Rimfire Benchrest Rifle Cleaning – Part 1

By Carlo Caricato
Cleaning .22 Long Rifle barrels is destined to be a job of precision. It is not particularly critical if compared to our centrefire peers, but at the same time the process implies you have accurate knowledge and a good process for its execution. The purpose of cleaning the barrel is aimed first at the preservation of the optimal conditions of the lining from inevitable attacks of corrosion. Thus we do not to jeopardize the final ballistics of the shot bullet.

In match barrels made in stainless steel and you may clean with minimal fuss; the leading results may be an almost nonexistent problem. For these types of barrels a very light clean is enough after every session of shooting. Their problem is that they have a relatively brief life of 15-20000 shots.

Barrels made of steel using a number of manufacturing techniques may last a lot longer, possibly 50-60000 shots. However, they need a more maintenance to guarantee accuracy.

Over time we gain various theories, more or less they are similar and generally very personal; all of them looking to establish how a barrel must be maintained. These theories converge in two current categories. First we have that they should never be cleaned and only if in cases of extreme necessity. The second is the contrary, in that after ten or so shot strings we clean because of the residue left by the shots, the dispersal of bullets widen: therefore cleaning should be accurate and very frequent.

The common experience however in most cases is that a clean barrel shoots well, a dirty one does not.

After every session of shooting it is important to remove any residue from the barrel. To do this is enough to pass one or two dry patches along the barrel. **Important:** to do this is necessary to prepare a good cleaning rod and a proper rod guide for your rifle. If you don't have these two essential accessories you may as well give up taking care of you of your barrel. I have already seen with my boroscope too many ruined barrels after 3-400 shots, from wrong cleaning techniques!
To achieve the periodic cleaning of a barrel it is necessary to remove the barreled action from the stock. Obviously remove the bolt and optics before starting. Removing the optics will avoid very probable damage due to accidental bumps or the damage (usually irreversible) of the lenses caused by the solvents used for cleaning. (I assure you that it is not a pleasant experience).

It is not necessary to take off the optics completely, just enough to loosen the base of the rings and to unthread optics where they attach together with the guides on the rifle:

Note - to set the optics back into place, mark with a pencil the normal position of the optics; it will be easier to reassemble the rifle when you will have finished cleaning. The point of impact therefore won’t be varied that much and with a few clicks everything will return to its natural aim point.

To detach the barreled action, tender the rifle vertically. In this position it allows detaching the action without damaging the bedding. To do this you may need hexagonal keys.

Cleaning rods have to be of good quality. They need to be free to rotate on their own axis. This allows the brush or jag to follow the natural roll of the barrel lining, effecting accurate cleaning inside the barrel channels. The protective covering serves to avoid that the steel of the rod coming into contact with the inside of the barrel, but above all you don’t damage the crown of the barrel by rubbing it. Use a barrel guide appropriate for your barrel as it will always centre the rod avoiding damage to the throat of the rifle action. Remember that the rod guide is an accessory that is really and absolutely essential.

Standard procedure for the periodic cleaning of the barrel
At my range we have modified an old carpenters bench to be able to effect any jobs of maintenance, disassembly of firearms and for barrel cleaning.

It is not very beautiful but it is effective for the use which we designed it. Obviously a normal bench vice is able to ensure the same hold on the barrel provided that is endowed with wood jaws, aluminium, plastics etc. Thus we avoid any scratches to the burnishing of the barrel. An important thing, and can also be seen in the photo, is to tilt the action of the weapon. The motive is simple. The solvents employed for the cleaning, can be toxic and very dirty. Tilting the barrel allows the residue to flow downwards, toward the muzzle. Therefore we do not have the risk of contaminated fluid going to end where the action is, which can create other types of problems...

Another concern about residue fluids is that they are very dirty. It would be opportune that it doesn't end on the floor. This will save you the blame from wife and the cost of cleaning.

Every rifle needs its rode guide. This necessary accessory is purchased separately. In this case a carbine Anschutz mod. 54 we are using the specific tool produced from the same manufacturer. For those that have difficulty in finding rod guides for other models of weapons, remember that the firm Sinclair International or Brownells, specialise in mail order sales. These companies have catalogues with specific accessories. The web addresses are http://www.sinclairintl.com http://www.brownells.com/

Once that the rod guide is inserted into the bolt housing the cleaning rod can be inserted. With the cleaning rod pushed backwards and forwards along the barrel rolling and the brush, it is worthwhile to mark the rod length before hand. You insert the rod up to the point where the end of the jag or the brush just appears out of the muzzle. At this point mark the rod with a pencil or with a bit of adhesive tape. When done we will have control of the length of the rod. Now we will be able brush back and forwards from the breach to the muzzle in a controlled way without danger to damage the delicate crown of the barrel.
The market offers us a myriad of products for rifle cleaning reeds. These solvents are all oil based. Nobody forbids us therefore to use some simple and economic oil in their place. You need to keep in mind however, that during shooting if they are left inside the barrel with lead layers, residues of combustion and Iron Nitride. The Iron Nitride is a white dust that he lays on the lining of the barrel and covers it. The Nitrogen ions present in the gases of the dust, during shooting, react to the temperature of around 3,000°C with the contained iron in the steel of the barrel. The Iron Nitride is very hard and resistant. It is visible on the lining of the whole barrel. Later shoot one or two shots looking with a Bore Scope.

It preserves the barrel from further scraping. It is finally dirtied by the bullets from the shots (carbon of the following hits). The Iron Nitride is removed by the solvents used for cleaning. Personally I do not like to use metallic brushes and I limit myself to their use to once a year and only if really necessary. For the periodic cleaning I use instead nylon swabs or brushes: they produce the same results and it doesn't take the risk of ruining the crown or barrel. Remember to bathe the brush well with solvent before inserting it into the barrel. Slowly pass through once before pushing back and forth at least twenty times. It is a good idea to concentrate in the zone of the throat of the barrel because it is there that the greater part of the residues of the shot and lead are deposited. Remember to renew the solvent on the brush.

After brushing the barrel there should be one or two passes of a cotton Patch (I use patch 11/8" from Sinclair) you saturate the patch with solvent and pass through from breach to muzzle. With this operation the greater part of the residues are expelled by the scraping of the brush. If you think it necessary you can repeat again with the brushing and then to pass some patches soaked of solvent through afterwards. The final result should produce a practically clean white patch. At this point the cleaning of the barrel should be completed and therefore one can quietly return to the use of the weapon. However it is not really this way. We can see why together.
Brushing succeeds in eliminating large parts of lead deposited among the lines of the barrel. The solvent helps but it is not enough to remove the smallest particles of lead that obstinately remain and “stick!” There are in existence in specific pastes for the purest cleaning and the polishing of the barrel. They are mostly non-abrasive for the metal and therefore you can be used at ease.

Their use is simple. You soak a patch with one or two drops of solvent and a small quantity of paste uniformly stretching them.

Pass back and forth about ten to fifteen times along the length of the barrel. (See how much dirt still comes!) If necessary then repeat the operation another time. Now it is carefully cleaned with solvent, oil the barrel and finally passes a dry patch through it. Looking now down the barrel, possibly using a bore torch, and you will see a perfectly finally clean barrel that should have a mirror finish.

End of part one