Personal Project – Design & Build Log

Emán Rabbani

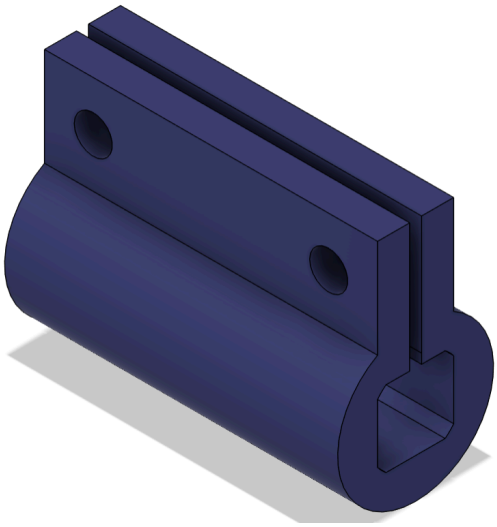
Date: 1/6/26
Part Name: Shaft Coupler
Version: 13
Trigger: (**Print** / Milestone)

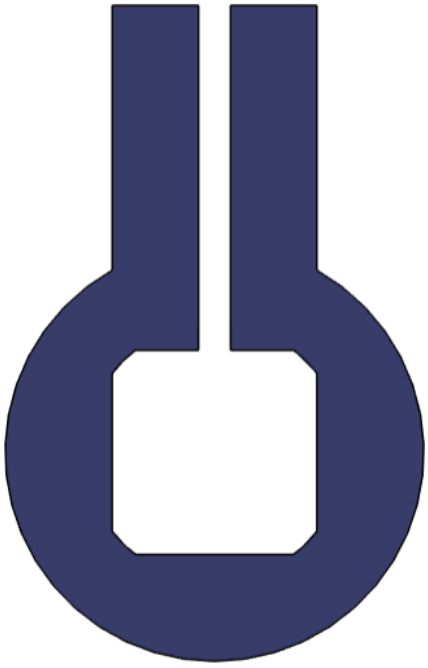
Progress/Changes:

- Adjusted tolerances on the wheel shaft and increased the fit of the coupler on the shaft. Applying clamping force on the wheel shaft resulted in preventing it from sliding out.
- Changed screw holes to M3, tolerance on the screw holes worked well.

Areas to Improve:

- None at the moment.





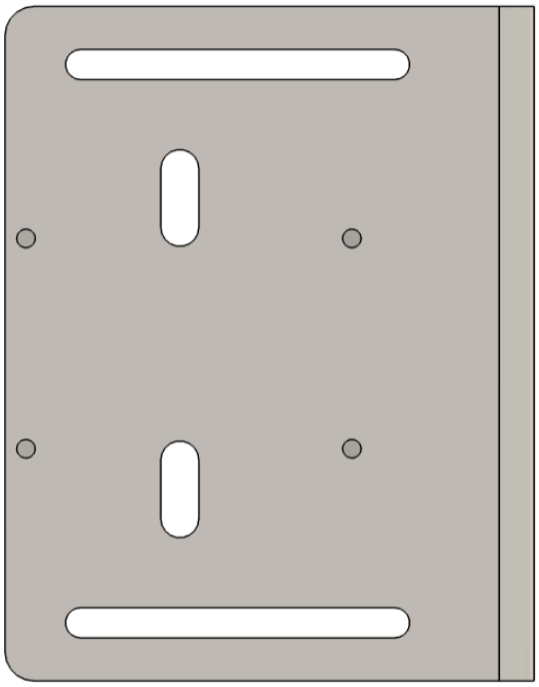
Date: 1/6/26
Part Name: L Bracket
Version: 26
Trigger: (**Print** / Milestone)

Progress/Changes:

- M2 Mounting holes for the motor controller PCB.

Areas to Improve:

- None at the moment.



