

O-Ring Pin Chuck

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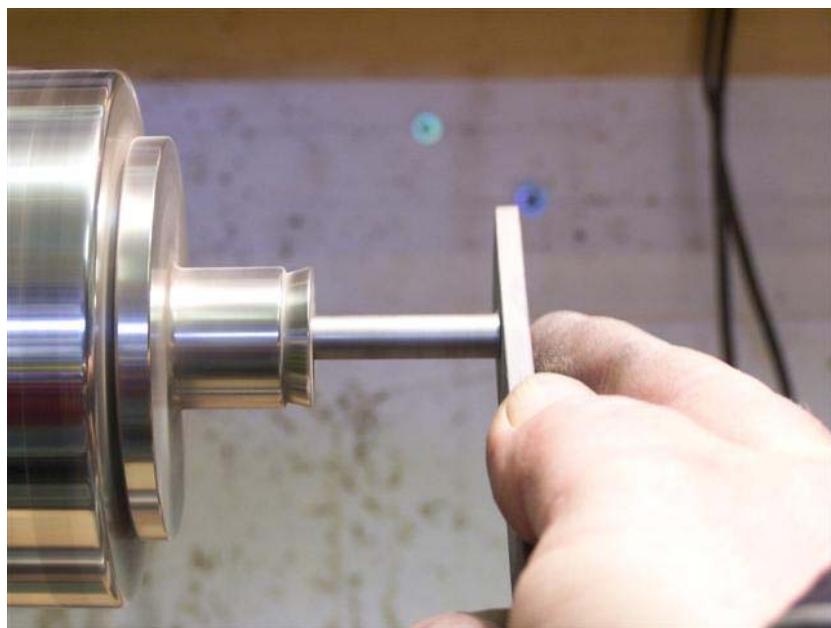
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This tutorial is presented to demonstrate that you do not need the accuracy of a machined part and a matching metal pin to make a serviceable pin chuck. The chuck in this article was made using a wood lathe, a vise, and a file.

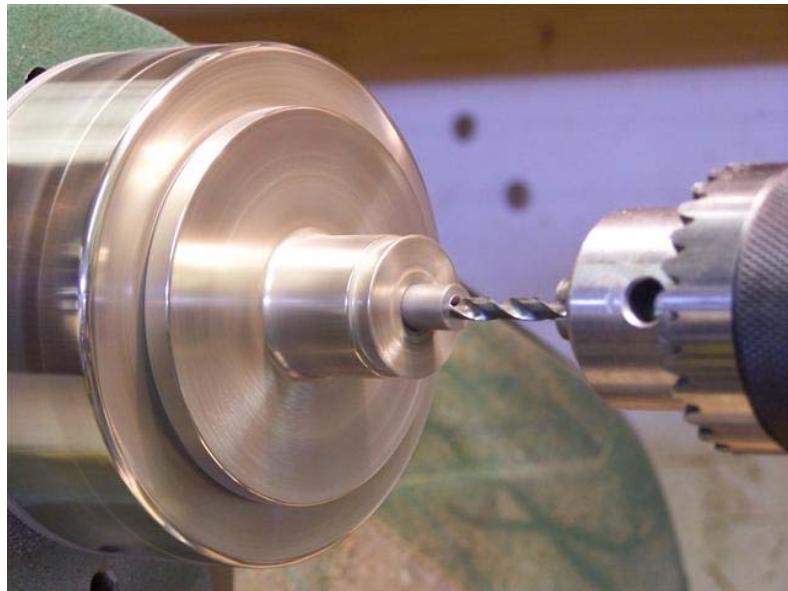
OK, select a long bolt that is as close to the size of your chosen pen kit tube as possible. I used this stainless steel, 8mm x 120mm bolt for the longest kit I had.



Now, with the bolt in a vise, cut the hex head off with a hacksaw and then square up the end with a file on the lathe.



Drill a centering dimple in the end of the bolt. If you have a center drill use it, or as pictured, just use a nice, sharp 4 or 5mm bit and drill to about 5-6mm deep. A smaller drill may flex and skate over the stainless steel.



Most scroll chuck jaws are numbered. Put a reference mark on the bolt in line with the # 1 jaw. Scroll chucks often have some discrepancy and if the part is replaced in the chuck the same way each time then you can be sure that it is as true as when you made it. If you are happy that your scroll chuck is fairly accurate, then you don't need to do this.



