

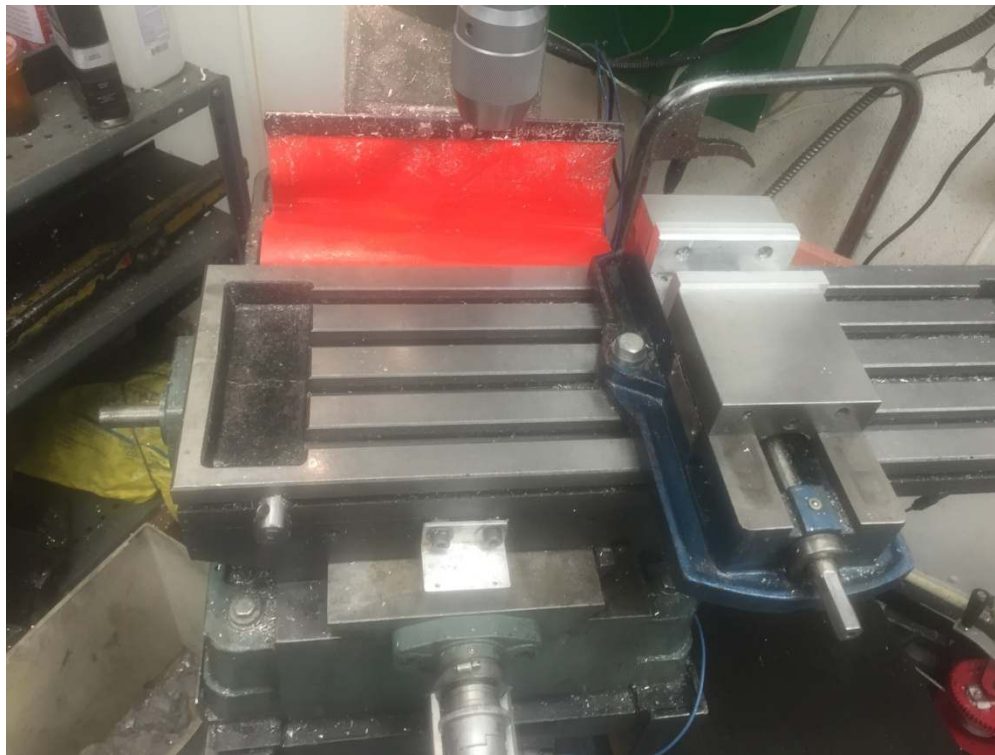
Removing and Installing the Leadscrews on a RF-30 Mill/Drill, version 1.1

