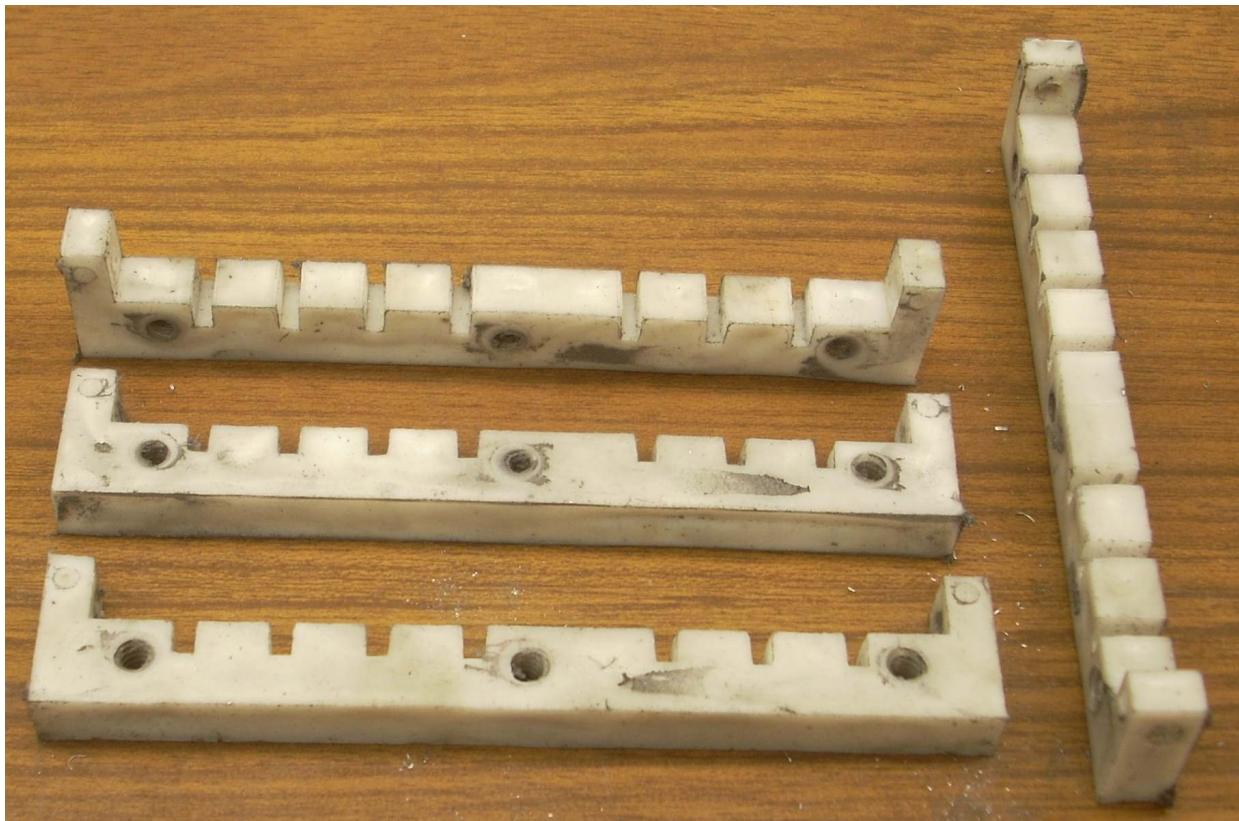


Molding Circuit Board Guides

By R. G. Sparber

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I don't normally start my articles with a lame excuse, but I have to say that these are my first moldings and I don't have the temperature set correctly yet. The parts should be pure white. Instead, they are streaked with bits of bunt plastic left in my Gingery injection molding machine from excessive heat.

OK, with that out of the way, let's focus on what is really important: the mold.

No plans were used for the mold. It was "organically" built based on the circuit board guide drawing.

