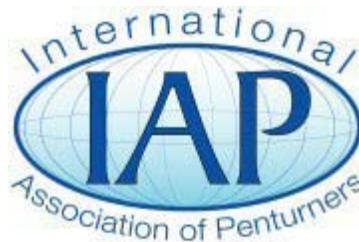


Rifle Shell Pen

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<http://www.penturners.org>

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RIFLE SHELL PEN TUTORIAL



Step 1: The items above are used to create the rifle shell pen.



Step 2: This tip end needs to be prepped to ensure drilling accuracy, do so by scrapping the lead off of the top with an x-acto knife, then create an inverted cone into the tip, this will help in centering the drill bit.



Step 3: You will notice after this step, roughly how your nib will look when drilling is complete.



Step 4: At this point, I have placed the bullet into what is a pen mandrel chuck, modified of course to fit the bullet, bring up the tailstock for centering, then tighten the chuck.



Step 5:



Step 6: Mount drill chuck to tailstock, load drill bit(#47), bring tailstock forward as shown in picture and lock, then use the forward twist mechanism of the tailstock to complete drilling. This process is slow as the lead inside the bullet will heat up and freeze up the drill bit, possibly causing damage to the tip. I generally turn my lathe down to the slowest speed, and drill in and out repetitively while clearing out all lead to keep the bit from clogging up. NOTE: only drill approximately 3/8" into tip, you will be drilling the opposite end with a larger bit and going all the way through would make it impossible to achieve a good centered hole on both sides.

This is how it should look.



Step 7: Use a Cross ink refill to test the fit before moving to next step.



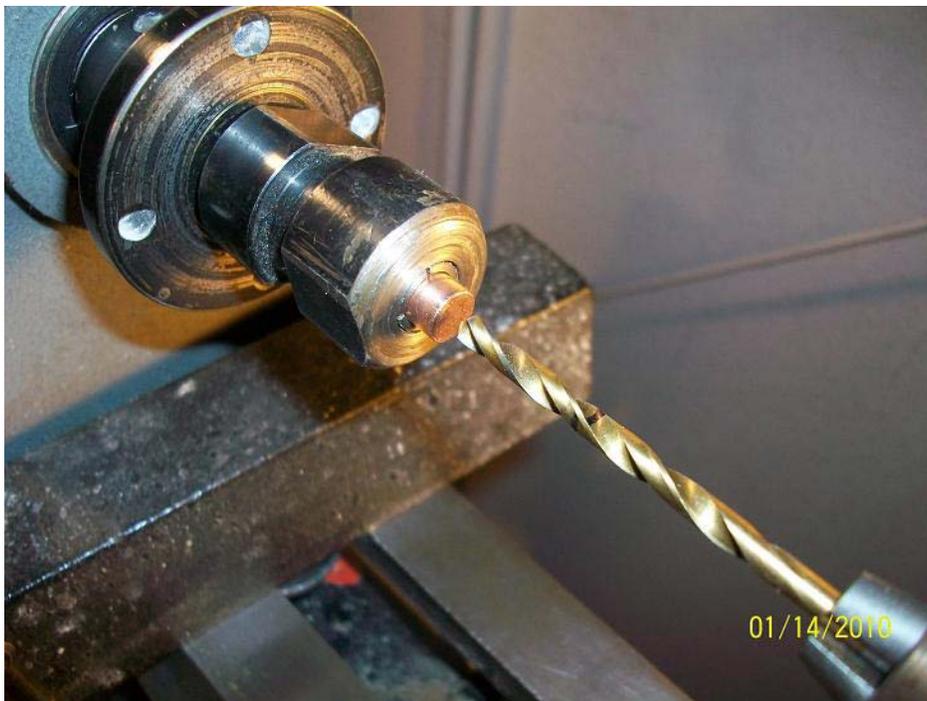
Step 8: Insert bullet into chuck.



Leave about 1/4" sticking out. You will be doing two steps with the bullet in this position.



Step 9: Tighten chuck.



Step 10: This step involves more attention to detail. Accurately drill 13/16" deep using the 5/32" drill bit. Same instructions as step 6.



Use some 3-in-one oil to keep drill bit cool. Again, keep your lathe on the slowest speed during this process. Continue to clear the lead waste as it is drilled by picking it off of the drill bit. I found that the more oil I used, the less locking up of the bit I get. If it does lock up, turn off lathe, and manually twist chuck in reverse (unlock tailstock) and back off the tailstock as you reverse twist the chuck.



Drilling complete, leave bullet mounted in chuck.



Step 11: Create the tenon. I use the Easy Rougher for this step. The purpose of this step is to ensure that the brass tube, when inserted into

the primer end of the shell, stays centered, from bullet to primer end of shell (where the twist mechanism will be inserted). This can be tedious as well, but have patience, and it will turn out well. (Pun intended) While doing this step, it would be a good idea to have a scrap piece of 7mm tube to use for sizing the tenon. You want the tube to slide freely onto tenon, not too loose and not too tight.

Note: when turning this copper, I have best results by starting from the drilled end of the bullet and pulling to the left rather than cutting straight into it. Do this several times using a very light touch to reach the desired size. Too much too fast and you may have to start all over with a new bullet.





Continue to check for proper fit.