By **R. G. Sparber**

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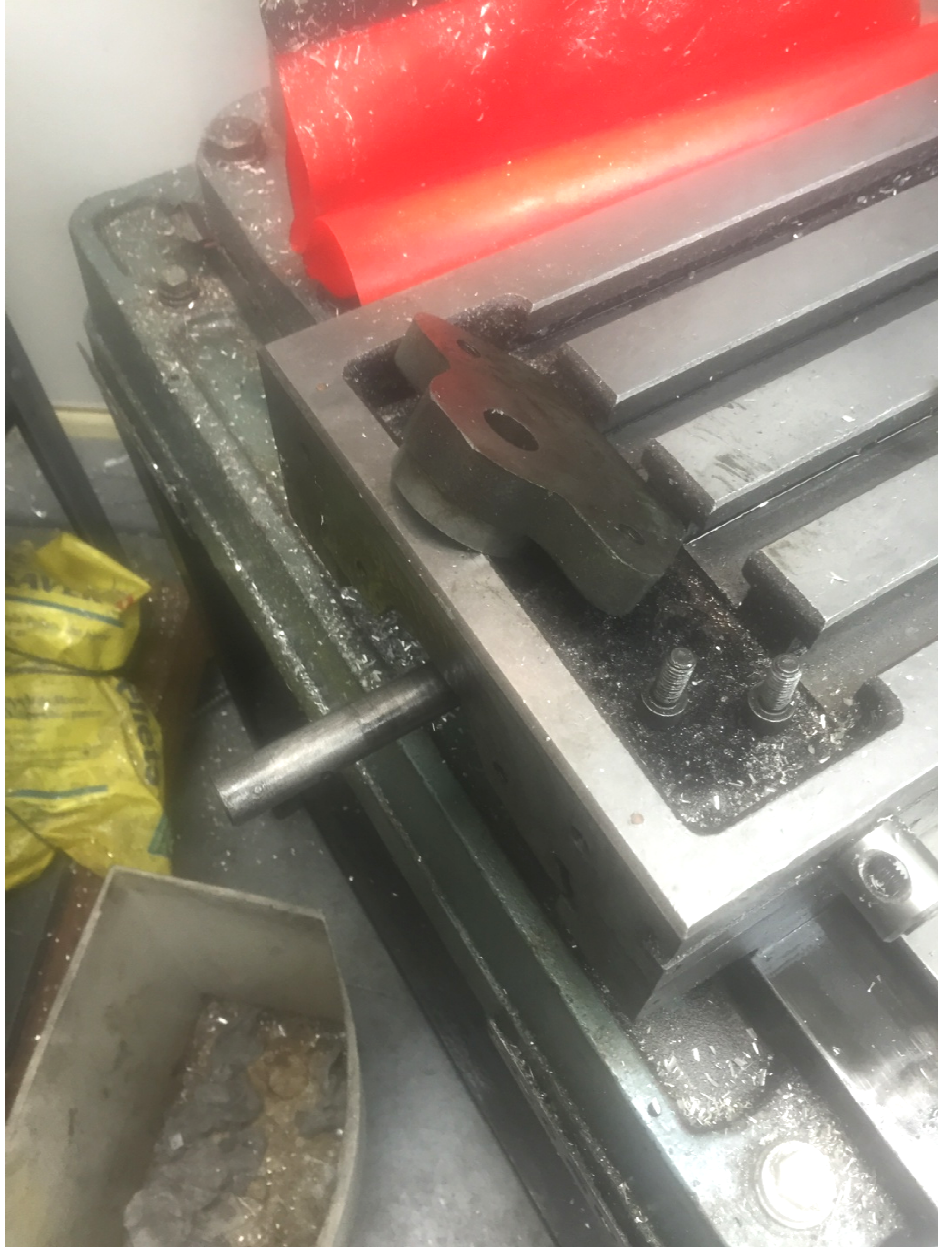
This article presents the steps needed for removing the leadscrews and associated take up nuts on a RF-30 Mill/Drill. It is only easy after your done. Handling these leadscrews is particularly messy. You will also need to lay on the floor as you work under the mill. A good hand cleaner and old work clothes are advised.

Removal



Move the table so the left end is lined up with the side of the apron. This makes it easy to put the table back to a known position for reinstalling the X axis leadscrew.

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Remove the two screws holding on the left support for the X axis leadscrew. This support prevents the table from being moved further to the right.



Move the table towards as close to the column as possible. This insures you have access to the screws that hold the X axis nut in place.



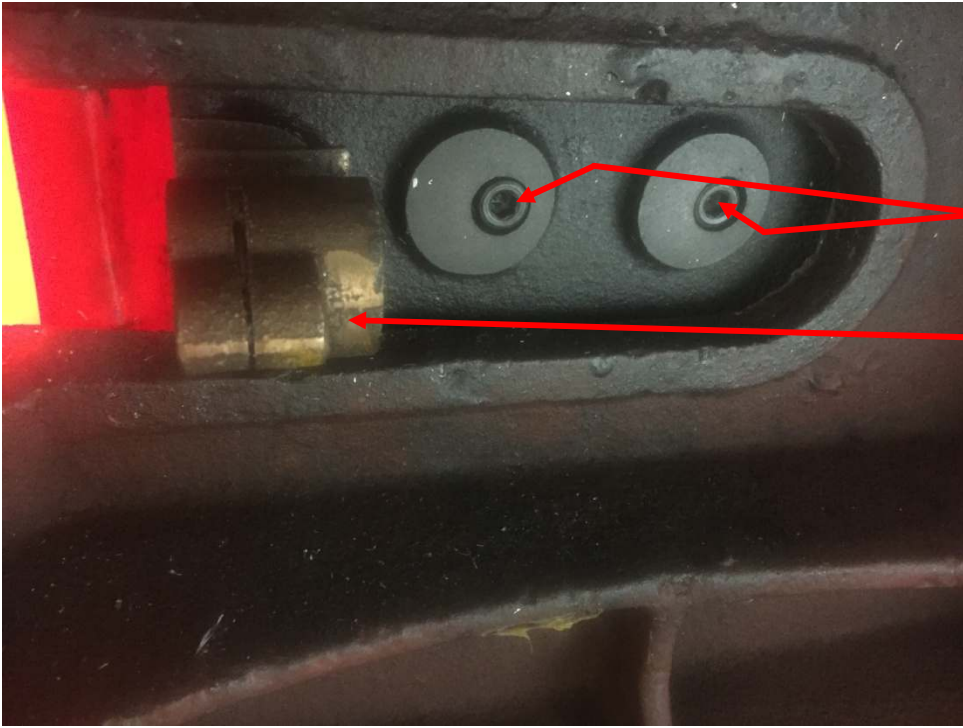
Remove the two screws that hold the Y axis bearing support in place. As the hand wheel is turned, the support should move away from the base of the mill. This is a left hand thread so think "screw in it" to unscrew it.



