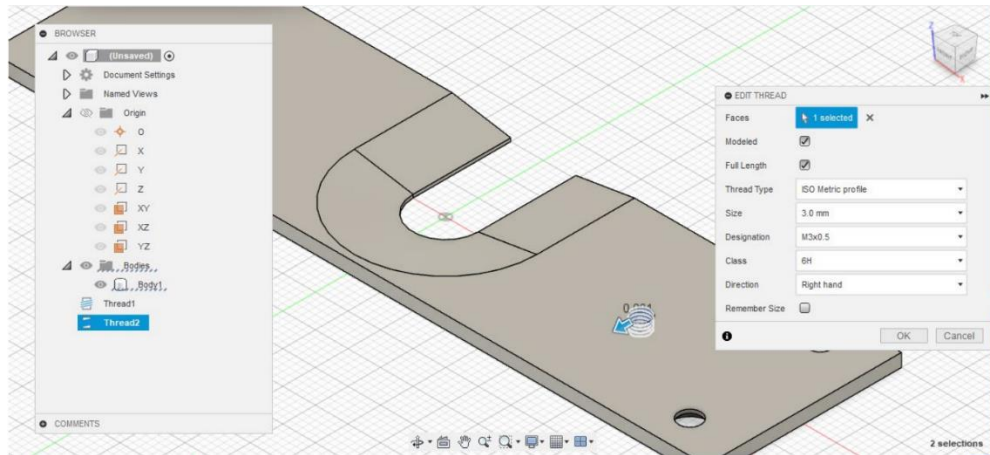
Table 2. The dimensions of each machined component in inches.

	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	

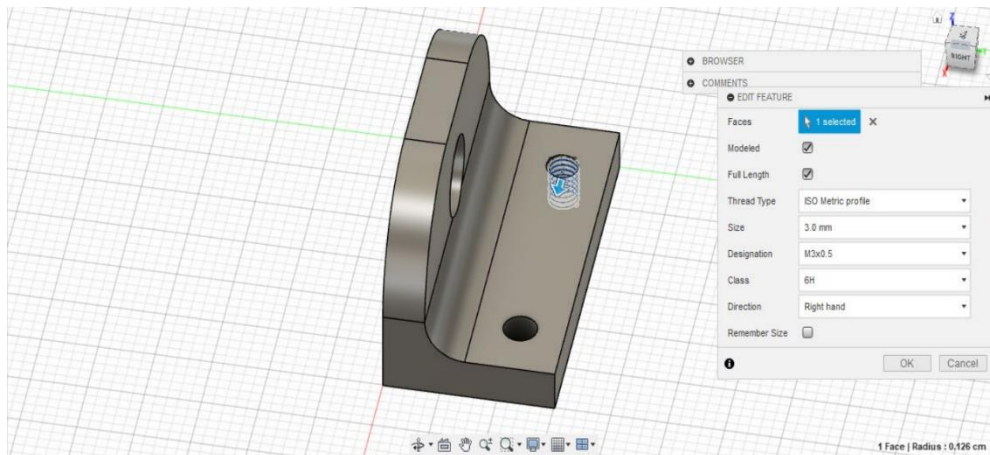
Table 3. The dimensions of each machined component in centimeters.

	Material	L x W x H (Millimeters)	Tolerance (Millimeters)
Rotary Encoder	Aluminum 304	14.98 x 3.98 x 65	+/- 0.0127
Head Plate Holder		30.07 x 15.11 x 16.94	
Head Plate Holder Top		69.97 x 2.99 x 29.99	
Head Plate Holder Bottom		109.98x 2.99 x 29.99	
Head Ring	Aluminum 6061-T6	12.06 x 11.98 x 3.30	

Table 4. The dimensions of each machined component in millimeters.



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).