

Wed-Fri 2013.06.12-14 LL

For the past couple of days, we've been reassembling the erg according to [2013.06.03 System Setup Diagram.png](#). The erg now looks like:

[2013.06.13 Differential photo with label.png](#)

[2013.06.13 wheelaxlesetup.jpg](#)

Wednesday

- We got 3/16" (thick and wide) keyways cut into the flywheel and lower wheel axle sprockets at Emerson. Joe showed us how to use the broaching tool to do this. These keyways are necessary to keep the sprockets on the axle without slipping (with the help of allen keys as well).

- We also had to shorten some screws that held together the differential, using the screw cutting tool from Emerson. This was mainly for conservation of space.

- One of the wheels was not screwing well into the wheel axle. We figured that a part of the wheel axle thread was damaged. Since the axle jutted out too much anyway, we decided to use the horizontal band saw in Emerson to cut off about 1" of the axle. After that, the wheel screwed on smoothly.

Thursday

- We worked on attaching the bungees in place. The bungee attached to the wheel axle (B2 in the 2013.06.03 diagram) was given a pretension of about 5".

- Attaching master links to the chains were quite difficult. We spent over 45 mins trying to attach them to the chains, without great success. In the end, we concluded that the chain could be kept taut and functional without the u-shaped clip. There must be an easier and more effective way to do this. Hmm...

- The erg worked! The recovery still needs to be worked on, but here is the footage of Andrea rowing on the erg, before the chains broke:

[2013.06.13 Andrea Rowing](#)

- > The erg moves a lot more smoothly and easier than before due to the corrected gear ratios allowing for more power in the wheels.
- > The resistance from the B2 bungee feels quite small. This could in large be due to that towards the end, we found that the bungee chain fell off the sprocket and was not affecting the wheels. We left the fix for this for Friday.
- > Some strange sounds are made during the drive stroke. We're not quite sure where it's coming from.
- > There is great slack on the handlebar chain. Maybe we should shorten it?
- > When Lily rowed on the erg, there was major slippage on the drive sprocket when the handle is pulled hard (the one the handlebar wraps around). We're not sure if shortening the chain would solve this problem.
- > At first, we thought that the flywheel chain might have been too tight, so added more links to it.

Friday

- We reattached the B2 bungee chain on the sprocket.

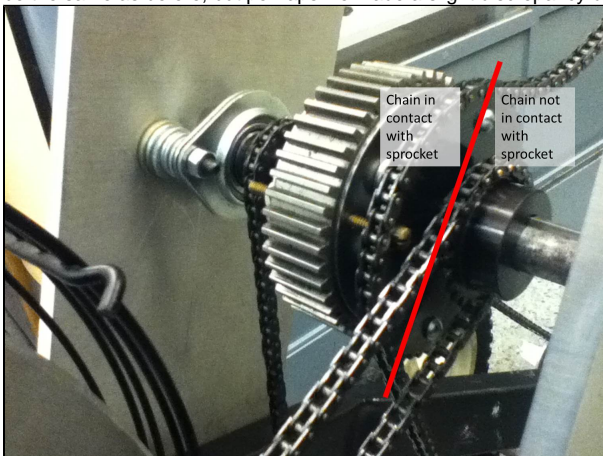
- Previous pretension of 5" felt like too much, so we lowered it to 3".

- Slipping of the chains is more obvious now. See video: [2013.06.14 Chain Slippage](#)

- Possible reasons for slip:

- > The drive sprocket of the differential is attached to the main casing by screws (the middle area of [2013.06.13 Differential photo with label](#)). The distance between the main casing and the drive sprocket is not constant (the sprockets are not perfectly parallel). The slanted drive sprocket tilts the path of the chain sometimes?

- > The chain is not in contact enough (a little less than half of the sprocket) with the drive sprocket enough due to the angle of the pulley and gear system. The position relationship between the differential and the #9 roller in [2013.06.13 wheelaxlesetup](#) (S1b in [2013.06.03 System Setup Diagram.png](#)) should be the same as before, but perhaps we made a slight discrepancy during reassembly?



- > The wheels are still delayed after pulling on the handlebars. Delayed reactions cause erratic movements?