Support the Y axis bearing assembly as you back the leadscrew out of the mill base. Any movement stresses the nut. By having the table as close as possible to the column, you have minimized stress.



The Y axis leadscrew has finally come free from the Y axis nut.



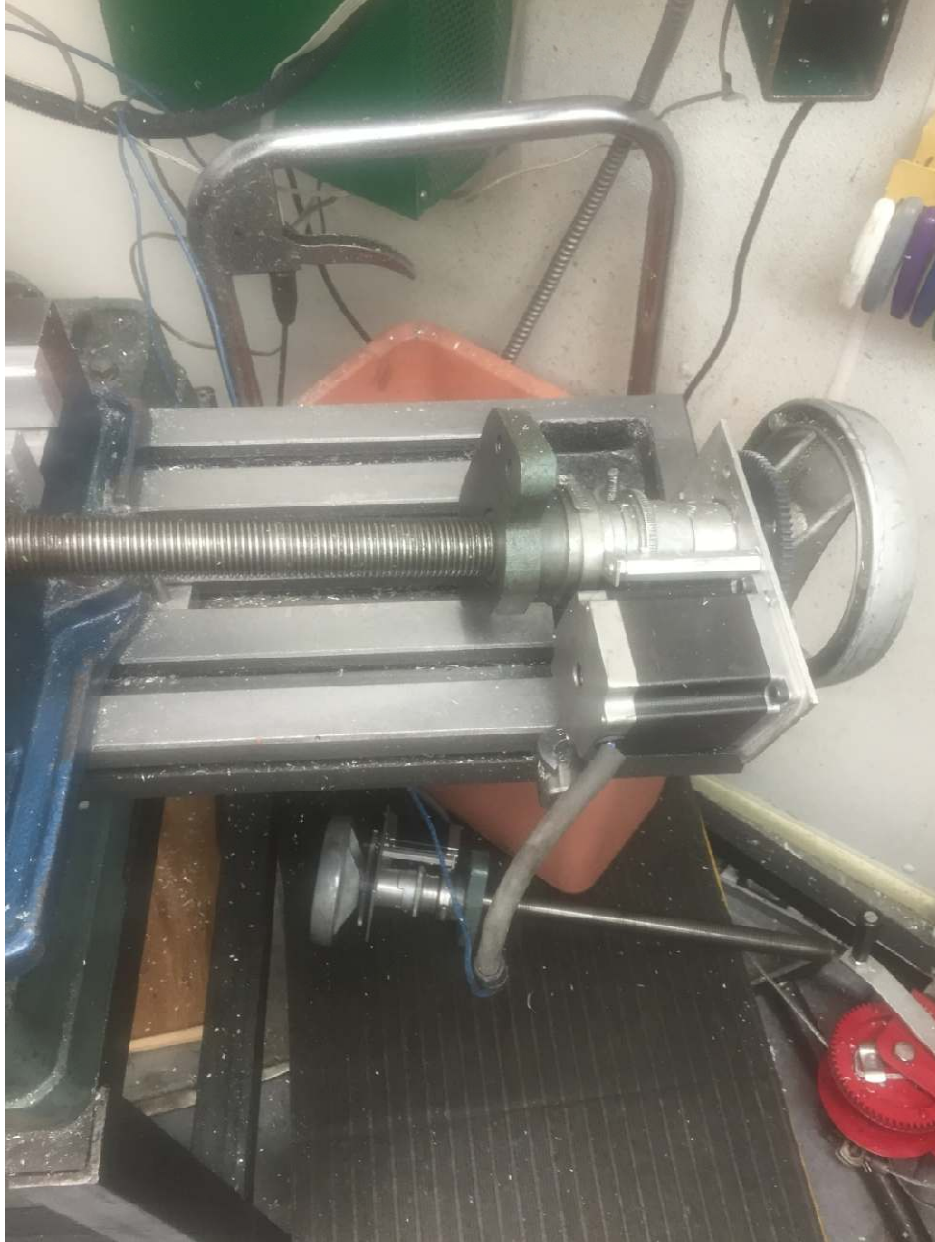
Laying on my back and looking up at the bottom of the mill base, I can see the mounting screws for the X axis nut plus Y axis nut.



