

O-RING PIN CHUCK

for making closed ended pens

By Steven (Skiprat) Jackson

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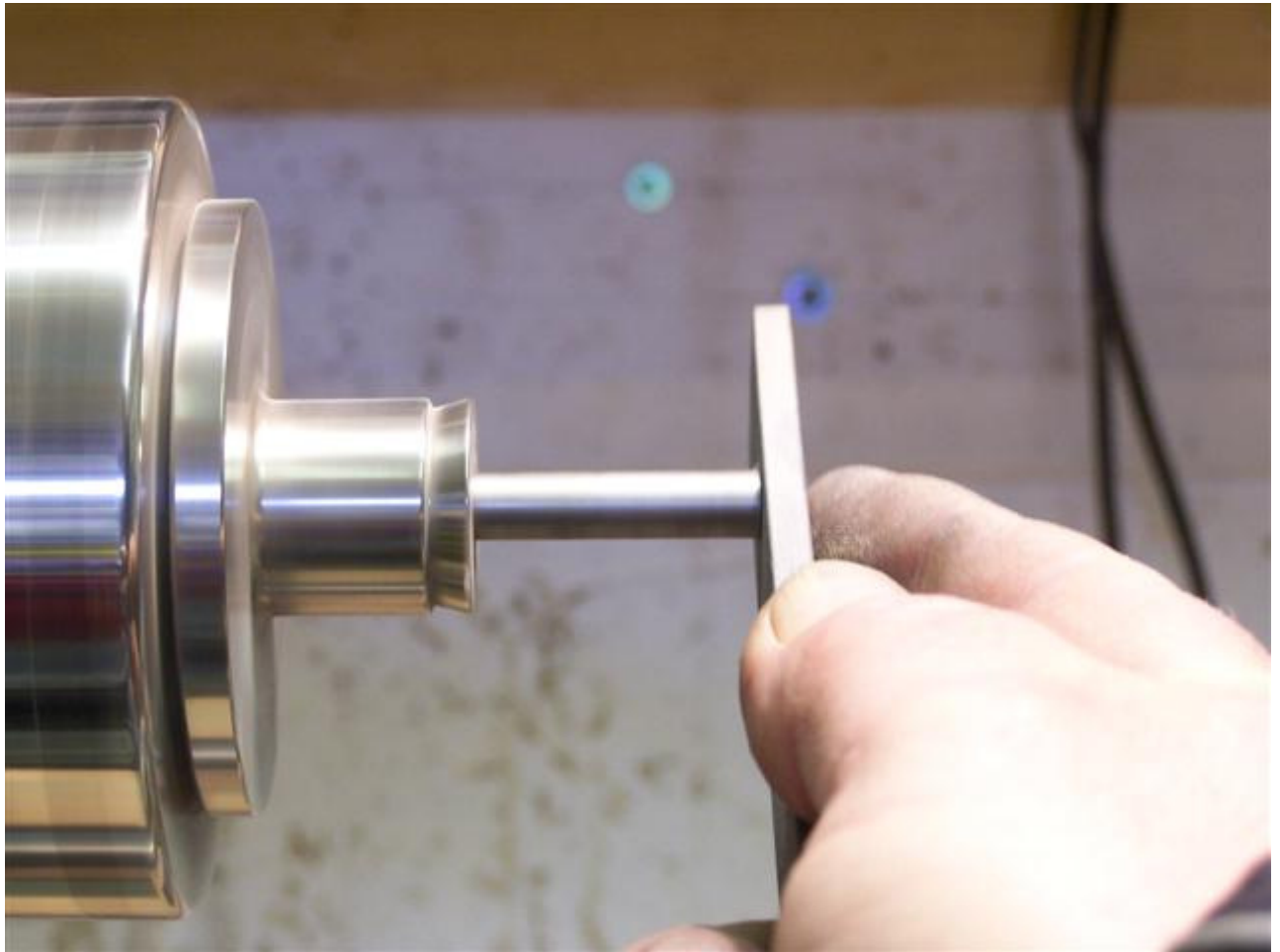


The idea behind this tutorial is to show that you do not need the accuracy of a machined part and a matching metal pin to make a pin chuck. This one was made using a wood lathe and a vise.

