Design Details:

Printed Circuit Board Creation

In order to make the Beer Bouncer as compact and neatly laid out as possible it was necessary to make printed circuit boards. There are three circuit boards in the Beer Bouncer. The first is the master board which controls the keypad, key switch for normal and party mode, LCD display, and sends signals to the motor circuit. The second is the keg-o-meter circuit which controls the keg-o-meters. Both of these are located in the main circuit box. The final circuit is located in the valve box and controls the motor that opens and closes the valves. All of these boards where created the same way using a positive photo resist technique. See the appendix for the PCB Express circuit schematics which are drawn to scale. The process is conducted as follows.

Figure 1. Create circuit on PCB Express and print onto transparency sheets

Figure 2. Expose Circuit for 4 minutes

Figure 3. Develop circuit for approx. 1 minute

Figure 4. Etch board for approx. 15 minutes

Figure 5. Drill holes for mounting components

Figure 6. Use steel wool to expose the copper traces
Figure 7. Solder surface mount resistors and capacitors to boards along with any other components

The following pictures show the three finished circuit boards and how the project components are connected together via the boards.

Figure 8: Master Circuit Board
Figure 9: Keg-o-meter Circuit Board

Figure 10. Motor Circuit Board
Below are the circuits as created in PCB Express. The circuits were created as a mirror image so that when printed on a transparency and exposed to light the printed board would read in the correct direction. The circuits pictured below are drawn to scale.