Remove the screws holding the X axis nut in place. There should be split washers on there too.



Note that the X axis nut mounting screws are longer than the ones used to hold the bearing supports in place. Don't mix them up.

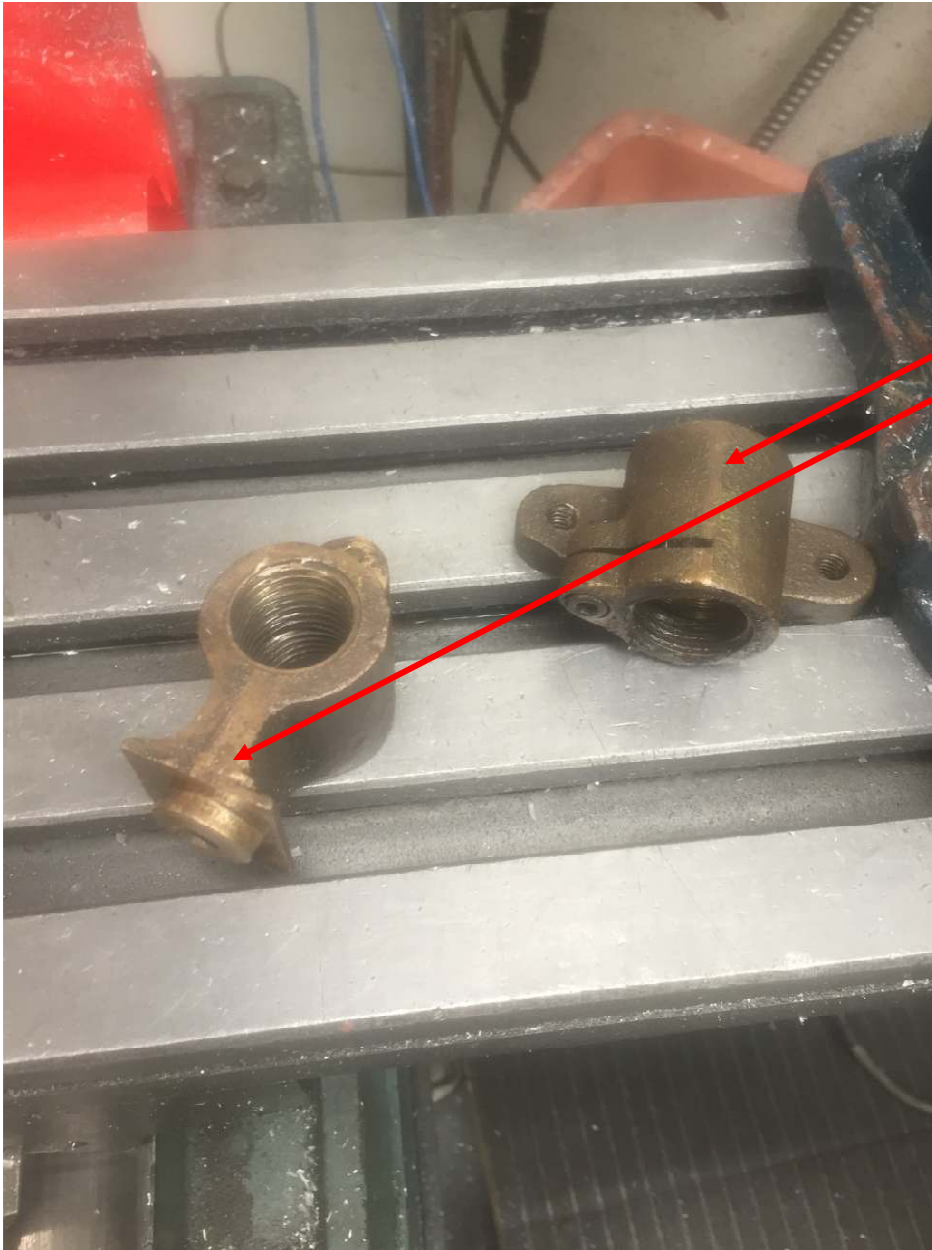


You can now carefully pull the X leadscrew out from under the table from the right end. The X axis nut will come with it. If you plan to disturb this nut, first measure the distance from the face of the bearing support to the face of the nut. When it is time to reinstall, be sure the nut is back at this position. It makes the lining up of the mounting holes much easier.