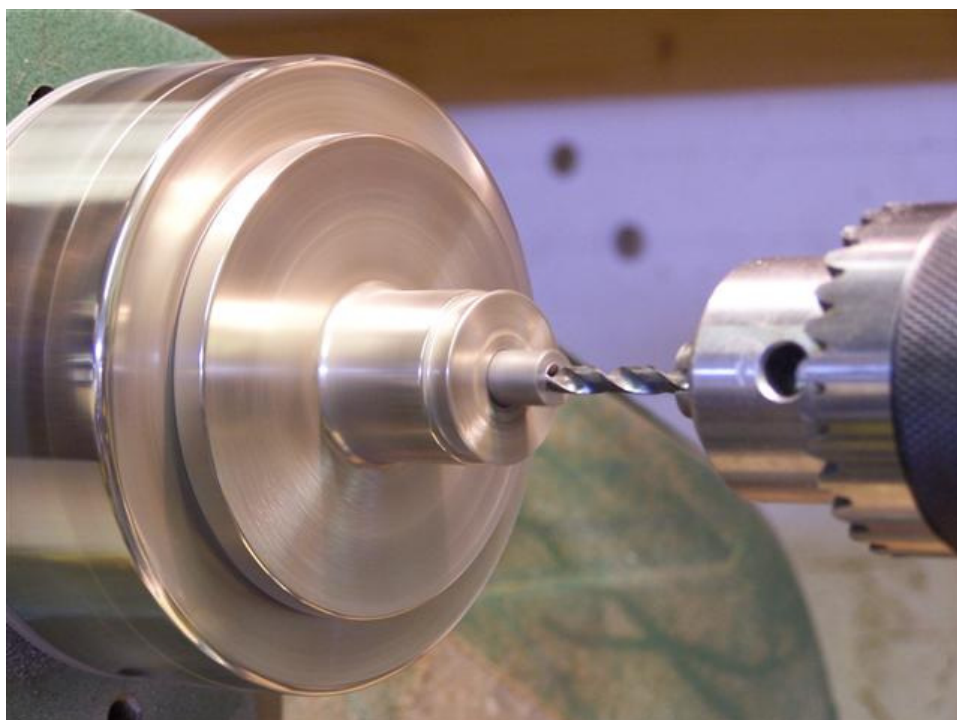
**Ok, take one long bolt that is as close in size to your chosen pen kit tube as possible. I chose this bolt for the longest kit I had. This bolt is 8mm x 120mm
Stainless Steel**



Now cut the hex head off with a hacksaw in a vice and square up the end with a file on the lathe.



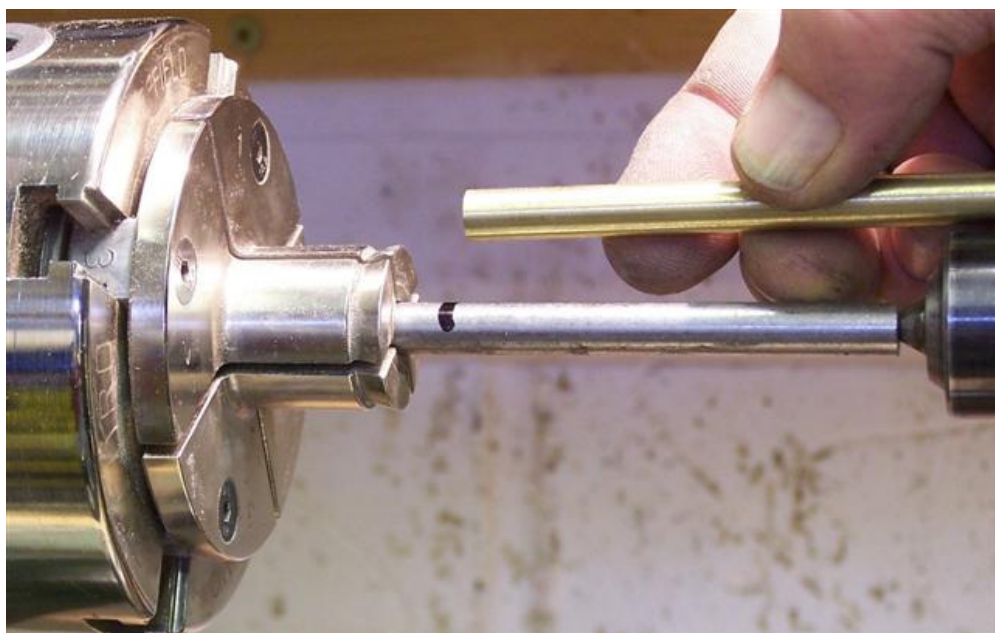
If you have a Centre Drill use it, or like here, just use a nice and sharp 4 or 5mm drill to about 5 -6mm deep. A thinner drill may flex and skate over the stainless.



