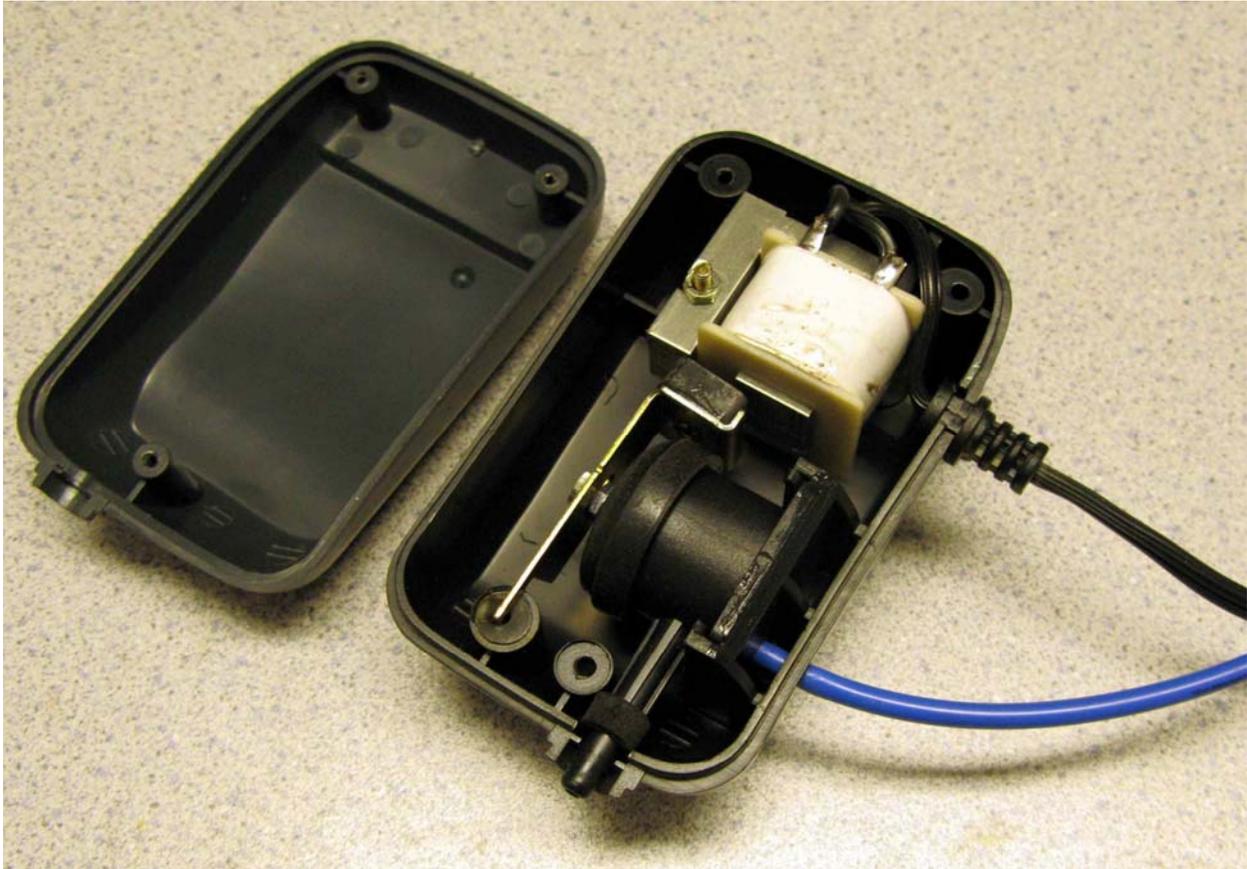


## Homemade SMD Component Placement Device



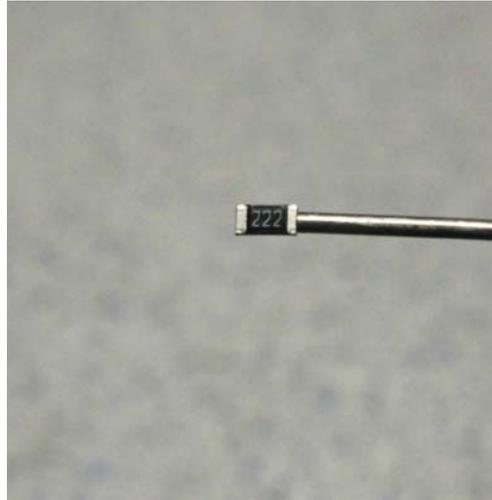
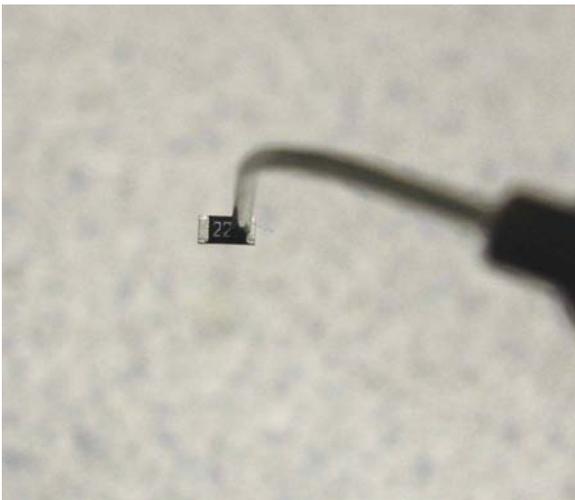
While assembling one of Steve Weber's (KD1JV) digital dials, an smd project, I lost one of the capacitors while taking it from the surrounding tray to place it on the board. I was using tweezers at the time and squeezed it a little too much and "zing" off into the abyss of stripped insulation, clipped wire ends, and general crud on the top of my assembly bench. I have tons of leaded components, but no spares of smd parts. It had to be found. I did find it, by accident, about an hour later. When I got done, I decided to look for another method of placing the components. I saw a commercial vacuum device in a catalog, and decided to try and make one of my own. I am pleased to announce it was easier than I thought, and decided to add the project to my list here.



I knew I needed a source of vacuum. I had an aquarium pump I picked up at a garage sale for \$2, that I use as a bubbler in my pcb etch tank. I assumed that if it pumped air, it must have an input somewhere that I could tap into as a vacuum source. When I disassembled it, I was pleased to see that all I had to do was drill a hole in the side of the case and into the input area of the pump. I drilled a hole a little smaller than the OD of some 1/8" dia. soft silicone tubing, that I squeezed into the hole. I used a piece of tubing about 36" long. It wasn't a lot of vacuum, but I didn't need a whole lot.



Next needed was a small handheld device to pick up the smd's. I had syringe and a .04" dia. needle I used as an oiler. I took that all apart and cleaned out the oil, took the sharp point off the needle with a file and bent it as shown. I drilled a 3/16" dia. hole in the side of the syringe near the tip end, and forced a 1/4" long piece of tubing into the hole. This is the release for the vacuum. You hold your finger over the hole for picking up, and uncover the hole for release. All that remained was to adapt the small rubber tube to the end of the syringe and seal it with some silicone caulking.



The results were very good. Once you pick up the part, it is firmly held and can be deposited with precision wherever you please or can be picked up and moved. I was pleased that you can even pick the resistors from the edge if needed. This is especially helpful when you need to turn the part over to get the value side of the resistors facing up.

I'm sure, not all aquarium pumps are created equally, so it may take some different techniques to get a rubber hose to the vacuum side of the pump. Also find the most flexible tubing from the pump to the syringe.

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