

Case preparation for reloading the .303 British cartridge. April 2020.

This is my routine for preparing the fired brass rifle cases for reloading. Most of my rifle reloading is for the .303 British round; my current preference is for the PPU make of cartridge.

1: First operating is removing the used primer from the case. For this I use a home made rig that is very basic; but actually works well.



The press was originally for an electric hand drill; to make it into a pillar drill. The tool that goes in the case is a 4" (100mm") long 5/16" (8mm) coach bolt with a 1.5mm hole drilled in the end; in which is inserted a short length of 1.6mm welding rod. Ground flat at the end. The case rests on an 8mm nut that has been pressed into a larger nut. The nut sit's on a block of hard wood with a groove cut out to allow the used primer to drop out into the catch pot; which is a plastic top off of a can of polish.

I place the bolt into the case ensuring that the pin finds the flash hole; put the case on the centre of the nut and pull the handle down, ejecting the primer. After I bit of practice it is actually quite a quick method. I also use the same rig

for large pistol primers.



Note: if you bend the pin; you can straighten it once or twice; but better to remove it and fit a new pin. If it breaks, you'll have to drill another coach bolt!

2: Next stage is annealing the brass. This is not necessary every load; but worth doing every 3 loads if you resize your brass full length. If neck sizing only you may get away with more reloads before annealing the brass again. But if you have more than one rifle in the same calibre; it get's complicated trying to keep track of which case was fired in which rifle. Having found myself at the range with round's that won't chamber; because they were fired in a different rifle; encouraged me to start full length resize. At least that way I know that it will always chamber!

To anneal the brass I use basic tools again: A gas blow lamp; and hand drill with an adapter to hold the case and a bucket of water.\*



The flame of the blow lamp has an inner and outer cone. The tip of small inner cone is the hottest part of the flame; and also the easiest part to see. Put the neck of the case at the tip of the inner cone and spin the case with the hand drill. The neck will change colour as it heats up; the colour change moves down the case as it heats up. When the colour ring gets to about a neck length below the shoulder; I drop it straight into a bucket of water\*. Then take the next case and repeat.

It is the shoulder area that is worked the most when being fired; the shoulder is blown into the form of the chamber. Resizing the case reforms the shoulder and will work harden the brass over time. The annealing removes the effect of work hardening; and so improving the flexibility of the metal to reform.

\*( Note: it is not normal to cool metal in water to anneal; it should normally cool slowly. Especially if annealing a bar of steel for example. But as the brass cases are very thin; the quenching prevents the heat soaking further down the case.

I would be interested to hear from any of our more knowledgeable members regarding the possible negative effects of quenching the brass when annealing.)

Here are some annealed cases; the colour change is visible. I try and get the same depth of heat on each case; but the shoulder area is whats most important.



3: Next stage is resizing the brass.

I only have one rig for reloading; which is a Dillon 650.

While it is not designed for “handloading” rifle cartridges, it actually adapts quite well to the task. (For reloading regular rifle or pistol ammo' it's great)

First thing is lubricate the cases. Most important is to get the lube into the inside of the neck as well as the outside of the case. That's why I stand up the cases in a plastic tray to spray them with the lubricant. Having broken the shell plate holder one time due to incorrect lubing technic! I've learnt my lesson! It was 50 Euro's for a replacement.



The Dillon has a hopper for dropping the cases into the rig. Pulling the lever advances the case to the forming tool and then the shell plate rotates to the primer position. When hand loading I remove the case by hand at this position. This is easily done; requiring just a sideways flick against the spring. The formed brass then gets dropped into a pre-cleaning tray, that contains a degreasant to help remove the lubricant. You may have noticed that I have not cleaned the cases yet! To prevent cleaning them twice; I clean them after forming. Because I found that I was cleaning a second time to remove the lubricant before loading; so cleaning once after forming streamlines the process.



#### 4: Cleaning:

For this I use a Lyman ultrasonic bath. I have a home recipe for the cleaning fluid. Fill the bath with warm water and add one cap of Citric Acid granules, a squirt of dish wash liquid and a squirt of dish washer rinse fluid.

Don't overload the number of cases cleaned at one time; say 50 cases at a time will get better results than 100 all together. A wash cycle is 8 minutes. Normally 2 cycles is enough.



When the cases come out clean; I drop them into warm water with some rinse fluid (to prevent water stains on the brass) in a salad centrifuge basket; move the basket around by hand to flush the cleaning mix off of the cases. The remove the water and spin in the centrifuge to remove excess water before tipping into an old tea cloth to dry off any remaining water droplets.

They should come out nice and shiny inside and out. Primer pockets are generally clean; but the next stage of preparation will correct any traces of residue left behind.