Stand to the right end of the table and pull. Once the table moves a few inches, you will find it is no longer easy to slide. At this point, lift up on the end and continue to slide just past the centerline of the apron. The higher resistance is due to the table wanting to lift up on the left end.

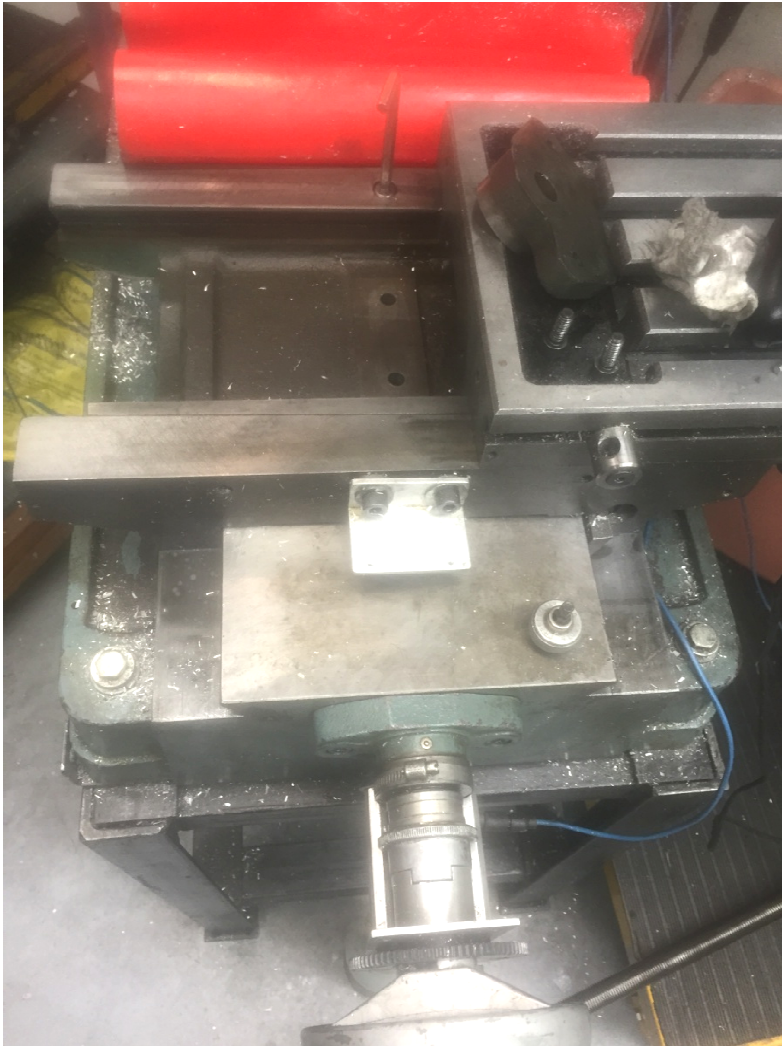
When the mounting holes for the X axis plus head of the Y axis bolt are visible, you have arrived.



Reach under the table to hold the Y axis nut while you unscrew the bolt from above. Here you see the X and Y axis nuts.

The bolt is particularly long and has a split washer on it.