Most scroll chuck jaws are numbered. Put a reference mark on the bolt in line with the number 1 jaw. This simply ensures that each time you use it, the O-ring chuck will spin perfectly on centre. If your scroll chuck is accurate then you don't have to worry about this.



Put the bolt in the chuck and bring up the tailstock. Note that I'm not trying to clamp on the threads. Select a length approx 3/4 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.



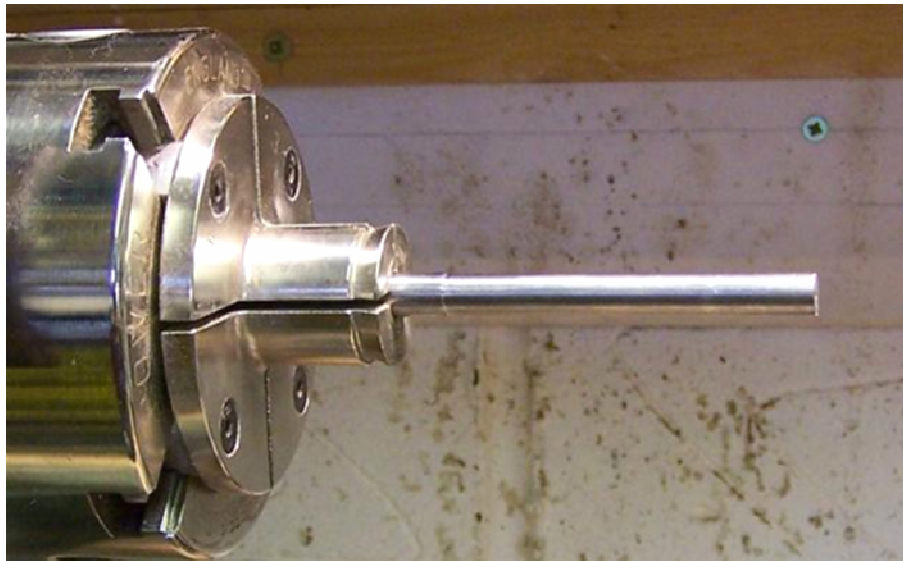
Measure the inside diameter of the tube. I have actually stretched the tube slightly with the caliper. The actual measurement is 7.26mm for this tube. Lock the caliper in this stretched position.



Now the fun part!!! Hold a good clean file in the LEFT HANDED method and with the lathe on quite slow, go for it. Stroke the file left to right in smooth circles. It goes pretty quick so keep checking with the calliper. Use a sharpie to mark any high areas. As 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, 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 and use it to get the brass tube to fit as snug as you can. Use the sharpie and start from the end. It should look like this.