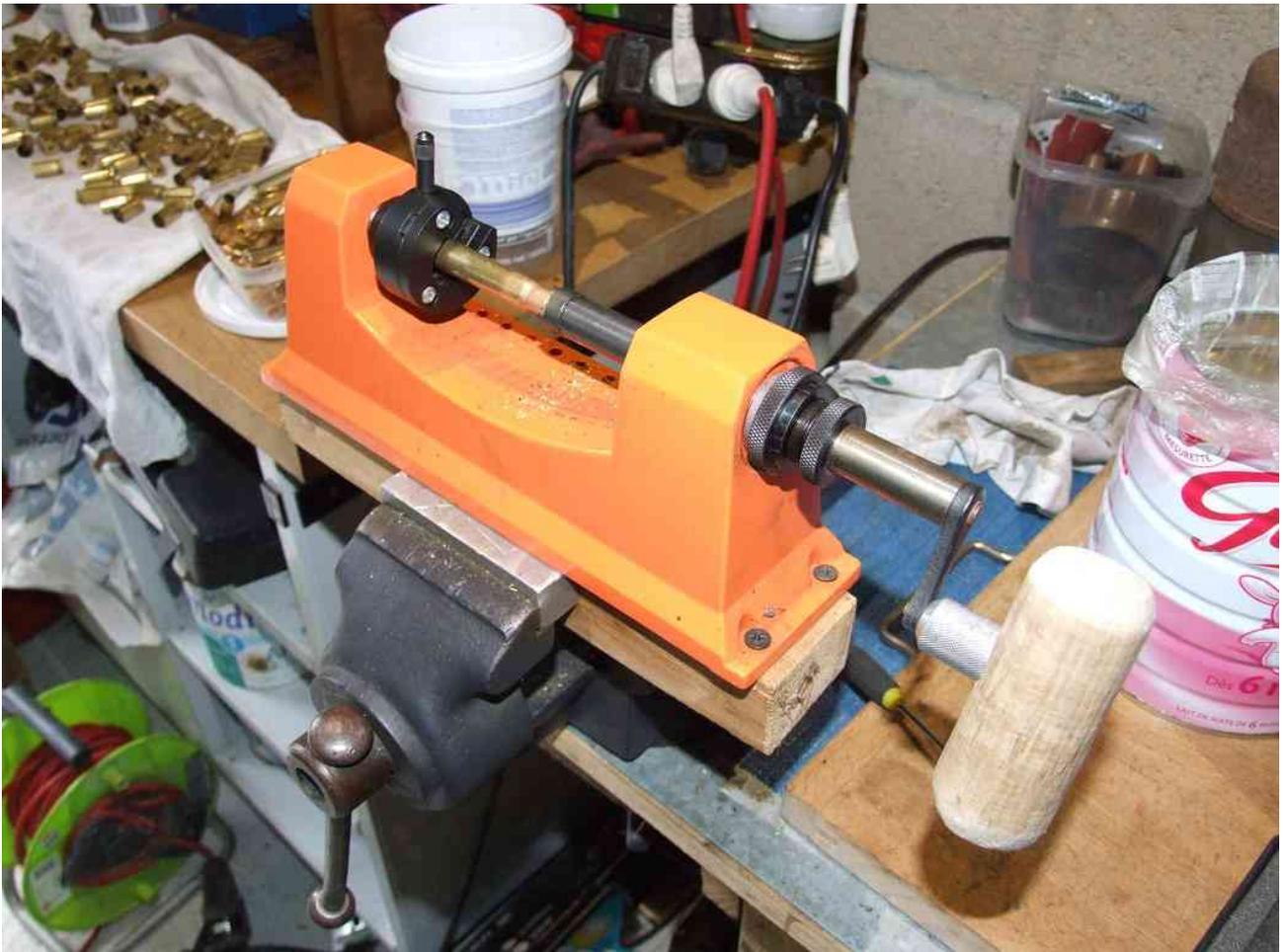


The cases need to completely dry inside before loading; so leave them to dry fully in a warm environment before you attempt to load.

5: Final preparation involves trimming the case to length; deburring the neck and cleaning the primer pocket.

Case trimming: I use a Lyman hand operated case trimmer; set to trim the .303 case to 2.222". This is the maximum recommended case length; so you can trim shorter; say 2.212". But I find that the generous chamber in the Lee Enfields allows me to keep the maximum length; which helps when using boat tail bullets. Keeping the maximum case to bullet grip length.

This is probably the most tedious part of the whole operation. One thing I did not like with the Lyman trimmer; was the small knurled metal handle. Trim 50 or more cases and your hand is sore. I just recently found a solution; that I should have done years ago! I made a wooden crank handle that is forced onto the end of the knurled handle. This makes it much more pleasant to operate. No more blisters!



After trimming to length. I use the Lyman case trimming centre, which deburr's inside and out; cleans and reams the primer pocket. This is my latest piece of kit. Well worth the investment; as deburring using hand tools is worse than the trimming! The apparatus is quiet, which means you can use it indoors without getting it in the ear from the missus! Which is always a bonus! This tool is quick and easy to use. Makes a nice job of the primer pockets; removing any residue not removed by the ultrasonic clean.



So now they are ready for loading!



Please feel free to share any advice or compare ideas and techniques. It's always good to share information.