

Y Axis Leadscrew Alignment Plate, version 2

By R. G. Sparber

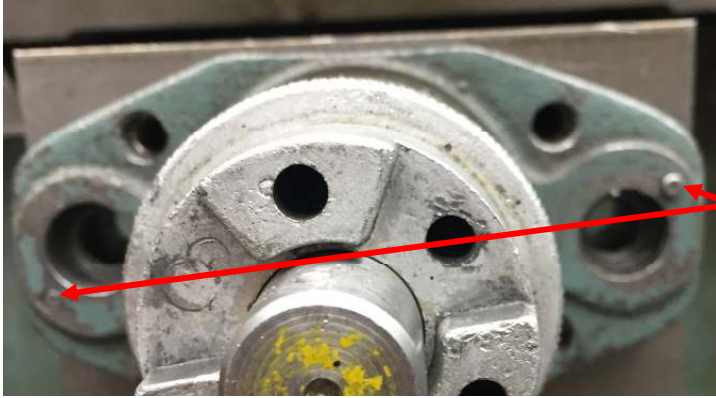
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If you are trying to reduce the backlash on the Y axis, your first step must be to align the leadscrew to the ways. Only then can you tighten up the nut and not have binding. The problem is that a very small shim under one side of the bearing flange causes a rather large swing in the lead screw's alignment. The ratio is about 12 to 1 and you really want to be aligned to within about a thou.

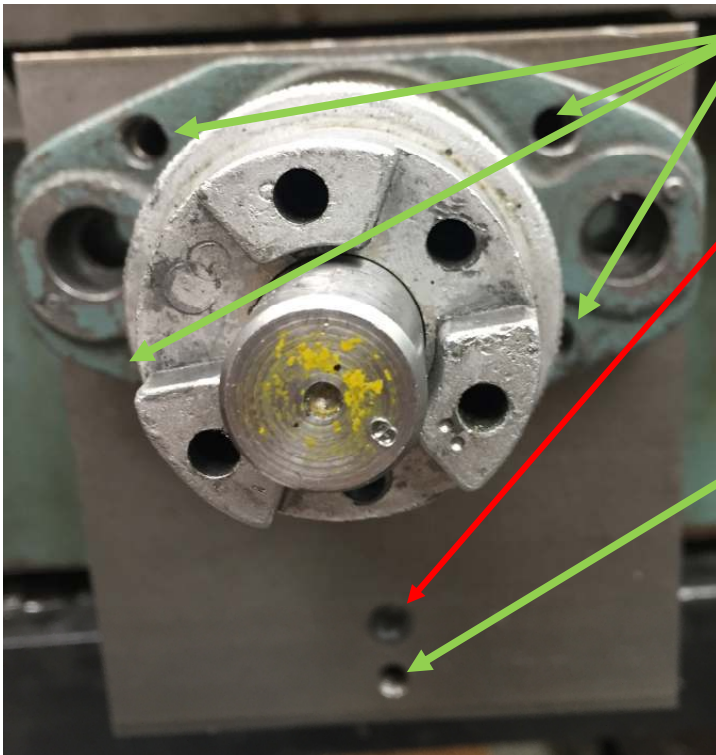
A one thou shim is far too coarse a step size since it will swing the leadscrew about 12 thou. Besides, if you shim on one end and not all around the mounting bolt holes, you run the risk of bending the cast iron bearing block. Cast iron is fine in compression but easily cracks if bent.

¹ You are free to distribute this article but not to change it.



The solution recommended to me by John Herrmann is shown here. I mounted the bearing block on a piece of 1/2" thick CRS and pinned the two together.

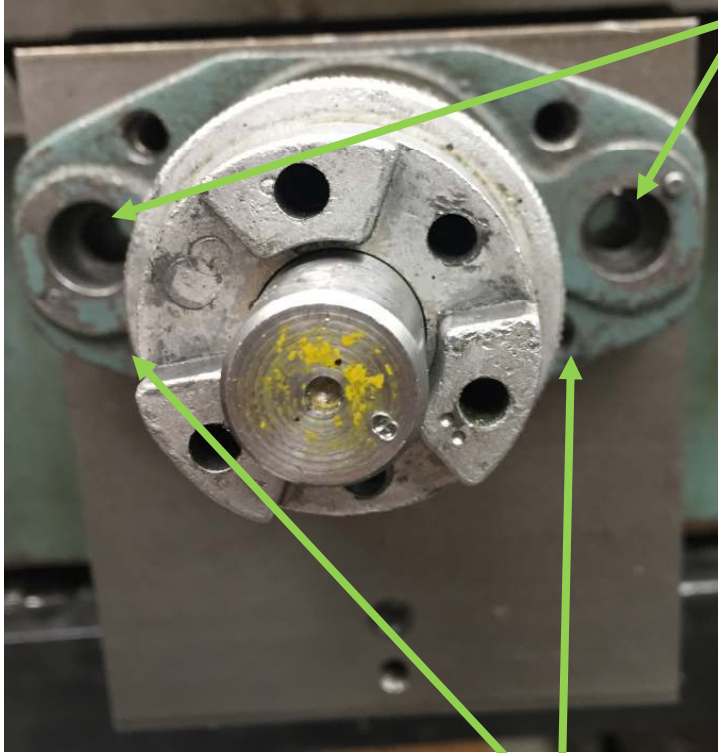
All bolts have been removed here.



There are 4 set screws in the plate accessible through the bearing block.

A 1/4-20 bolt fits through an oversized clearance hole. It screws into the base casting. I lined the threads with a Heli-Coil® so it does not pull out.

A fifth set screw is at the bottom of the plate.



The two big mounting bolts are temporarily replaced with longer bolts that have stiff springs around them. The springs press on the mounting flange with enough force to keep the set screws in contact with the base of the mill. The bottom bolt is snug for now as is the set screw below it.

By adjusting the top two set screws, you can smoothly and precisely swing the leadscrew side to side. Once set correctly, adjust the bottom bolt and set screw together in order to tilt the leadscrew up and down.

When all is true, finger tighten the two set screws below the large mounting bolts. They help to support the steel plate. Then remove the spring loaded bolts and screw in SHCS bolts. These bolts must be about 1/2" longer than the original bolts.

There is room to feed down 5 more set screws to lock the adjustment set screws in place.

The one down side here is that the Y leadscrew extends under the table by about ½” less. If you drive the table all the way to the column, you may disconnect from the nut. I will be adding a limit switch to keep me from driving into this area.

Acknowledgments

Thanks for the great idea John!

I welcome your comments and questions.

If you wish to be contacted each time I publish an article, email me with just "Article Alias" in the subject line.

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