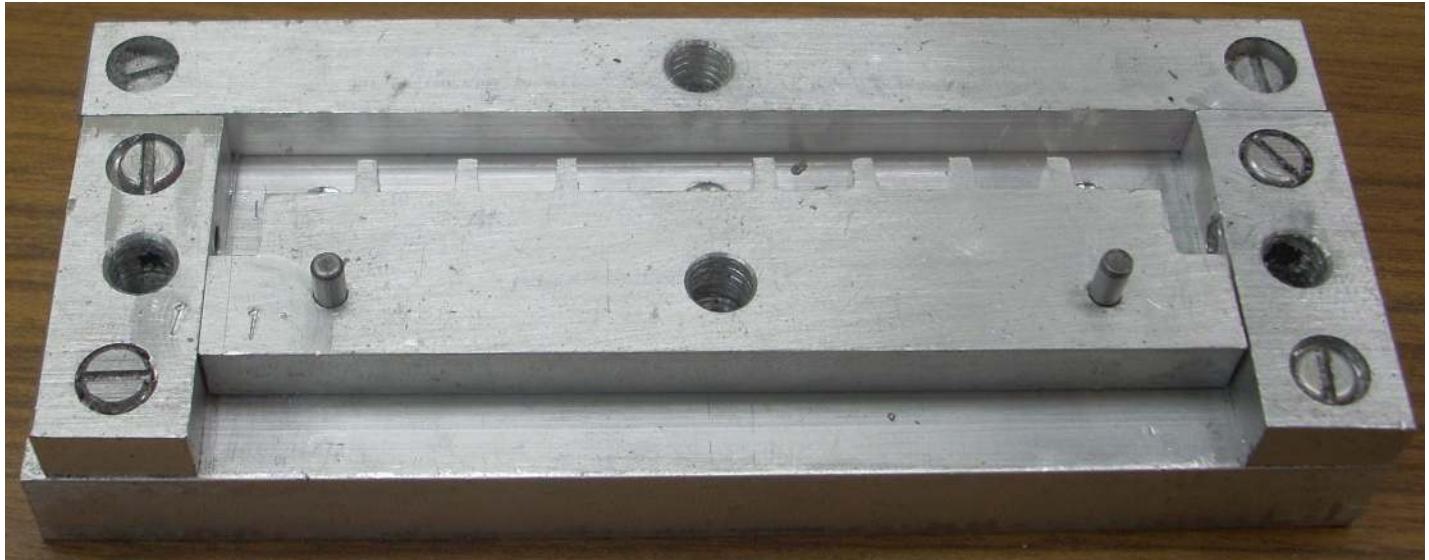
¹ You are free to copy and distribute this document but not change it.



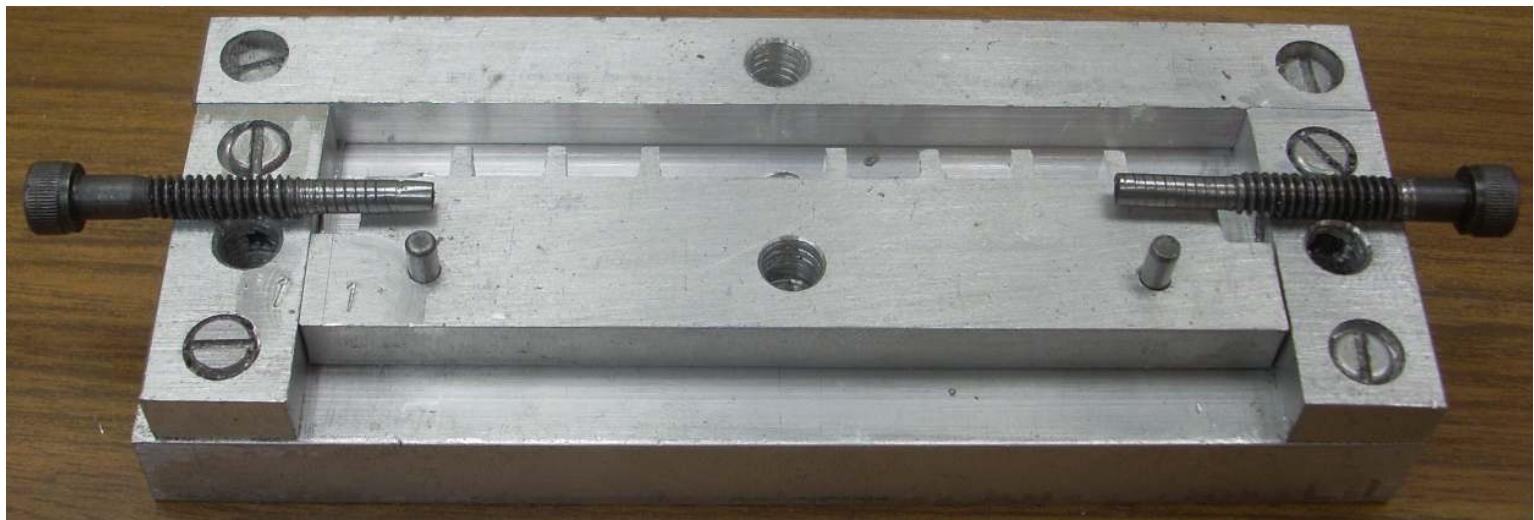
The drag (the bottom of the mold) was built up rather than machined out. After attaching these three pieces with 6-32 screws, I took a light cut across the top to insure they were at the same height. This is essential for a close fit of the cope (the top half of the mold). The location of the blocks was set by the insert which will be shown later.



