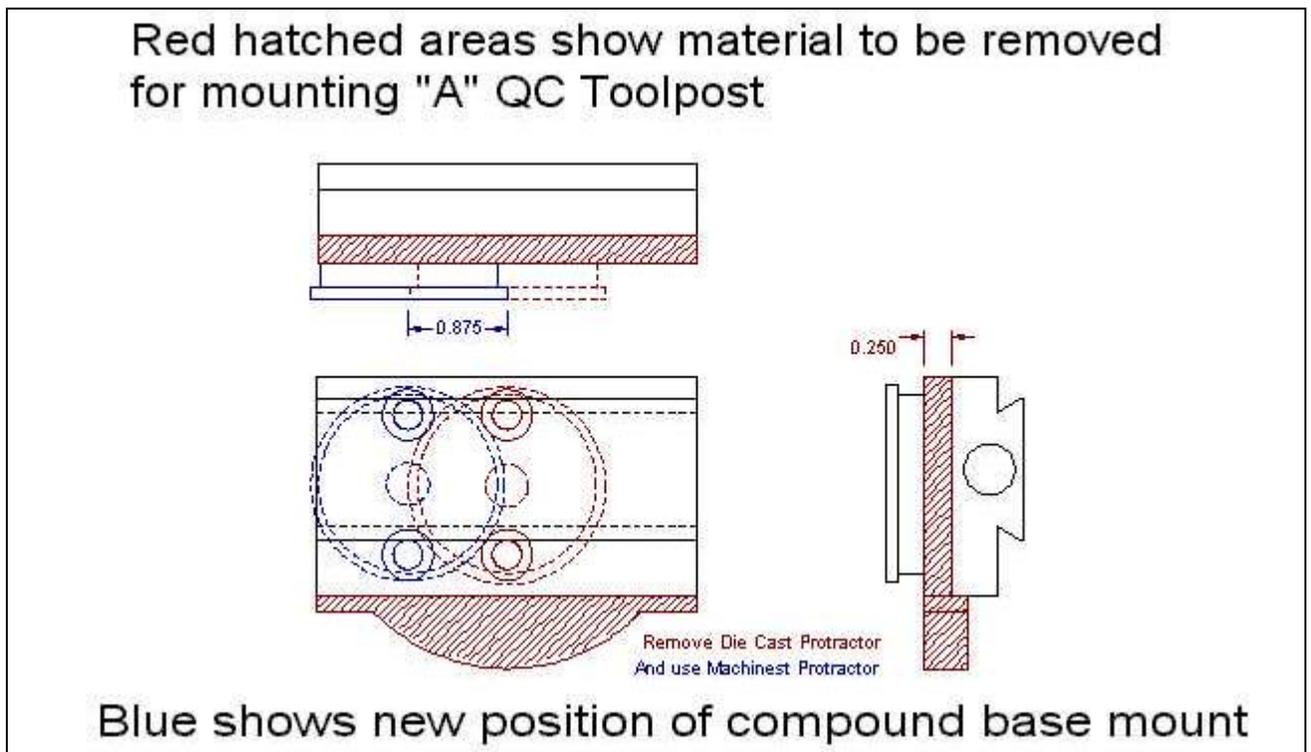


## Modifying the Compound Rest on the 7x10 Mini Lathe For Quick-Change Tool Posts and Larger Turning Diameters

One of the major complaints most users have with the 7x10 is setting the tools for center height because there is no consistency in the stock height of the tool post. On my three machines there is a height variation of .035 between them. #1 needs a .015 shim under a 3/8" tool to bring it to center. #2 is just right for 5/16" tools. #3 needs a .020 shim for 5/16" tools. Because I have had a 9" South Bend Model A and a Taiwan 9x18 for several years and both of them are equipped with QC Tool-posts, I wanted the same flexibility on the 7x10. Both of these machines use 3/8" tooling and I want to be able to use those tools on all machines.