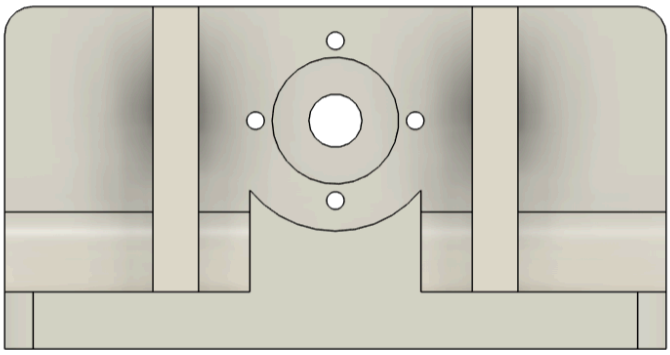
Date: 1/5/26
Part Name: L Bracket
Version: 24
Trigger: (**Print** / Milestone)

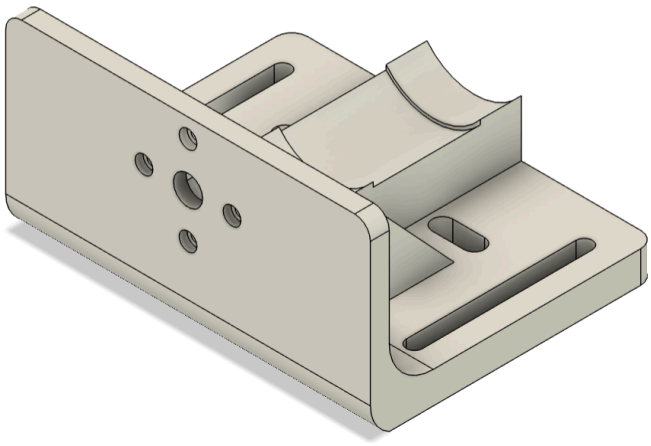
Progress/Changes:

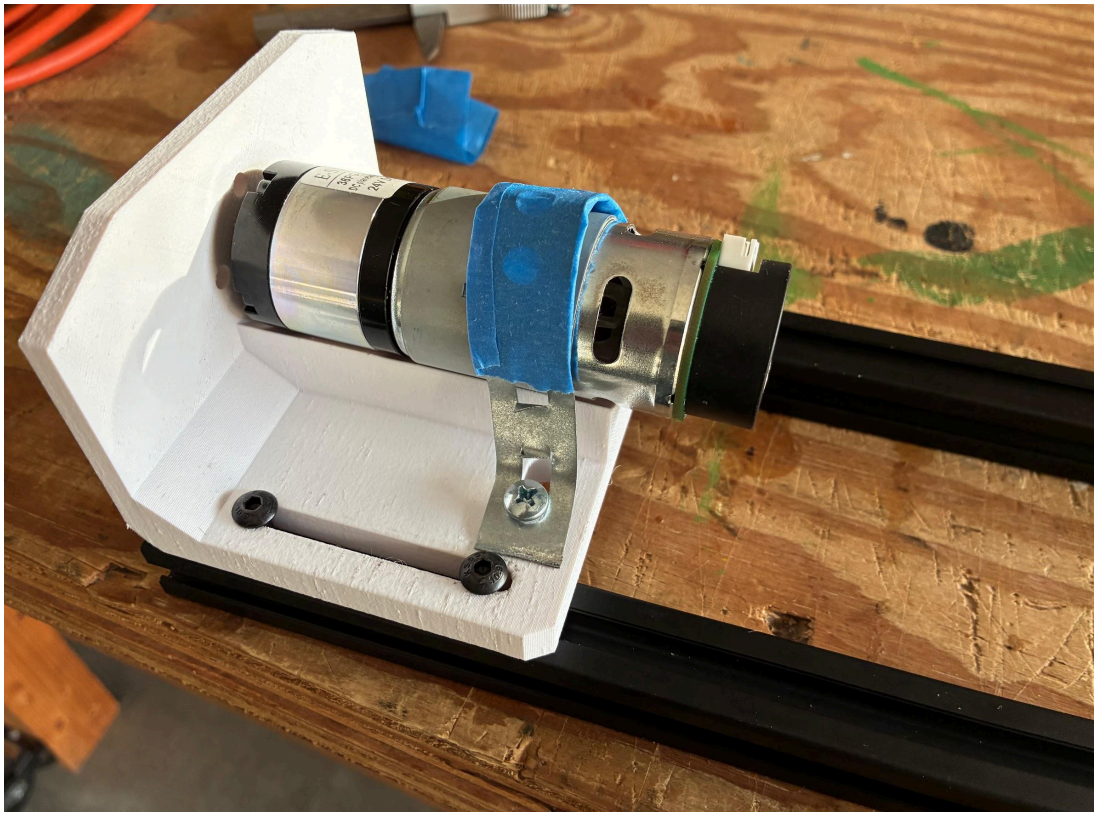
- Countersunk the top plate for the extruded plate on the motor. Counter sunk motor mounting holes and changed them to M3.
- Changed motor bed to account for the 1 mm thick banded section on the motor.
- Realigned screw holes for the saddle mount.
- Added ribs to reinforce bracket structure. Added fillets to round out sharp corners.

