Project Identity
Monitor Lift & Paint Cap Remover Project
Progress Report #10- Katie Zilm
Week 10: November 9 - November 15

Work Completed

Monitor Lift Project

Last week we tested the lift, worked on the switch/circuit and made a few minor adjustments. This week we attached the new adapter to the switch and then focused on more aesthetic and safety measures.

The new adapter arrived. It has an output voltage of 9V which raises the monitor quickly, but not so quickly that the actuator is loud or the motion is unsafe. The adapter is rated for up to 4 amps. The actuator is rated for up to 5 amps but that is under a 400 lb load, which we do not foresee this lift ever handling. The new adapter was necessary to accommodate the small spike in current seen when the lift begins moving from its lowest state (due to a ‘sticking’ mechanism in the guide rails). The adapter’s end was cut off, the wires split and attached to the switch.

After heat-shrinking and soldering the wires to their respective places, the top was attached and the switch was finished being assembled. However, the two cords that exit the box looked messy and would get tangled easily. The solution to this problem was the use electric tape, which is black like both of the cords, and to neatly wrap it around the cords all the way from the box to about 1.5’ or 2’ away. The result was a neater looking ‘single’ cord protruding from the box that splits into two wires close to the linear actuator base.

Another aspect of the monitor lift that raised some concern was the edges. The edges were square and could possibly be a safety hazard in the event that, for example, somebody was to fall within the vicinity of the platform/lift. Pat and I rounded off the corners of the platform. This was done by taking a roll of tape that probably had an approximate diameter of 2”, lining it up with the edges of each of the front corners and tracing it. The corners were then cut off (using a band saw) along this trace leaving a round edge. The edges were smoothed with a belt sander. The edges and corners of the
mount support and guide support bars were also filed down to try and make them less hazardous.

The platform, which is made out of aluminum, gets scratched easily. It is also easy to leaves smears and smudges on. All of the transporting (to and from machine shop and around lab) and testing that has been done with it has left the surface looking beat up. Painting the platform was an idea that had been thrown around. However, after getting a few consultations, it was determined that painting the platform would only be a ‘quick fix’ and that it would look worse when scratched later on. Also, without dramatically roughing the surface, paint would not adhere well to the aluminum- it would just peel off. Rather than painting the surface, we decided to brush the top. I used hand sander/buffer was used to buff/brush away all of the scratches. The surface is now very clean and neat looking.

**Paint Cap Remover**

Last week, the structure of the paint cap remover was modified and the switch was built. This week, the button was mounted, the enclosure was attached more securely, the edges were rounded for safety and we shopped for grommets/grounding products. The button was attached to the enclosure this week. This was done with a strip of metal (scrap from the enclosure itself) and epoxy.

![Paint Cap Remover](image)

Previously, the enclosure was attached by means of two bolts, both of which were located on the front side of the device. In order to make the enclosure fit more securely to the rest of the setup a hole was drilled on each of the sides (near the rear) where two additional screws can be placed (see above picture).

Next, all of the edges of the paint cap remover were filed down so that none of them would be sharp and we shopped for grommets online and in hardware stores. A grommet is needed for the hole that the adapter cord goes through the enclosure. By using a grommet, the hole will be lined by rubber thereby not only insulating that area, but also making the hole less abrasive to the cord (so the cord will not wear and will not eventually expose the wire inside). The wires for the rest of the circuit were prepared and Dan and I began to solder and heat shrink them. However, to avoid doing work more than
once, we are waiting until we obtain a grommet to permanently attach the rest of the wires.

**Future Work**

**Monitor Lift**
- Cover bolts
- Attach rubber dots or strips to bottom of platform for superior grip and stability
- Final touches

**Paint Cap Remover**
- Finish attaching the wires/switches/fuses
- Ground the device
- Final touches

**Project Review**

**Monitor Lift**
The monitor lift project works. Everybody is still working well together to now make sure it is safe and as aesthetically pleasing as possible.

**Paint Cap Remover**
The paint cap remover works. Everyone is working well to make the finished product safe and to get it all together.

**Hours Worked** 13