Work Completed

For the majority of the time a problem existed with the ability to move the elements of the cutter assembly while still remaining manageably small and allowing room for the cutting blade. A possible solution this problem was attempted with a screw drive mover. This was constructed from a servo motor and case salvaged from a blow control circuit of a HS-402X servo unit. Testing of this unit failed to meet design speeds due to inadequate information about the servo motor. Assumed valued were greatly overestimated resulting in a unit that moves at ½ the desired speed. In order to provide adequate speed a linkage system was developed to move the components. This linkage system is composed of an abs plastic arc cut from an abs pipe to a thickness of 0.16 inches. Approximately ¼ of the circle is used to produce the arc (90 degree arc.) This arc is attached to the servo through a servo saver head with built in spring. This assembly is linked to the moving stages through a 2-20 threaded rod (1.5 inches) and two easy clip spring metal connectors with shrink plastic retainer. The base assembly is constant with the exception of the servo saver as it is not needed. This linkage was chosen due to the limited space available for the footprint. Additional modifications to the cutter assembly include reduction in the moving stage and base stages for operation in limited area. Mover servos are mounted and linked. Work has continued on the cutting blade. The linkage for the blade is the same as above to allow mounted low and in front of the unit. The blade is
secured at the stationary arc. I have researched and programmed a servo control loop; I am currently trying to resolve DAQ problems in order to test the program with the servo. The program provides a fully adjustable square wave modulation.

Sensidyne model 40 vacuum pump have been tested at they 6 volt requirement. Without the use of the reservoir assemblies the tubing was tested to pick up a pill. However if the seal on the pill is at all compromised the pill will fall. In an attempt to correct this two strategies will be employed. First the second pump will be connected in parallel to the first with a tee fitting and then if possible a conforming seal cup will be obtained.

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 precede. 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 ~ 12 hours

Photos