Put the bolt in the scroll chuck and bring up the tailstock. Note that I'm trying not to clamp on the threads. Select a distance from the end of the bolt approx. 3/4 of the length of the tube and make a mark on the bolt.



You don't want to wreck the jaws, so stack some washers up to the mark.



Measure the inside diameter of the tube. I have actually stretched the tube slightly with the caliper. The actual measurement is 7.26mm (0.2858") for this tube. Lock the caliper in this stretched position. (0.2874") (Note: These measurements are examples only. You will have to determine the dimensions required for your particular kit.)

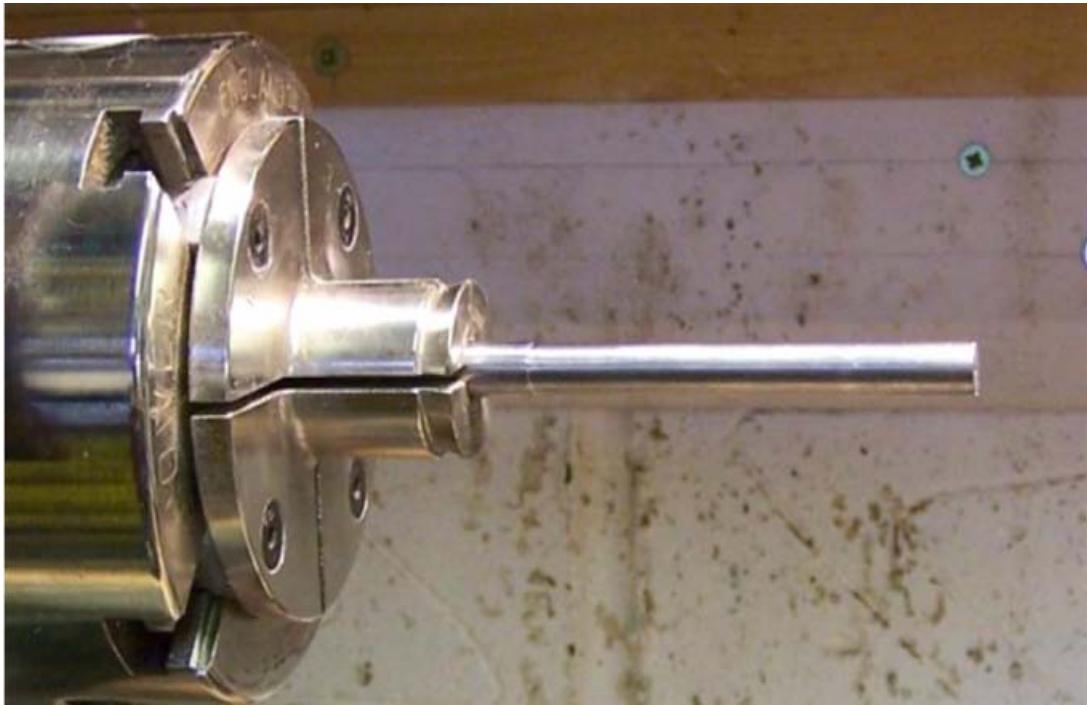


Now comes the fun part! Grasp a good clean file using the "left-handed" method. Holding the file in the left hand is a safety precaution. By using your left hand to hold the file, it does not hang over the chuck and reduces the risk of contact with the chuck. With the lathe turning quite slowly, stroke the file left to right in a smooth motion. It goes pretty quick so keep checking with the caliper. Use a Sharpie pen to mark any high areas. Since the file does not leave the surface, you don't have to worry at all about the washers. Use chalk on the file to prevent clogging and rip out. (I can't touch chalk, it makes my skin crawl so I just use a wire brush to keep the file clean.)



Once the caliper goes over the bolt throughout its length, you can remove the tailstock. Now change to about 240 grit wet'n'dry sandpaper and use it to get the brass tube to fit as snug as you can. Use the Sharpie pen to mark the high spots and start from the end.