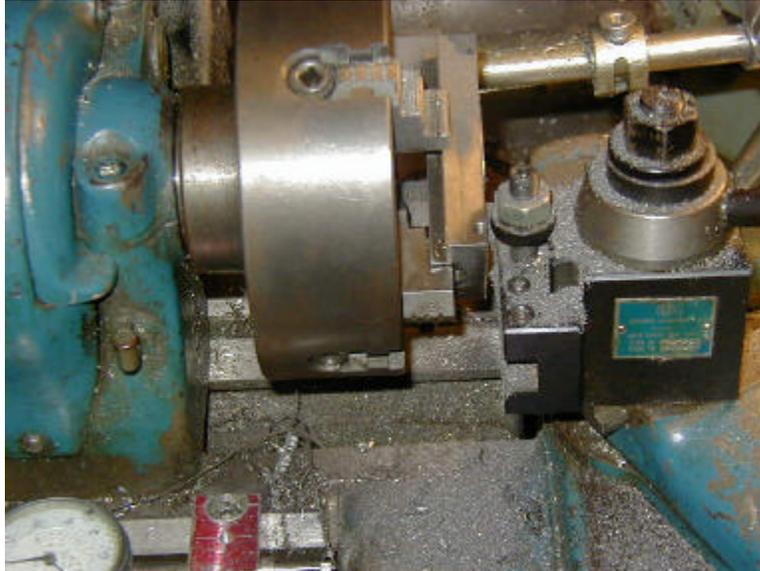
I purchased two of the 39083 tool posts from HF and set about evaluating how best to fit them to the 7x10. After some study and measuring I decided the compound needed to be lowered by .250 for the QC post to have a good adjustment range. Drawing #1 shows how I went about this.



*Drawing #1*

Because the cast protractor supplied on the machine is less than useless for setting the compound angle for any reasonable work such as thread cutting it had to go any way. I then removed .250 from the bottom of the compound base. At the same time because I do not like retracting the compound slide all the way just to loosen the screws for setting the angle and because I wanted to gain some more turning diameter I moved the compound base mount forward by .875 allowing a 1 3/4" gain in effective turning diameter. At a later date I will do the 1" spacer modification to the carriage and cross-slide as shown on Ty Hoffers Web Page to gain another two inches of effective turning diameter. When this is completed I should be able to handle more than 4" material with the tool post squared up and 6" with the tool post rotated.

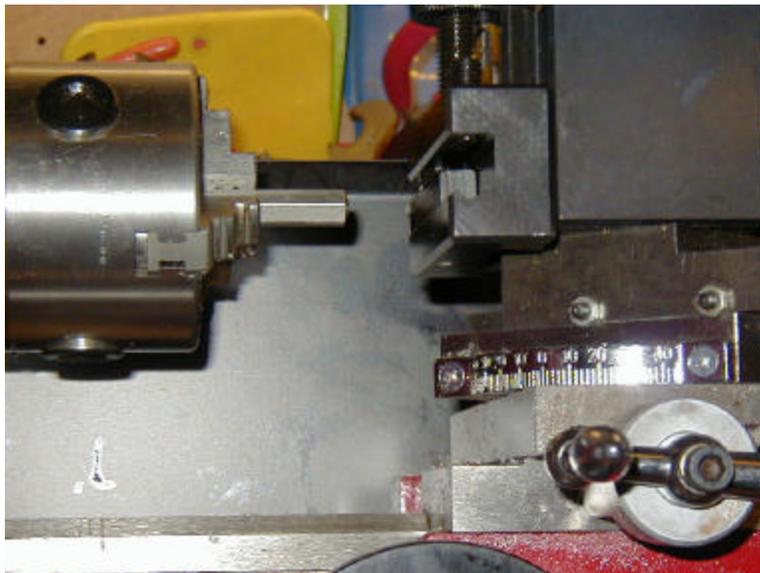
Picture #1 below shows the compound base mounted in the 4-jaw chuck on the South Bend for facing off the .250 from the bottom.



**Picture #1 Facing the compound base**

This shows what a mess turning cast iron is. It flies off as a powder that is very gritty and gets into everything around. It also very dirty, your hands look like you have been working on an old car afterwards.

The next photo shows the QC tool post mounted on the 7x10 before removing the protractor and the .250 from the base.