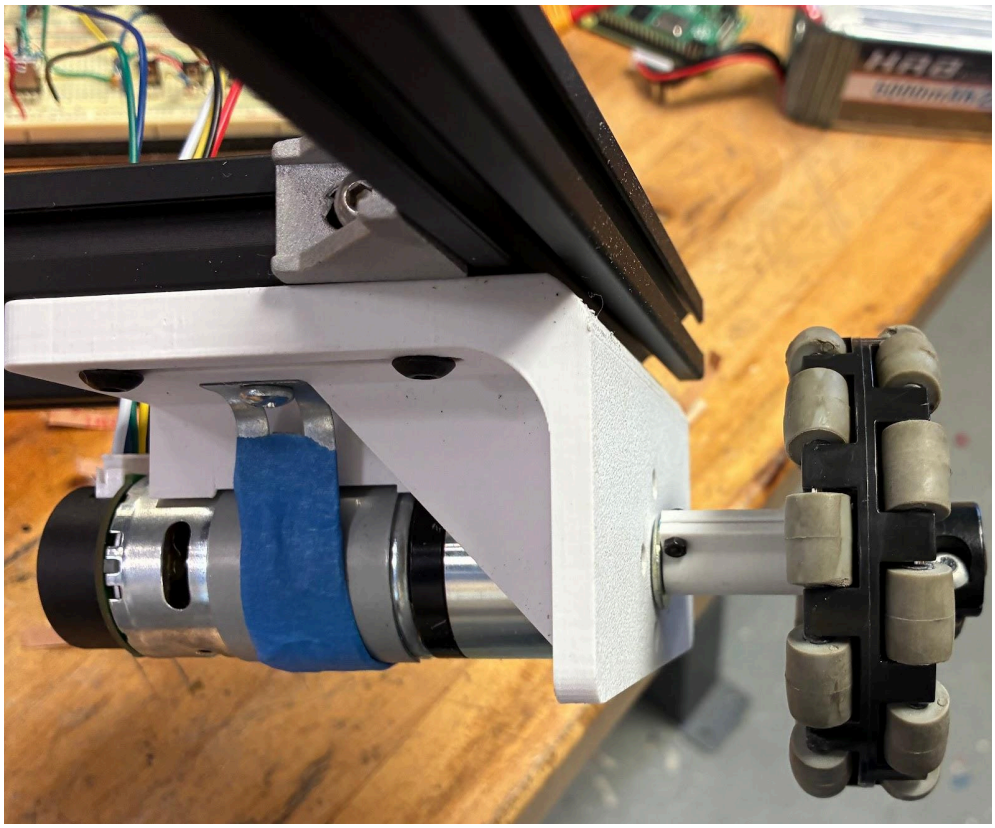
Areas to Improve:

- M2 Mounting holes for the motor controller PCB.









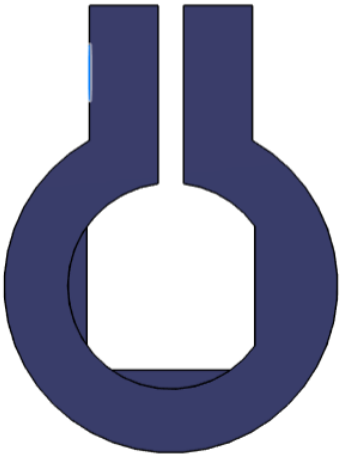
Date: 1/5/26
Part Name: Shaft Coupler
Version: 9
Trigger: (**Print** / Milestone)

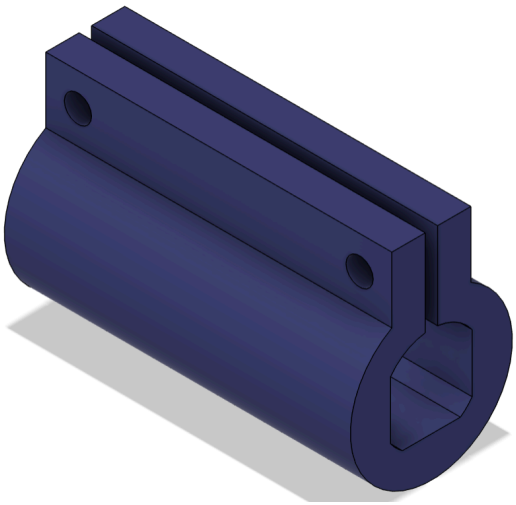
Progress/Changes:

- Changed the shape on the motor end to be D-shaped according to the shape of the motor itself.

