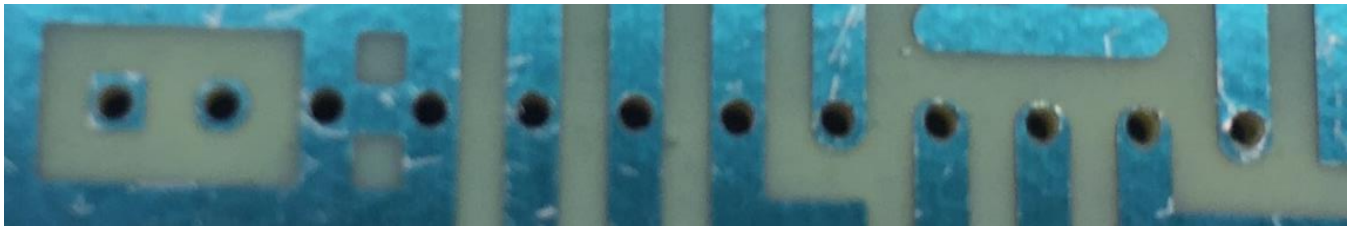
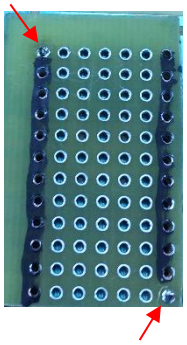
Circuit Board Drill Templates, Version 1.0

By R. G. Sparber



Drilling a series of holes in a circuit board so they line up with the copper traces can be tricky when the drill bit is 0.03 inches in diameter. I often need to do this just once or twice on a hand etched board and the patterns vary.

My solution is to build a custom template for each hole pattern. Nothing fancy, just  a piece of perforated circuit board material that has a copper land around each hole. Drop in two alignment pins, solder, snip off excess.



In this template, I have soldered in my two alignment pins. The black lines remind me where to drill. My drill is a close fit to the holes.

It far easier for me to align these tiny drills with these three dimensional holes than with two dimensional features on the board. 

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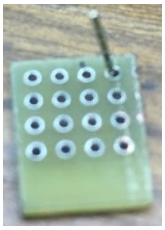
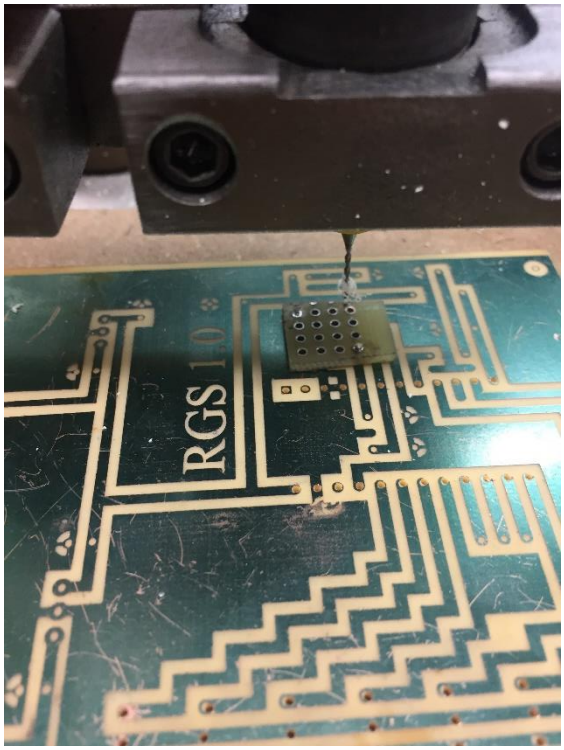
The first step is to pull a pin from a strip of pins.



Then a scrap of circuit board is cut to include all of the holes to be drilled. With the pin in the top right hole and the circuit board on the bench top, I heated the pin and hole and add a ***very small*** amount of solder. Excess solder will coat the bottom of the pin and is a pain to remove without disturbing the pin alignment.

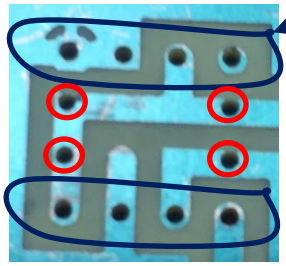
Then I placed the template over the edge of the circuit board and reheat the pin and hole. The pin drops down the proper distance. I used my finger to set the pin vertical before the solder cooled. Finally, I snipped off the excess on the top of the template. Repeat for the bottom left pin.

Next, I carefully drilled the diagonal holes in the circuit board that will accept the template.

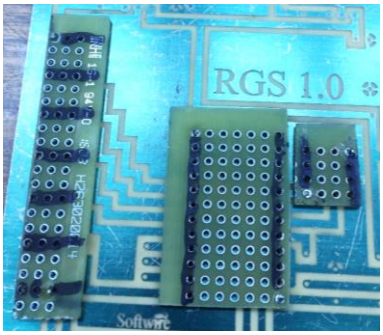


Then the template drops in. Drilling was quick and accurate.

One stupid mistake I made in this instance was forgetting to run the black marker over the holes to be drilled. Yup, drilled the wrong set.



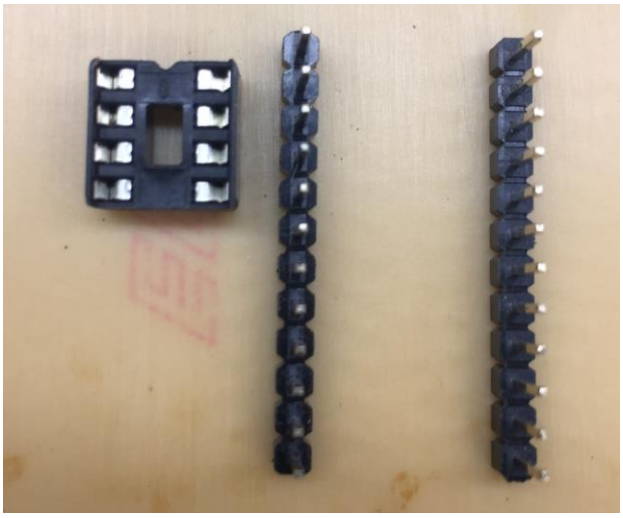
You can see the top and bottom holes are nicely aligned. But then there are four holes that should not be there.



Here you see the three templates I built for this circuit board. The black lines tell me which holes to drill (duh).

The template to the far left guides holes for a series of connectors. The one in the center is for an Arduino Pro Micro . On the right is the template for an 8 pin DIP.

I have trial fit a few parts. It all went in perfectly.



I welcome your comments and questions.

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