Installation



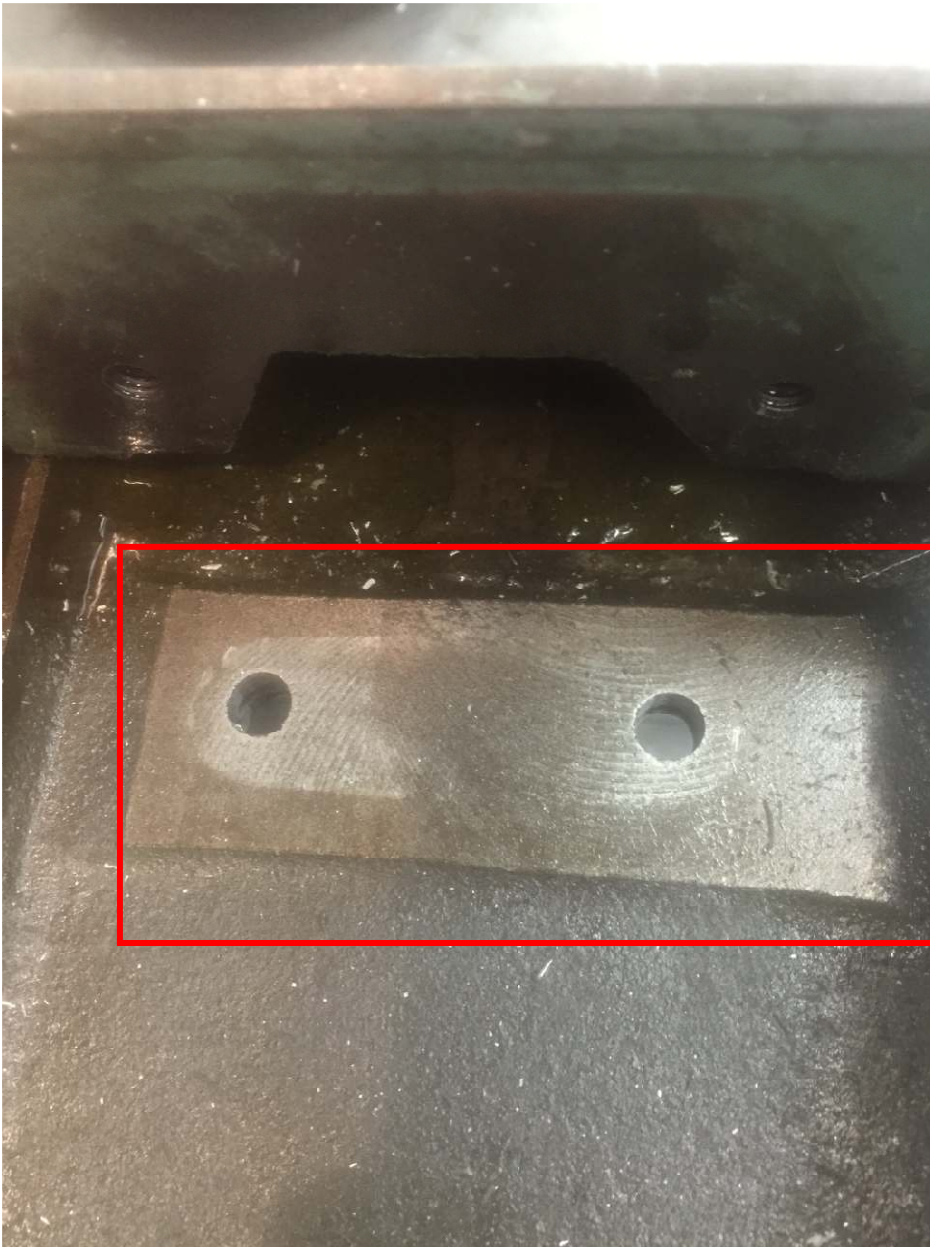
Start by carefully cleaning the Y axis nut especially the underside of the base. Then clean the mating surface under the mill's base. Any swarf caught between these surfaces may cause the nut to rock as the table moves in and out. That causes wear on the nut plus excessive backlash.

Feed the Y axis bolt with split washer down the hole. Leave the Allen wrench in place. Reach under the base and place the boss of the Y axis nut into the recess. Then loosely tighten the screw. The nut should be able to turn around the mounting bolt but should not be floppy.

Then screw in the Y axis leadscrew. You may find it easier to first turn clockwise until you feel the threads

"bumping out". Then turn counter clockwise and the thread should engage with the nut. Keep turning the leadscrew until the bearing flange is almost touching the base. Feed in the mounting screws leaving them slightly loose. Then turn the hand wheel until the flange is tight against the base casting. Tighten both screws. This will properly orient the nut. Fully tighten the nut mounting screw. Then remove both mounting screws on the bearing flange and remove the leadscrew.