Two 1/8" dowel pins drop in first.



The detail insert drops in over the pins. I accidentally milled off one of the fingers that will later become a cut in the part. I may either find a way to add it back in or just make this insert again. Of course, I could also just saw out the missing cut on each molded part.



The ears of the board guide have 6-32 clearance holes. I formed them with 10-24 screws with the thread turned off.

One downside to “organic” design is that I drilled the holes for the clamping bolts assuming I could use 8-32 screws for these ear holes. When the molded holes were too small, due to shrinkage, I had to go up to 10-24. That caused a slight interference between these screws and the clamping bolts. Turning down the hole forming screws let me recover from this mistake.



The side screws feed in until they contact the insert.

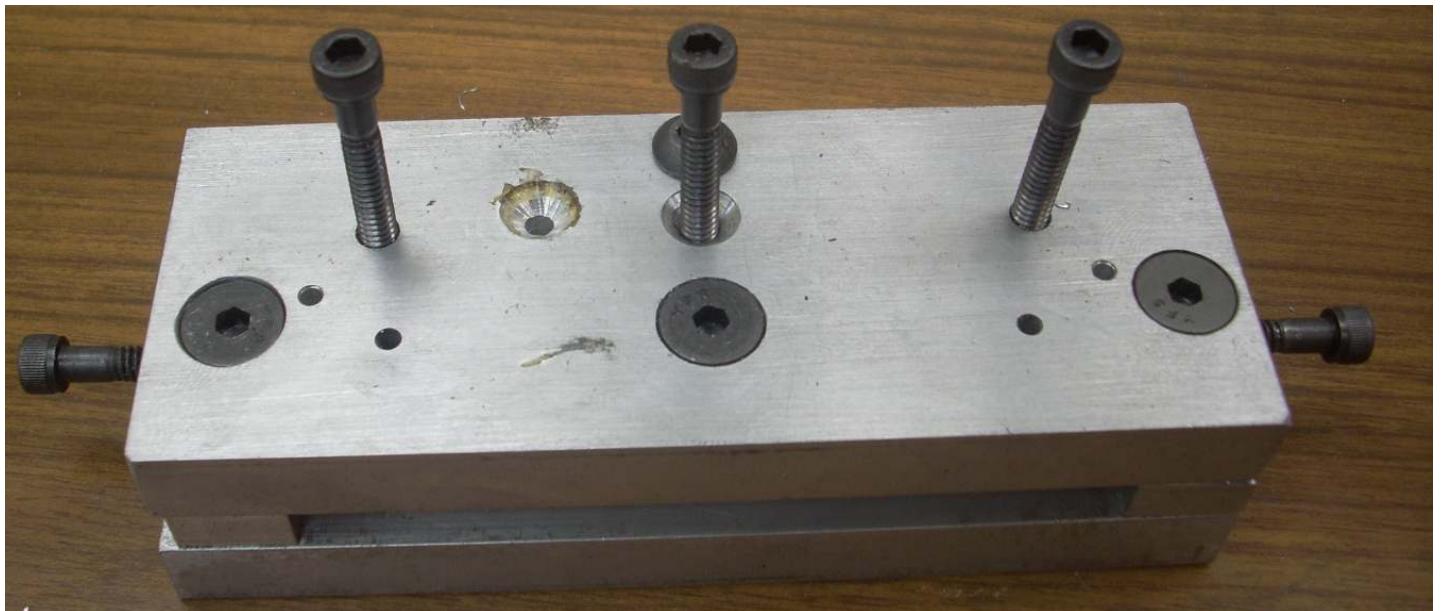


Next the two center locking $\frac{1}{4}$ -20 screws go in. The back screw should have been a flat head rather than a button but it interfered with the filler nozzle on the molder. Later I had to move the filler hole (the sprue) so in the end, it didn't matter.

I tighten these center screws first to minimize the risk of the cope going on crooked.



The side locking screws drop in next.



With the cope secured, I screw in the three top 10-24 screws that form the side holes in the part. Murphy's Law was sure with me on this one. Originally that center hole was my sprue. But then when I added these 3 screws, I found my center screw hole aligned with the sprue. Fortunately, they were perfectly aligned and not off by some small amount. So I just tapped the sprue and formed a new sprue off to the left. It is not in the optimal location but does work.



Note the hole between the left hold down bolt and the left top screw. This is where excess plastic will come out to tell me the void is full. This hole is called a riser. I have a second riser on the right side.

The mold is now fully assembled and ready to be filled.



I used plastic coat hangers from Target® as my feed stock. It cost \$1.37 for 10 hangers and you get a nice choice of colors. The molten plastic flows nicely.

I welcome your comments and questions.

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