

Have You REALLY Cleaned Your Chamber?

The late Larry Carter (gunsmith & target pistol importer) wrote a trouble-shooting guide for Benelli .22's that equally applies to most other .22 semi-auto target pistols. The first question for every possible malfunction except trigger issues was "Have you cleaned your chamber?" His chamber cleaning process used a .25 caliber rifle brush bent in the shape of an "L" (Figure 1) to dislodge as much fouling as possible from the chamber before proceeding with a normal bore cleaning.



Figure 1: .25 caliber "L" chamber brush

The college team I help coach has five Pardini SP .22's bought in 2016, and twenty one much older MP90S/MP95E Benellis. In recent years, many of the Benellis had started having extraction and ejection problems of the sort that could be caused by a dirty chamber. Even with regular use of oversized chamber brushes, a borescope showed that all of the pistols had stubborn carbon deposits in the chambers. Much of the summer of 2022 was devoted to finding the best way to remove this fossilized carbon fouling.

With lots pistols to work with, I could do detailed comparison tests. Over a dozen different solvents, cleaners and bore abrasives were tried, including a number specifically sold to remove carbon (Figure 2). The results were checked with a borescope, as well as by monitoring how much carbon came out on patches. All of the treatments had some effect, but the typical instructions involved multiple cycles of patching, scrubbing, soaking, more scrubbing, etc. It was often difficult to see that a single treatment had any effect at all. None of them were simple and quick enough to be used by our students, who barely have time to practice most weeks.



Figure 2: Some of the cleaning products tested

Fortunately, I discovered a simple and effective treatment. It uses standard products one would typically already have on hand for routine cleaning and maintenance. You can use a light gun oil like Rem-Oil, but it works even better with "CLP" (Clean, Lubricate, and Protect) products.

The steps are:

- 1) Use a tight fitting right-angle bronze (not nylon) bore brush to scrub the chamber.
- 2) Run one or two patches soaked in light gun oil, or better yet, a CLP product, through the barrel.
- 3) Let the solvent sit in the bore for at least two or three hours. Overnight is even better. This is the key step.
- 4) Brush the chamber again with the bronze chamber brush.
- 5) Run patches with oil/CLP through the barrel until they come out reasonably clean.

Depending on how much you've shot between cleanings, you may find a second cycle will remove even more carbon. It helps if you can clean your pistol relatively soon after shooting, when the most recent carbon hasn't had time to harden. If you get in the habit of brushing and wet patching any time you store your pistol, and then brushing and dry patching it before you shoot, I'm convinced you can keep the carbon from building up. We will be working on getting the students to follow that protocol in the future. For example, the team pistols often don't get cleaned before winter break, and can sit dirty for extended periods. That would be a perfect time for a long soak.

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Figure 3 shows borescope photos of a 25 year old Benelli chamber. The pistol had been cleaned before being put away for the summer. This was done using our normal process of brushing the chamber with a .25 caliber brush before running a few patches with CLP through the barrel, followed by several dry patches. Figure 3(a) shows the carbon coating the chamber before the new process was tried. The centers of the images are roughly where the case mouth sits in the chamber, with the breech to the left. Figure 3(b) shows how much carbon was removed after a two day soak with Breakfree CLP, and Figure 3(c) shows the final state of the chamber after a second soak and brushing.



Figure 3: Borescope photos of a Benelli chamber before and after CLP soak & brush treatment

We have seen major improvements in the functioning of our pistols after this treatment, the older Benellis especially. If you believe your current protocol is fine, give this a try on a “clean” pistol and see how much carbon comes out.

Solvents: This is entirely subjective, but I believe Shooter’s Choice FP-10 CLP works a little better than Breakfree CLP, and both work better than an oil like Rem-Oil. I have been using FP-10 on my own pistols for the last six or eight months. Based on the color of my patches, it seems to remove carbon more quickly/effectively than Breakfree.

Brushes: The brushes need to be a moderately tight fit in the chamber. The bristles of the .25 caliber brushes tend to get bent over, and they lose their effectiveness fairly quickly. You can feel them taking less & less force to insert and twist after only four or five cleanings. For many years, I used Brownell’s “Special Line” bronze core brushes. The current ones don’t seem to have as many bristles as the old ones, and they have also recently nearly doubled in price.

There is a lot of variation in the actual diameter of the bristles between brands. I examined twenty different 6 mm, .25 and .22 caliber bronze brushes. The .25 caliber Brownell’s brushes run ~ 0.260” diameter, which is small for that caliber. The brushes I’m using now are the fattest .22 caliber brushes I’ve found (~0.244” dia). They are Tipton’s “Best” .22 cal brushes (#140337). They have denser bristles than most, and (on sale) are lower cost than Brownell’s brushes. At least when new, they are a good fit in the chambers I’ve tried. I am hoping that being only slightly oversized, the bristles will last longer by flexing more and bending less. To mass produce “L” brushes for the team, I’ve made a pair of bending tools from ½” aluminum rod, drilled to slip over the brush ends to the desired depths.

I also tried nylon brushes, on the theory that they might spring back better than bronze and last longer. However, nylon just doesn’t do as good a job at scraping the carbon loose. I cleaned a chamber using a brand new nylon brush, and then got considerably more carbon out when I re-cleaned it using a bronze brush. I also thought the nylon might be gentler on the chambers. That may be true, but after taking hundreds of bore scope photos of chambers cleaned for years with bronze brushes, I’ve seen no indication of any wear or scratches I could attribute to the use of bronze.