

## 50 CAL AUTHENTIC BULLET CARTRIDGE PEN INSTRUCTIONS

The 50 cal. bullet cartridge kit uses a once fired spent 50 cal. bullet cartridge and a 50 cal. bullet. Both parts have been machined and are ready for assembly. There may be small dings in the brass or marks on the copper bullet. This is normal. Both parts will tarnish over time. Use a copper/brass metal cleaner as desired.

You should become familiar with the components in a Cigar pen kit. For more information go to [www.beartoothwoods.com/faq](http://www.beartoothwoods.com/faq). The instructions are listed alphabetically. Go to the CIGAR pen instructions and you will find a complete diagram of the components for this kit. You will be shortening one tube, modifying the coupler/twist holder diameter, and gluing several pieces together. A table top belt sander can do everything needed, but a lathe can also be used.

### WHAT IS NEEDED TO COMPLETE YOUR KIT

1. - Cigar Pen Kit, Berea preferred, any metal plating is fine. You will not see the metal components, therefore it does not matter if you have a gold, chrome or other metal plated kit. You will not use all the components in the Cigar kit. You will use both brass tubes, twist holder/coupler, nib adapter twist mechanism/transmission, nib, spring, ink cartridge and clip bushing/finial brass tube section.
2. - 2 part epoxy. Any dry time works (5, 15 or 30 minute).
3. – Pen press or arbor press (or any method that will press pen parts together).
4. – Method to shorten one brass tube - stationary table-top belt sander, disk sander or similar tool.
5. – Method to modify the twist holder/coupler – stationary table-top belt sander, disk sander or lathe (and parting tool).

### 50 CAL INSTRUCTIONS

There are several possibilities on how to make this pen. After making hundreds, I find this way works for me.

1. MAKE A SAMPLE - Press the lower Cigar kit tube (longer tube) into the nib adapter and screw on the nib. Use this as a sample for the length to make the 50 cal. bullet and brass tube. You will not use this for your pen – only as a sample to attain the proper length in step #2.
2. SHORTEN THE BRASS TUBE - Insert the short brass tube fully into the 50 cal. bullet. If it is tight, you can use sandpaper wrapped around a round punch to clean the hole in the bullet. Make the bullet with brass tube inserted the same overall length as the sample you pressed together earlier in step 1. To shorten the brass tube, sand it on a belt sander (or your preferred way to shorten the brass tube slightly) and recheck the length. Sand a little more and check. Keep the end square. When it is the correct length as the sample from step #1, you no longer need the sample for this pen, but you may want to keep it for future builds.
3. MODIFY THE TWIST HOLDER/COUPLER - The twist holder/coupler is too wide and will not fit into the cartridge. Make the diameter of the twist/holder coupler smaller by mounting it on a pen mandrel and turn it down using a parting tool or similar tool. Once you break through the outer plating, the brass is easy to turn down. Alternatively, you can put the coupler on an un-mounted spare mandrel and hold the twist holder/coupler against a belt or disk sander to sand and decrease the diameter. Make the finished coupler diameter a little larger than the tube diameter and smaller than the neck of the cartridge. Being exact is not important – it just needs to go into the cartridge.
4. Press the modified coupler into one end of the modified brass tube from step #2.
5. Check that the ink cartridge passes through the small hole in the bullet tip. The bullet is copper and can be damaged if dropped etc. The ink tip should move in and out of the bullet freely. If it is snug or does not pass freely, you can use an old Parker ink cartridge to push in and slightly rotate around to “ream” out the hole. Only open the hole enough for the ink cartridge. You may also use a small drill bit (smaller than the hole), insert it and move it around off center slightly to widen the hole slightly. Since copper is soft, this is usually easy to do – but don't overdo it and make the hole too big.
6. CHECK FIT - Without using the spring, insert the Parker style ink cartridge into the bullet, insert the brass tube with twist holder/coupler and then thread the twist mechanism/transmission on the twist holder/coupler. Push

all the way into the bullet. Check for fit. Operate the transmission and extend the ink tip. If it does not extend beyond the bullet tip enough, your brass tube is too long. Be sure to check and recheck before shortening the brass tube. Sand/shorten the brass tube a little more until the ink cartridge extends beyond the bullet tip the desired amount. If the ink nib extends too far for your preference, the tube is now too short. You can resolve it in the next step.

7. Scuff the brass tube with 150g sandpaper to ensure proper glue adhesion.
8. **GLUE ASSEMBLY INTO THE BULLET CARTRIDGE** - I prefer epoxy over CA glue for the next step. Epoxy allows time for fitting and adjustment. CA may set up too soon for you to make length adjustments. Mix enough epoxy to cover about ½ of the brass tube. Coat with glue about ½" of the brass tube opposite the twist holder/coupler. Insert the brass tube (with the twist mechanism/transmission and twist holder/coupler assembly with ink cartridge) into the bullet using a twist motion to ensure the glue coats the inside of the bullet. Push in completely. Move the tube in or out so when the transmission has extended the ink cartridge fully, the nib extends just past the cone shape at the ink nib. Be careful not to get glue inside the brass tube as it will interfere with the pen operation. Let the epoxy fully set up (preferably overnight).
9. When the epoxy has hardened/cured, replace the spring on the ink cartridge and reassemble. Operate the transmission left and right (Cigar kits come with a dual twist transmission) and check for proper operation of this assembly.
10. Push the clip bushing onto the transmission. Insert the assembly completely into the 50 cal. brass cartridge. Push hard enough to seat the clip bushing onto the transmission and into the cartridge bottom. You might need to adjust/move the assembly a bit to ensure the finial brass tube is seated into the drilled hole in the bottom center of the cartridge.
11. I set most of the 50 cal. pens I make such that the groove(s) around the bullet is exposed just above the cartridge neck. You can make slight adjustments how deep the bullet sets into the cartridge by sanding a couple of threads off the chrome end of the finial piece. Be sure the assembly fits into the cartridge and you have the desired "look" before proceeding.
12. **GLUE THE ASSEMBLY INTO THE CARTRIDGE** - Stand the cartridge on end. Mix more than 2cc. epoxy per pen. Use a small cup to pour it into the cartridge, or use a ¼" or smaller dowel/punch/rod to load with epoxy and dribble into the cartridge. You need about 2cc. Too much and it will reach and glue the twist mechanism/transmission causing failure. Be sure to clean out any glue you may have gotten on the inside of the neck/mouth of the cartridge. Insert the complete bullet assembly completed above and ensure it is seated fully into the cartridge bottom. Let the epoxy harden and cure overnight while the pen is in this upright position with the nib facing up. Don't rush it.
13. The following day, check the operation of the pen by twisting left and right. Pull the bullet out of the cartridge. The clip bushing should remain glued inside the cartridge and the transmission and other parts should come out with the bullet. When you reassemble the bullet/transmission assembly, you need to line up the transmission with the finial tube. Don't force it. A quick jiggle and it will easily realign allowing you to push the bullet assembly in fully.
14. Note – if you used too much glue or if the bullet will not turn (glue in the cartridge neck that glued the bullet), you can "unglue" it. Use a hot air paint remover or similar heat source. Carefully heat the cartridge hot enough to loosen the epoxy and pull out the bullet and transmission assembly. You can re-do as needed and reassemble.
15. You did it! Enjoy your new AUTHENTIC 50 CAL BULLET CARTRIDGE PEN.

NOTE – if you let your friends, co-workers, relatives or others see this pen you made, you will likely be making more for them! And, TSA WILL NOT ALLOW YOU TO CARRY THIS OR OTHER BULLET PEN ON AN AIRPLANE – EVEN THOUGH IT IS ONLY A PEN. DON'T TRY TO GO THROUGH THE SECURITY CHECK WITH THIS PEN. You can travel with it in your checked luggage.