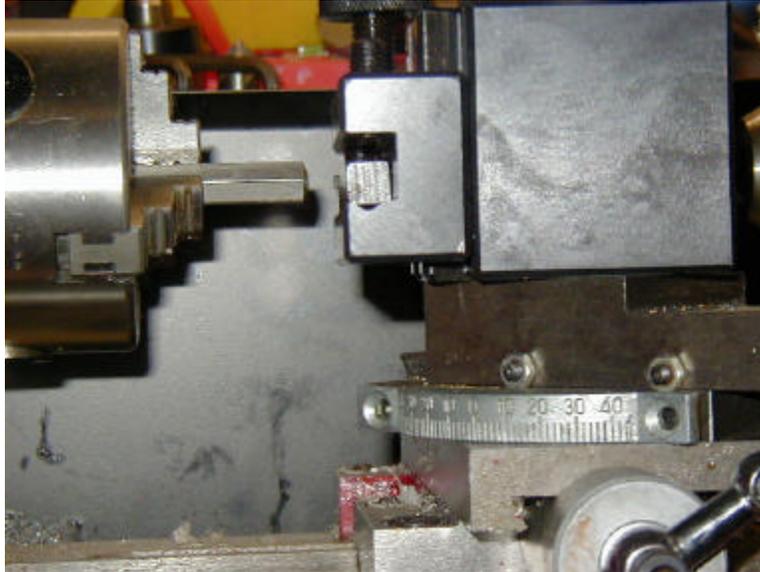


**Picture #2 Before modification**

As you can see the tool holder hangs below the top of the compound slide when the cutting tool is centered on the work. This is the difficulty several have had fitting the QC tool posts to this machine. Because I have been a master automotive mechanic and machinist for over

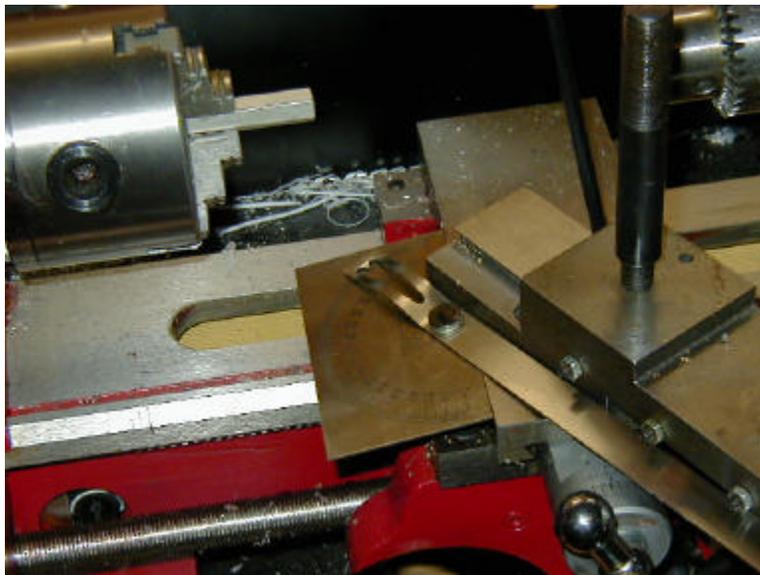
twenty-five years a small problem like this is not going to keep me from fitting the tooling I like to a machine I like. The modification that I showed in drawing #1 takes care of this

The next picture shows the QC tool post mounted on the machine after the modifications shown in drawing #1



***Picture #3 After modification***

As you can see in this picture there is now plenty of adjustment room. The next picture will show the method I use for Setting the compound angle.



***Picture #4 Setting compound angle***

Using an engineer's protractor of this type makes it easy to get exact settings for the compound. The cast one supplied with the lathe is useless for thread cutting angles.

The next picture is showing two compound bases laid out for the new hole locations. One has the center-locating hole drilled.



***Picture #5 Lay out work***

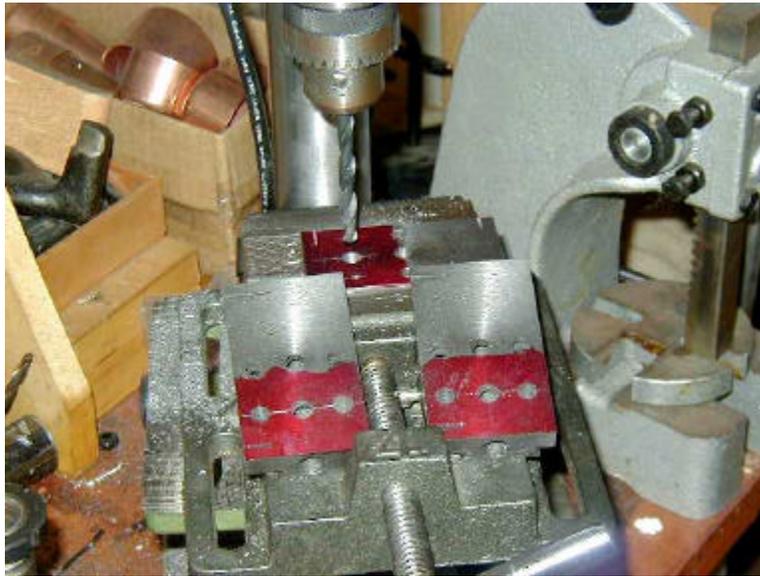
The next picture shows the setup in the 4-jaw for drilling the center-locating hole



***Picture #6 Precise center drilling***

Locating the center hole is one of the most important operations. This picture also shows the Enco Phase II tool post that I have used on the South Bend since 1975. Being spoiled from long use of this convenient item made the job of shimming tools on the stock 4-way even more tedious.

