Work Completed

We have worked out the details of our PDA problem. Resolution comes from the purchase of a compatible machine as well as new DAQ for communications through the compact flash drive. All other functions will be conducted through the USB ports. Eva has given a lot of effort to ensure product compatibility.

Sensidyne model 40 vacuum pump have been tested at they 6 volt requirement and show great promise. I am unable to measure the outlet pressure without a suitable vacuum gauge. I have conducted searches showing as of yet no inexpensive solutions. For about $30 an entire hand held vacuum pump with gauge can be purchased. The pump is coupled to the main reservoir via 1/8 inch tubing through a brass fitting. The reservoirs are constructed of PVC piping capped at both ends. One end has a fitting for securing the reservoir via three screws to the vertical position. Total volume in the reservoir is ~160 cm$^3$. There is two reservoirs available for use in the project.

While the cutter assembly remained an area of disagreement. The cutting assembly is now constructed of balsa wood and craft plywood. The centering mechanism is an oval. This was chosen to replace the circular design due to the ovals ability to more forcefully apply the required center vectors. This new design allows for better motor mounting and pill removal. This unit could be constructed with the use of plastics however for prototyping purposes the unit is again made of wood. Important modifications to the wood were the coating of friction surfaced with laminate. This allows the pills and
slides to move with limited resistance. A preliminary operation shows that circular pills require a two stage centering while tablets are centered on the first attempt. This result shows the importance of balanced loading across the pill. Due to the limitations a program should include that the moving slide should close, then open, then the lower stage moves out followed by the closure of the moving slide. The driving motors for this cutter are based on a craft servomotor with case. By removing the intelligence from the motor a simple gear head can be made. The potentiometer gear is drilled and tapped to produce a screw drive. A threaded shaft is placed through the case and attached to the moving slide and the stage. Important to note that the moving slide required a limit switch and a spring coupled interface to protect the servo gears. This interface is simply a linear spring with the shaft through the middle secured at each end with a washer and one nylon lock nut. Construction is not complete however the servo is apart and beginning the tapping process. This step requires careful measurement and can not be rushed.

**Future Work**

Efforts will continue in development of the LABView control programs the level of control is beginning to be of high concern due to the implementation of our design controls. As the cutter assembly continues under construction the completion of this work as well as the testing for this untested and unproven system will proceed. While the storage assembly remains uncompleted this construction and testing will progress through the next week. With the cutter, storage assembly and arm complete the combined functions can be tested to ensure proper clearances between items and relative locations on the mounting plate.

Aside from construction efforts further effort is placed on component interaction. That is that all components will properly connect to one another. This will help to remove problems later in construction.
Project Review

Group brainstorming has produced several issues with actual implementation of control functions. In overview the project is proceeding at a pace consistent with completion by the required deadline.

Hours Worked

Kevin Villani ~8 hours