**Tenon achieved!
Proper fit!**



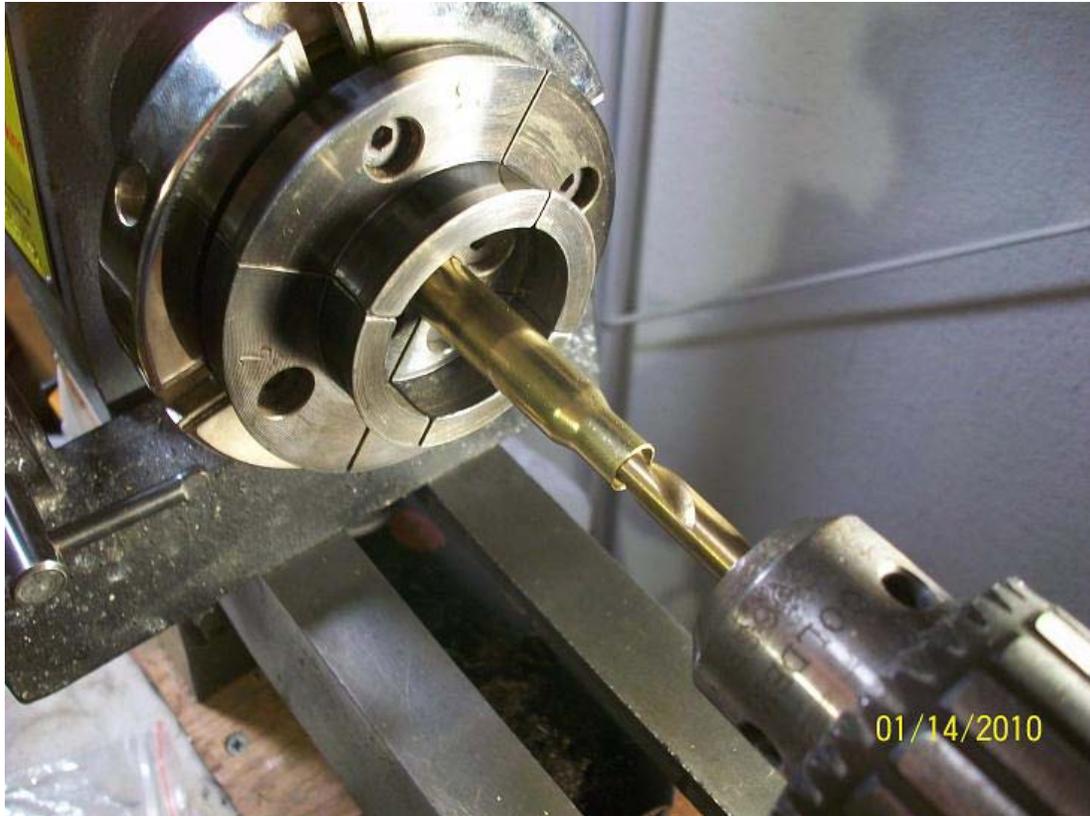
Step 12: Test fit. Remove bullet from chuck and test fit the Cross ink to ensure a proper fit. You want the ink cartridge to stick out through the bullet tip a little farther than what looks normal. If it doesn't, push the bit through the end of the bullet as shown in this picture, and hand twist bullet to drill out a little more, then test fit again. Repeat step until desired depth is reached. Once this is complete, I will use 320 grit sandpaper and buff any rough spots smooth.





Then I will use this round file to smooth out the inside, so that the ink will twist freely, in and out of the tip. (Part of the reason I sell these pens for so much is because they are so labor intensive).

Now file the opposite smaller end, bullet is complete.



Step 13: Drilling the shell. Unfortunately, I have to use my bowl chuck to hold the shell casing, until I get the Beall chuck. Before I start drilling though, I will put a few drops of 3-in-one oil on the drill bit, again to keep it cool. Inside the shell on the primer end, there is a hole, where the explosion from the primer travels through, use that hole for the drill bit to line up with, and the drilled hole should be almost accurate every time. Again, take your time, drill slowly. Your patience will pay off.



This last picture is showing how I trim up the drill hole. I use the x-acto knife to do this at a 45 degree angle.

The steps taken to assemble the shell and bullet are as follows:

First, I take the bullet and using 220-grit, sand the portion that will be pressed into the casing, just like you would a brass tube before gluing into the material you are using. I apply the CA glue to the inside of the of the shell, not too much though, just a small bead. Then I press the bullet into the case to the Index line. (The Index line is the crimp line on the bullet)

Next, I take the 7mm tube from the lower portion of a Euro or Designer pen kit(longer tube) and test fit the tube to make sure it seats on the tenon, and that there is sufficient length sticking out the primer end(about 1/4"). Then I mix up a small bit of 5 min. epoxy, (enough for the primer end drill hole). Apply a small bead of CA to the inside edge of the 7mm tube that will mate with the bullet end. Insert into primer end only half way, then, using an applicator, wipe epoxy onto portion of 7mm tube that will seat into the drilled hole (primer end). Push rest of the way

in and twist to ensure it seats on bullet tenon. You will need to work relatively quickly so that the CA does not set up too fast.

Once that dries, press in the twist mechanism to desired length, insert ink, and then set aside.

When turning the upper barrel, I use the upper tube from the same kit (euro or designer). I have found that the bushings for the Sierra pen kit match the size of the 30-06 primer end. And then I use the clip end bushing from the Euro/ Designer kit. I also use calipers to get my size exact.

I hope that this provides you with enough information to build your own! Should you have any questions, please feel free to call and I will help in any way possible.

Thanks,

Seamus Rooney

