Monitor Lift and Paint Cap Remover

Daniel Zachs

Weekly Progress Report
10/26-11/2

Work Completed
Paint Cap Remover

We made good headway on the paint cap remover this week. We started by trying to build an enclosure around the motor plate. As you can see from the image on the right, the motor hangs down from the motor plate, and many wires and switches and the fuse will all be exposed underneath.

Our reasons for wanting an enclosure are twofold. We wanted to make sure all electrical components were out of the way of the user. The user should not ever come in contact with the electrical parts, unless maintenance is needed on the device.

The second reason we wanted an enclosure is for appearance. The device will look much more professional and have a finished look if the motor and its components are enclosed underneath the motor plate.
Our original idea was to use a plastic box and put all the electrical components into it. But for simplicity and for the overall professional look of the project we decided to use aluminum sheet metal and build the box ourselves.

There are several advantages to the aluminum sheet metal over the plastic. Firstly, the aluminum matches the rest of the device. Almost all pieces of the device were made from aluminum and therefore for continuity, having the base aluminum makes the device look professional.

Secondly, we were able to shape the aluminum to exactly the proportions of the device, so it fit perfectly around the motor plate. This means that it looks like it is part of the device, and wouldn’t stand out.

To build this enclosure I started with a raw sheet of galvanized aluminum. Galvanized aluminum is perfect for this instance because it bends easily and has a high measure of shear deformation so it won’t break after being bent. I measured the proportions of the motor plate, so that it would fit snugly around it. Then I cut the sheet to fit. The dimensions were 3.25 x 12.5 inches. This on this rectangular sheet I drew several sections, 4.5, 3.5 and 4.5 inches apart. I then used a manual sheet metal bending machine to bend the sheet into right angles.

The sheet now was like 3 sides of a box. The other 3 sides were part of the device already (the back plate, the base plate and the motor plate). Together they fit snugly like a box.

The last step was to drill holes so the enclosure could be attached with the preexisting screws. I used a ¼ inch drill bit so that the screw we used for the ¼ -20 attachments would simply slip through the holes. Now the holes fit very nicely into the project and it became one.
This is what our device looks like when the encasement is attached to it. The figure is shown on the right.

Notice how the screws which already are used to attach the motor plate to the back plate now have a dual function of securing the encasement around the motor plate.

The encasement matches the project nicely because it is aluminum and looks very much like it is meant to be part of the device.

The encasement can be removed if maintenance is required on the device by simply unscrewing the securing screws.

**Project Overview**

The project is going very well. We made huge strides in the Paint Cap Remover and it is really taking shape. We are on schedule to finish both projects on time.

**Future Work**

- Work on the circuitry for the paint cap remover
- Attach the switch through the new enclosure
- Incorporate the new fuse into the circuitry for safety
- Attach the back plate to the guide rails for the monitor lift
- Test the projects.

**Total Work Hours: 12**