Areas to Improve:

- Adjust wheel shaft tolerances to make a better fit with the wheel shaft -> adjusting by 0.2 mm
- Change screw holes to M3





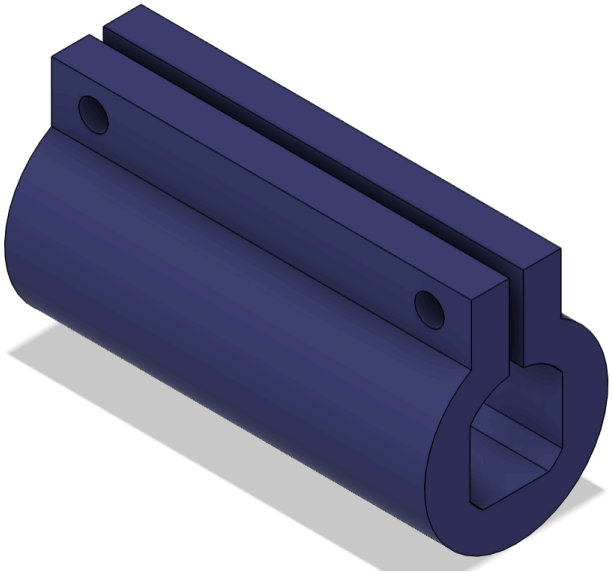
Date: 1/4/26
Part Name: Shaft Coupler
Version: 8
Trigger: (**Print** / Milestone)

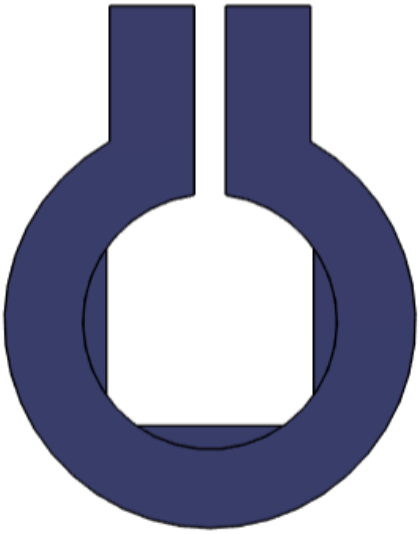
Progress/Changes:

- Note this part was printed on 1/1/25, this is a review of the part overall done at a later date.
- Overall, the print quality was pretty good and didn't show signs of warping.

Areas to Improve:

- Make screw hole larger than 2.1 mm -> try 2.2 mm for the M2 screw
- Fix the shaft length for the motor shaft and make the coupler more D shaped on the motor end





Date: 1/4/26
Part Name: L Bracket
Version: 12
Trigger: (**Print** / Milestone)

Shaft Coupler V8

Progress/Changes:

- Note this part was printed on 1/1/25, this is a review of the part overall done at a later date.
- Overall, the print quality was pretty good and didn't show signs of warping.

Areas to Improve:

- Wrong screw hole, should be M3
- 0.7239 mm band around the motor for 1.3415" -> add proper adjustment for band
- Counter sink motor screw holes
- Move saddle tabs over to make better contact with the band
    - Add tape around saddle band
    - Cut the saddle band strip
- Consider thickness of the part in relation to the motor shaft (if that is causing problem -> not enough shaft coming out)
- Tolerances:
    - 5.1 mm for M5 is too small -> 5.2 is better
    - 5.45mm is the diameter of the M3 screw head
    - 9mm too short for the shaft hole
    - 15.875 usable shaft

Open Questions:

- Consider reducing the thickness of the top plate on the bracket to have more shaft extending out of the bracket.
- Consider rearranging chassis bar structure to sit connecting rails on top of the motor rails for better clearance with the shaft.

Screenshots: