

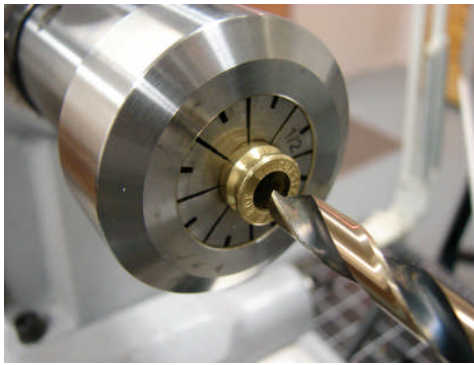
Rifle Cartridge / Pen Key Ring Tutorial

By Les Elm

In this Tutorial New Unprimed Brass 30-06 Casing, European 7mm pen kit lower tube, 7mm transmission, Cross refill, Detachable Key Ring kit, a short piece of 7mm tube and a 30 Caliber Full Metal Jacket Bullet are required.

Preparing The Brass Casing

Install a 30-06 casing into a 1/2" collet and tighten. Install a drill chuck into the tail stock with a 7mm bit and enlarge the primer hole to 7mm. Ensure the collet is tightened enough to prevent the casing from turning and damaging the brass surface. De-burr the 7mm hole. Remove the casing from the collet and use a rolled up piece of 220 grit sandpaper and sand the inside of the casing neck to remove any burrs. This will help the Bullet Tip Assembly turn smoothly inside the casing neck.

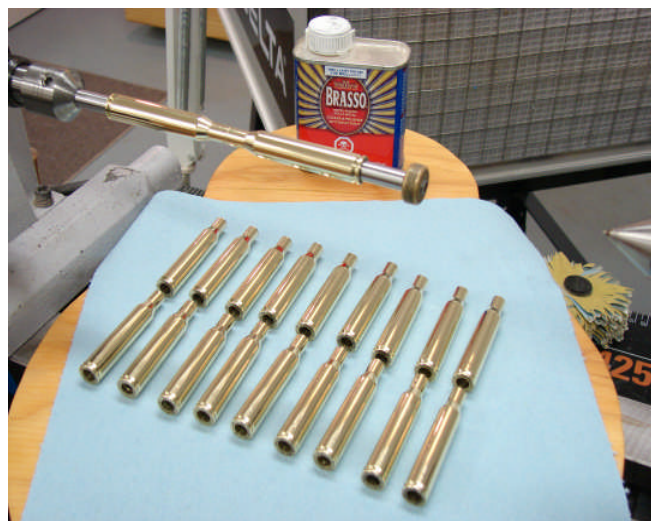


Drilling Out Primer Hole To 7mm



De-Burr Casing Neck

Using an adjustable A Mandrel, install some 7mm tubes to match the length of 2 casings neck to neck along with Slim bushings. Install casings over the 7mm tubes and tighten. With lathe running at 2600 rpm clean and polish the casings with liquid Brasso. Clean with Lacquer Thinner prior to applying any coating.



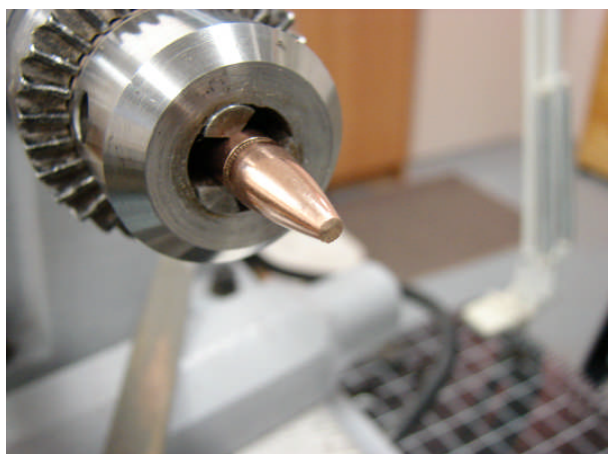
Cleaning Brass Casings

Making The Refill Bullet Nib Assembly

Install a drill chuck in the headstock and install the bullet with the point facing out. Now File 3/32nds of an inch from the point to get a square flat surface. **Don't over tightened as to cause damage on the copper surface .**

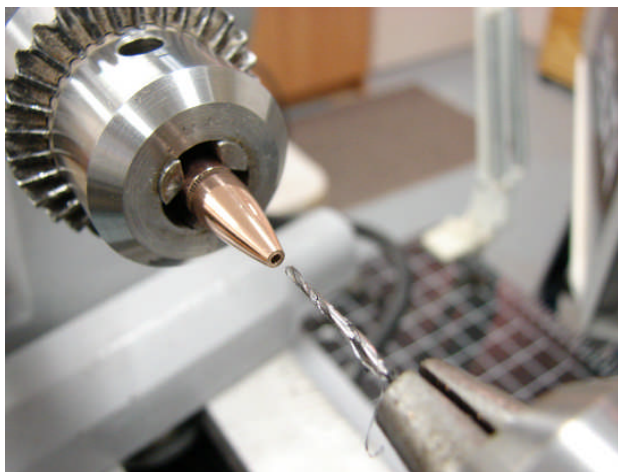


Bullet Installed In Drill Chuck

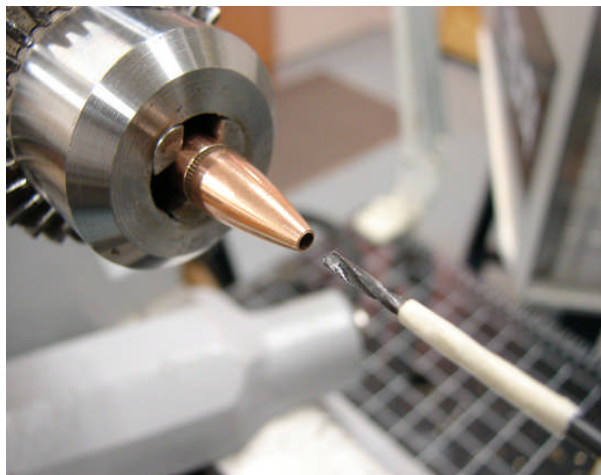


Bullet Tip Filed Square and Flat

Install a drill chuck in the tailstock and install a #55 drill bit to drill a pilot hole in the center of the flat bullet tip. Drill slowly using Rapid Tap Drilling Fluid and stop drilling once you hit lead. Remove the #55 bit and install a #46 bit and drill through the pilot hole using Rapid Tap Drilling Fluid to a depth of 1/2". Place a piece of tape on the #46 bit to act as a depth gauge.

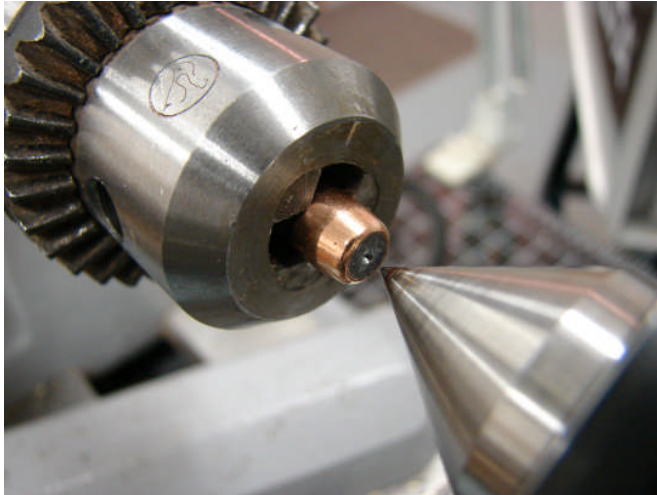


Drilling #55 Pilot Hole



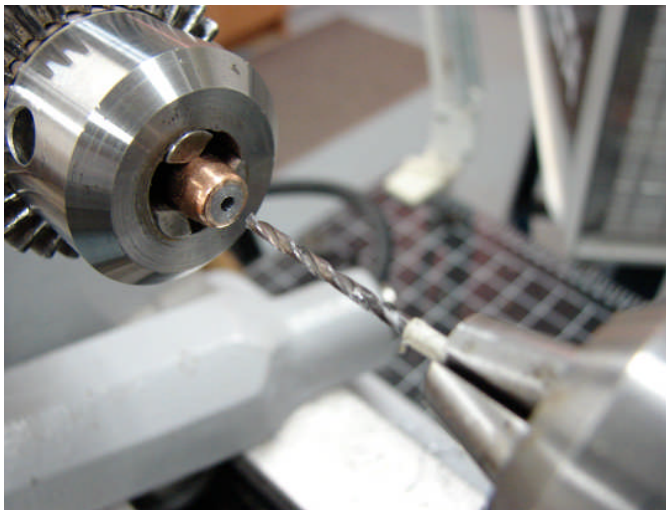
Drilling #46 Nib Hole

Reverse the bullet in the drill chuck with the tail facing out. Install a live center into the tailstock and mark the center of the bullet tail.



Marking The Center Of The Bullet Tail

Install a drill chuck in the tailstock with a $5/64^{\text{th}}$ bit and drill a pilot hole to a depth of $15/16^{\text{th}}$ “. Place a piece of tape on the $5/64^{\text{th}}$ bit to act as a depth gauge. **Drilling too deep with cause the bit to exit the side wall of the Bullet tip.** Drill slowly using Rapid Tap Drilling Fluid and clean the hole and bit frequently. De-bur and clean up around the hole.

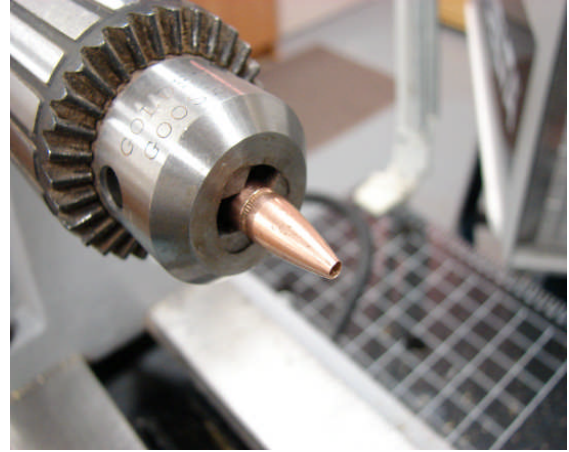


Drilling 5/64ths Pilot Hole

Remove 5/64th bit and install a 7mm bit and using Rapid Tap Drilling Fluid, drill through the 5/64th pilot hole stopping frequently to clean hole and bit. Drill to a depth of 1/4" being careful not the drill too deep and cause the bit to exit the side wall of the bullet. Dress bullet tail and de-burr. Reverse the bullet in the chuck, de-burr and clean up the #46 hole



Drilling 7mm Hole



Finished Bullet Nib Hole

Check the #46 nib hole to ensure the refill slides in freely and that there is enough 9/64th hole depth to get the correct amount of refill tip reveal through the nib hole.



Checking Nib Refill Hole For Reveal

Insert a shot piece brass 7mm tube through bullet tail, mark flush and cut off at the mark. De-burr the tube, rough up the tube with 220 grit sandpaper and glue into bullet with Medium CA.



Cut Tube Flush with Bullet Tail



7mm Tube Glued Into Bullet

Clean out any glue from inside the tube, check that no glue has plugged the nib hole using a Cross refill. Press the transmission into 7mm tube glued into bullet tail.



Transmission Pressed Into Bullet Tail

Take a standard Cross refill and shorten to 2-5/8" so that when installed in the transmission the tip will extend the proper distance through the bullet tip.



Cross Refill Shortened to 2-5/8"



Completed Cross Refill Bullet Tip Assembly

Insert the Bullet Tip Assembly into a 1/2" chuck and hand tighten onto transmission. **Do not over tighten chuck on transmission.** Using a narrow strip of 400 grit sandpaper sand the bullet until enough material has been removed to allow the Bullet Tip Assembly to turn freely inside the casing neck. Re-install in the chuck and clean and polish the bullet. The Bullet tip should be cleaned with Lacquer Thinner prior to applying any coating.



Sand, Clean and Polish Bullet

Completing The Cross Refill Tube Insert

Slide the long Euro 7mm brass tube over the transmission to seat on top of the bullet tail. Insert the bullet tip assembly into the casing neck with the amount of Bullet Tip Extension wanted. Mark and cut the tube extension flush with the top of the casing head.



Long Euro Tube Seated on Bullet Tail



Mark and Cut Tube Extension Flush

Once the Tube Extension has been cut and de-burred press the Detachable Ring Holder Cup into one end of the 7mm brass Tube Insert.



Holder Cup Pressed Into Tube Insert

Rough up the brass Tube Insert below the holder cup, apply a few drops of Medium CA around the tube below the Holder Cup, insert the tube with a twisting action and at the same time push the Bullet Tip Assembly into the Tube Insert through the casing neck. This will center the Tube Insert inside the casing. **Stand the Casing with the bullet facing up to avoid any CA running down onto the Bullet Tip Assembly and let cure over night.**



Check the twist action to extend and retract the Cross refill and the Bullet Tip Assembly should rotate smoothly inside the casing neck. If the Bullet Nib Assembly dose not rotate smoothly in the casing neck remove the Bullet Tip Assembly from the Tube Insert and sand the inside of the casing neck with some 220 grit sand paper.

The Tube Insert will be centered the casing just below the casing neck. No extra support around the top of the Dowel Insert should be required with the Dowel Insert securely glued into the bottom of the casing.

Completed Rifle Cartridge Bullet Pen / Key Ring

