

Fitting the Ram to the Column

by R. G. Sparber

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Getting the ram to slide smoothly in its guide takes a bit of effort.



The bottom plate of the ram must be a good sliding fit on four sides. I chose to use UHMW tape over the slide ways and the clamps. The left edge, as viewed facing the front of the machine, is CRS on cast aluminum. I may later change this to UHMW tape.



The right side has the gib which is brass. Adjusting the gib is easy because of the 5 adjustment screws.

I did my best to set the slide ways at the proper distance from the top surfaces of the side castings but in the end I needed a little more room for adjustment shims. The obvious solution is to reduce the height of each column side casting. However, with the column standing upright, my mill/drill does not have the headroom to make this cut.

Not to worry. I just modified the clamps. Gingery called for 1/4" CRS but I chose to use 3/8" so the loss of 0.025" of thickness won't matter.



I set my mill vise and took a clean up cut on the soft jaws. My left clamp was then clamped in place. I am about to cut a step 0.025" deep and 0.600" wide. Note the white patch on the right end of the bar. It is a scrap of UHMW tape.

After making this pass, I took about 0.001" off of the 0.400" pad in order to guarantee that the two faces are true.



Here is the finished piece.

Next I must cut a few shims.



I was lucky to have cut that step in the clamp bars. It enabled me to clamp a piece of MDF in my bench vise, fit the first clamp bar against a piece of 0.004" shim stock, and clamp down. I then ran my "F" letter drill down each hole, through the shim, and into the MDF. The holes therefore are perfectly aligned and undistorted. Without moving the C-clamps, I used an Exacto knife to cut the shim. After each shim was cut, its orientation was marked.



I cut one 0.016", two 0.006", two 0.004", and in the end had to cut a 0.0015" for the right side. The left side was fine without it.

Note in the above picture that the surface that will contact the ram has a strip of UHMW tape on it. Because the tape went onto an elevated surface, alignment was easy. Any tape that stuck out the ends was just trimmed off with my knife.

It did take some time to find the right combination of shims. When I got close, I blued the edges and top in order to find where there was a slight binding. A strip of 600 grit backed with a large parallel was used to smooth the trouble spots. I was careful to wipe off all grit and metal flecks because they can embed in the UHMW tape and cause damage.

My ram now slides smoothly with no play.



Sorry about the camera not being level, but you can clearly see the slide ways, brass gib on the right, and top clamps. The shims and UHMW tape are barely visible.

Rick Sparber
rgsparber@AOL.com