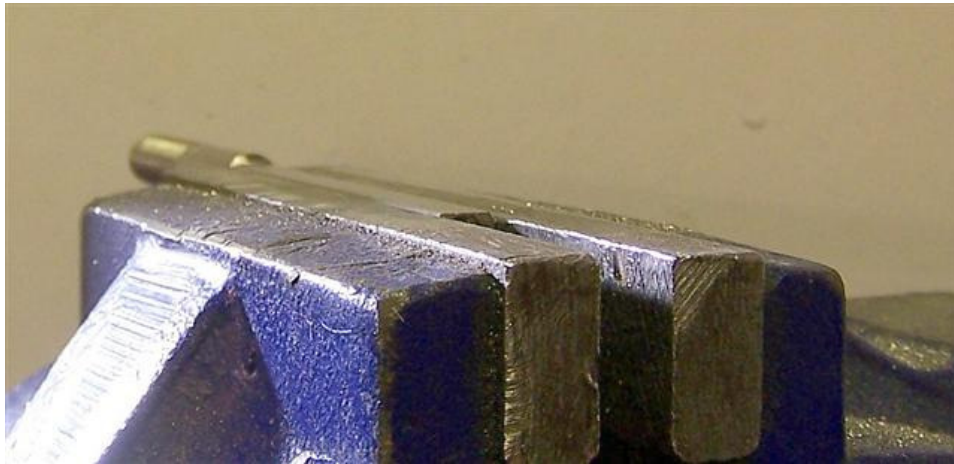


Now some more 'fun' 🤪.

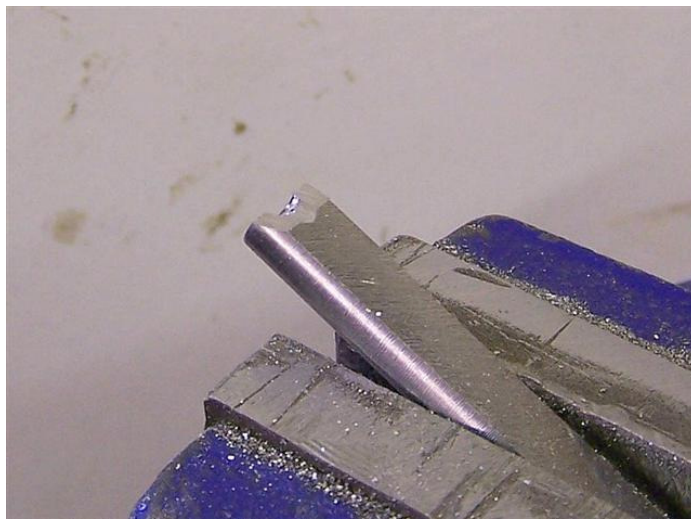
Mount the bolt in your vice like this. Take some time to do this. Make it protrude from the jaws by approx 2mm. (Or about $\frac{3}{4}$ the thickness of your o-ring) When you are happy it is parallel to the jaws, clamp it up real tight. I tried to use jaw guards but it just popped out- my vice is a bit worn. No big deal at all. Any marks can just be sanded down later.



Now file a flat down to the jaws. You will soon see how flat you are filing by following the lines.



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

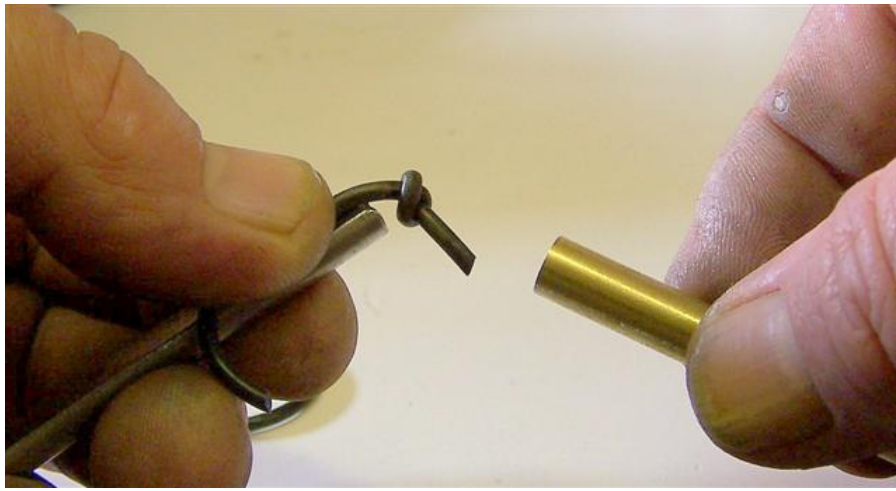


Now the magic bit. Take a small o-ring and cut it. Tie a knot on one end.

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 in the lathe to get it on the rest 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. I rarely use bushes. Mount it in the chuck with marks aligned every time you use it. 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 centre and the blank. Works great.



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 looooooong knurls on everything (Thanks Joe)



So, there you have it.



The finished pen 🇩🇪