It should look like this:

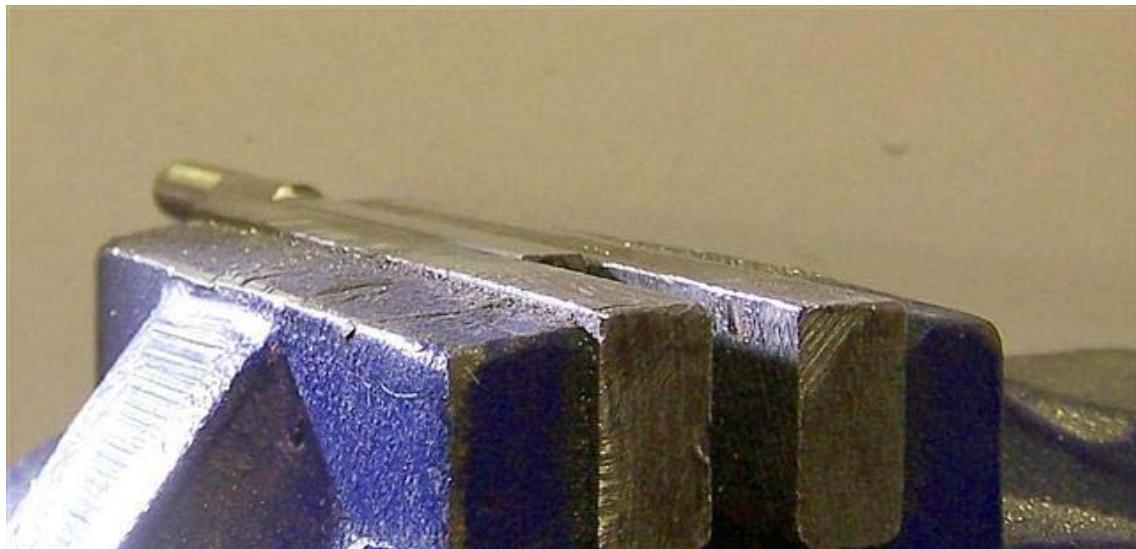


Now for some more "fun". Mount the bolt in your vise like this. Take some time to do this. Make it protrude from the jaws by approx 2mm. (About

3/4 of the thickness of your O-ring) When you are happy it is parallel to the jaws, clamp it up real tight. I tried to use jaw guards; but it just popped out as my vise is a bit worn. No big deal as any vise marks can be sanded down later.



Now file a flat down to the jaws. If you are not filing flat and reasonably parallel to the top of the jaws, it will soon become very apparent.



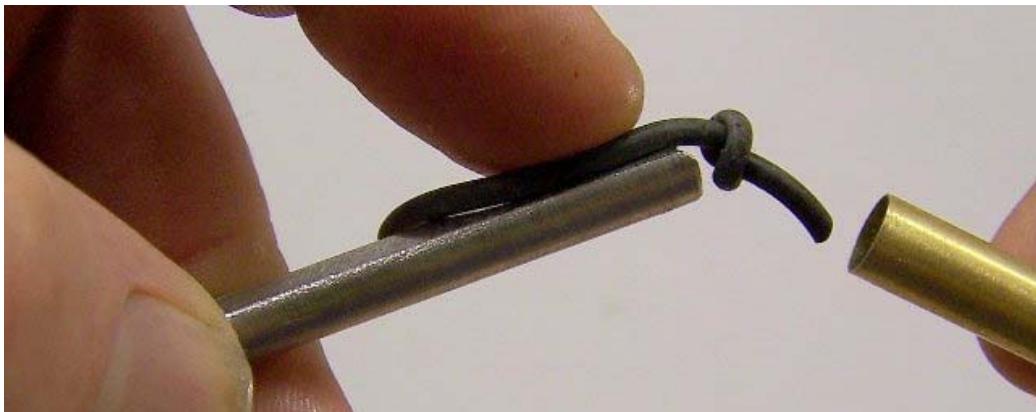
File a flat chamfer on the end. I also filed a round groove; but it's not required.



Now for the magic! Take a small O-ring and cut it. Tie a knot on one end.
O-rings are dirt-cheap.



Hold the O-ring over the chamfer like this and offer up the tube. It helps if you wet the O-ring a bit. (I just licked it.)



I had to mount the shaft in the lathe to get the tube on all of the way. You can just see the end of the O-ring. The tube (when you have a blank on it) will, of course, go all the way to the shoulder. You can also slide a correct bushing on first if you choose although I rarely use bushings.



Here you can see why I didn't cut the threads off. I tapped an aluminium tube with the same thread (8mm) and made a handle for buffing. As you can see, I am putting loooooooong knurls on everything. (Thanks Joe Schmidbauer-jhs494 for the tips on how to do these.)



Mount the pin chuck shaft in the scroll chuck with the registration mark aligned with the #1 scroll chuck jaw. If your blank is square, I suggest using the tailstock till you have it round. If your wood is pretty soft, then just put small washers between the revolving tailstock center and the blank.

WORKS GREAT!



The finished pen.😊

(The Chrome Top Pen from Axminster UK)