I know this seems like a wasted step but it is essential for proper alignment of the nut. The Y leadscrew must then be removed so the X axis can be installed. At that time, it will no longer be possible to access the Y axis nut mounting screw.

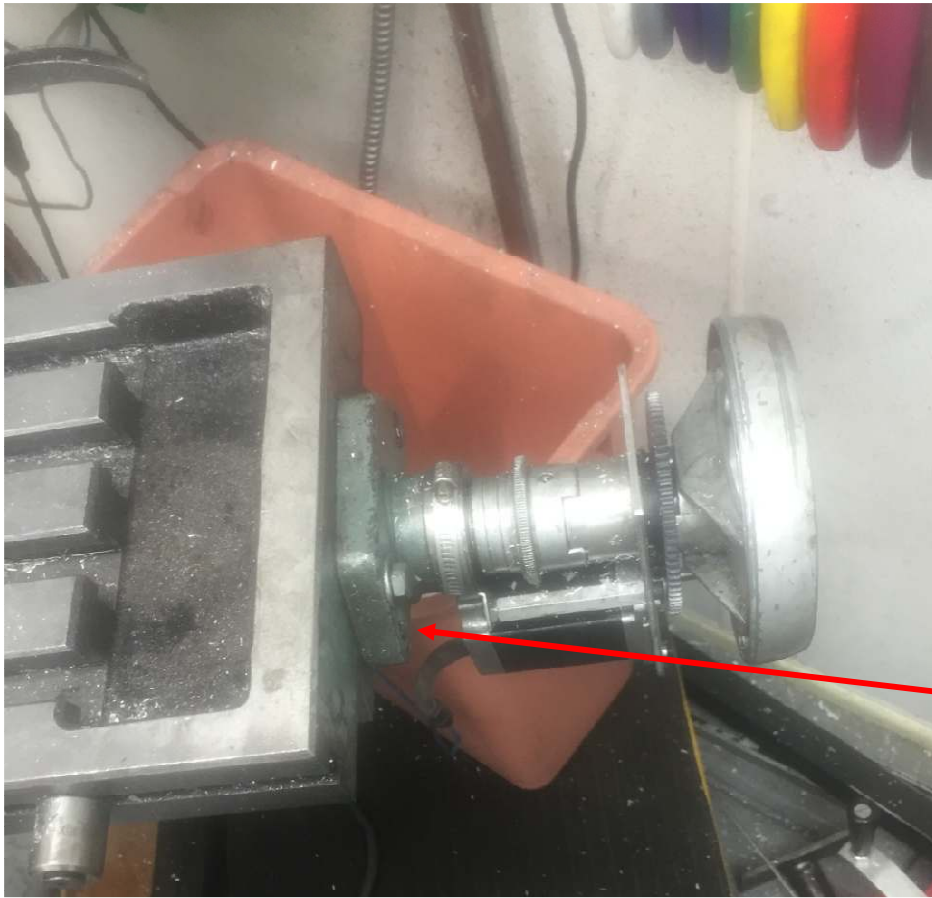


Carefully clean the area of the apron casting that will accept the X axis nut. Do the same with the X axis nut. As with the Y axis nut, any swarf caught between the mounting face and underside of the nut may cause rocking which in turn causes excessive wear and backlash.



Slide the table so the left end is even with the side of the apron.

Then reinstall the left side bearing support.



With the flange of the X axis nut facing down, slide the leadscrew back under the table. When it can't go any further, reach over to the left end and guide the shaft through the left end bearing. Then feed the mounting screws into the right flange and tighten.

Note that one of my mounting screws in a hex head bolt. A long time ago I noticed binding of the leadscrew when the

table was all the way to the left. The right bearing support was too low relative to the X axis nut. I drilled a new clearance hole in the right bearing support and match drilled into the table. Then I tapped the table hole. That solved the binding problem.



If you put the X axis nut back to the same location along the X axis leadscrew as when it was removed, the threaded holes in the nut should line up with the mounting holes in the base casting. If you are close but the screws won't go in, turn the X axis hand wheel until they line up. Install these screws with their split washers and tighten.

Hopefully, there are no spare parts and both leadscrews turn freely. Good luck getting all of that greasy gunk off of your hands!

I welcome your comments and questions.

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