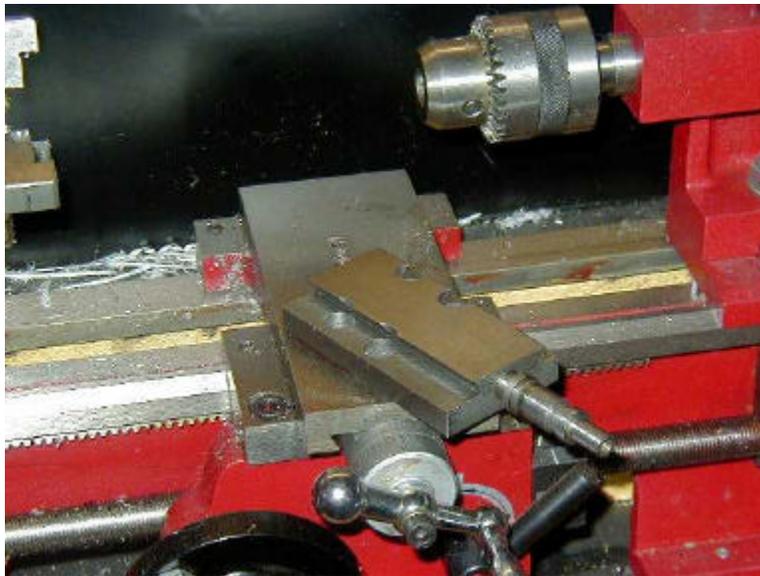
Next we must drill for the clamp mounting screws.



**Picture #7 Drilling mounting holes**

Because these will be opened up with a counterbore drill for 1/4" socket head cap screws, careful drilling in the drill press is accurate enough.

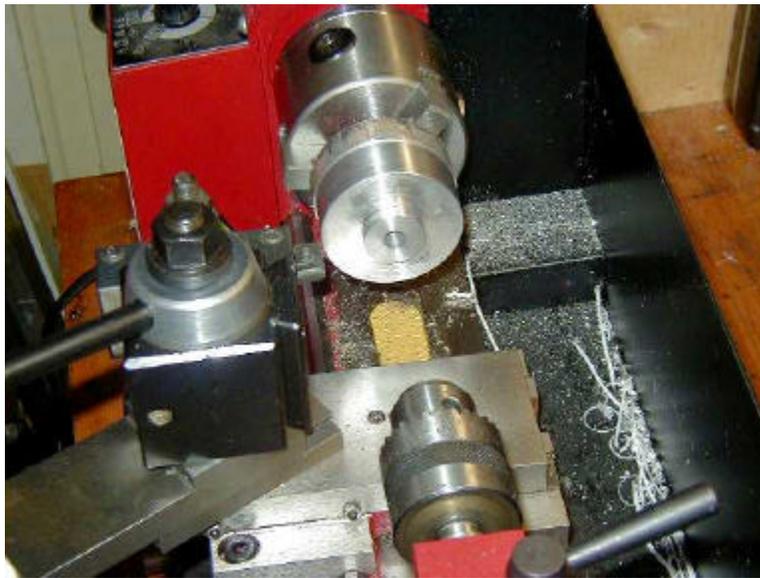
The next picture shows the completed compound base and feed screw mounted on the cross slide.



**Picture #8 Base in place**

It is very important as you are putting it all back together to align the compound and cross slide feed screw mounts. To align the feed screw mounts thread the feed screw all the way in without the mount. Next adjust the gib screw to where the slide can be moved full travel with minimum drag and no slop from side to side. Next install the mount cross slide first but do not lock down the screws. Tighten the mount screws a little at a time making sure the feed screw

does not bind when the screws are tight. These mounts not being aligned and binding cause most of the notchy feel on these feed screws.



***Picture #9 Finished ready to work***

All ready to use. Lots of room and quick-change convenience.



***Picture #10 Nice***

Here is #3 and the compound slide for #2



*Picture #11 Hard at work*

