Work Completed

This week I worked on two main tasks: completing the attachment for the back of the seat and designing the mounting for the braking actuator and its associated parts. Last week, I had found a bracket for mounting one end (the fixed end) of the actuator. I debated manufacturing it, but at a price of only $18 and it being a relatively complex piece, I ordered it shortly before spring break. I have not yet received it, but I spoke with the company and was assured that I would have it very soon.

I have decided to make a curved bracket to fit around the shaft of the actuator. Although curved brackets do exist, they tend to have semicircular curvature. The shaft of the actuator is not a semicircle, so to ensure a tight fit I will make the bracket myself. Also, since there are two brake cables, one for the left brake and one for the right, but only one actuator, the two cables must be joined and then connected to the actuator. The ends of the cables have small metal cylinders on them, which I will use in the cable joiner.

I also designed a plate for mounting the actuator and determined whether there would be enough space for all the needed parts, including: (1) the purchased bracket for the fixed end of the actuator, (2) the actuator, (3) the bracket around the shaft of the actuator, (4) a connection from the moving end of the actuator to the pulley, (5) the cable joiner, and (6) room to secure the cables. There must also be enough room to actually mount the plate to the go-kart. Also, it is important that the cable joiner not be in the part of the cable which will run over the pulley, so one of the cables must be cut longer than the other. (If the joiner did run over the pulley, it would hinder the pulley from moving easily, which is part of the reason for its use.) The pulley will be used to ensure equal tension on each of the right and left brakes.

The overall scheme is: the purchased bracket secures one end of the actuator, the manufactured bracket secures shaft of actuator, the moving end of the actuator is attached to a pulley, the brake wires go over the pulley and are joined by the cable joiner, and the cables are secured. I have not yet figured out the optimal method for securing the cables, but I will talk to Serg. Securing the cables is necessary because it is important to ensure that the cables, when they are pulled, are already straight (the actuator should pull the brake wire to depress the brake, not pull the brake wire to straighten the cable). Also, the cables should be secured so the actuator pulls on just the wire and the sheath over the wire does not move.

In addition, this week I finished attaching the seat to the go-kart. I did this by attaching a metal plate to the back of the seat, where there was a pre-existing threaded hole. I threaded two holes in the plate and put two threaded rods into these holes. I also bought two round clamps used for plumbing fixtures to go around the bar behind the back of the seat. These clamps had threaded holes in them, and the other end of the threaded rods screwed into these. A picture of the finished product is shown below in Fig. 1.
Future Work

My biggest task left to complete is the braking actuator mounting an implementation. I am confident that I now have a good design for the layout of the actuator and its various associated parts. I plan to cut the cables on Wednesday 3/19/08 and make the cable joiner, mounting plate, and shaft bracket on Thursday 3/20/08, Friday 3/21/08 and Monday 3/24/08. I hope to be able to attach the actuator and pulley to the plate on Tuesday 3/25/08 and Wednesday 3/26/08. If all goes smoothly, I plan to secure the cables to the plate and install the plate on Thursday 3/27/08 and Friday 3/28/08. I unfortunately do not think all will follow exactly according to this schedule, but I would definitely like to have the braking actuator work done by Tuesday 4/1/08 or Wednesday 4/2/08.

If I am not done with actuator until April 2, I will still have just over two weeks to complete mounting the joystick. This involves building an armrest for the joystick, mounting the armrest to the frame of the go-kart and installing the joystick into the armrest. Hopefully by this time, some of my group members will have completed their tasks and will be able to help me with the joystick.

Project Review

The project is still going well, but we are definitely getting down to crunch time, and projects must start coming together soon. As long as I can complete the braking actuator by the dates mentioned above, I should be in good shape. The brakes will require a lot of time to make sure they are working properly as the braking system is one of the most important parts of the project. The current budget is approximately $500.

Hours Worked

Time spent on the project 3/5/2008 – 3/19/2008: 14 hours