

Barrel Break-In

[input from many]

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Here's a subject I get a lot of questions about, and after hearing and reading (mostly reading) some of the most cock-eyed means imaginable used to describe performing this simple procedure, I thought I'd best reprint an old article on the topic.

When you have a new barrel installed, taking a few pains to break it in will pay off in the long run. A properly-conditioned barrel will shoot to its best potential and be less susceptible to fouling. This last is a big benefit to the high power rifleman who must shoot a relatively large number of rounds in a tournament (with the "most important" ones usually coming at the end of the day).

What breaking in a barrel actually accomplishes is allowing the freshly-finished bore to conform a little better to the bullets that will pass through it (so the bullets themselves don't have to conform as much...). As a bullet passes through a new, clean bore, there is a burnishing action that smooths the surface of the bore. Think of it as "bullet lapping." (Read the note at the end of this to see another, more direct approach.)

For a bullet to have this burnishing effect on the bore, the bore must be clean. If you've ever found that a new barrel starts to shoot better after you've put quite a few rounds through it, what may be happening is that the first few rounds fired after you've cleaned the barrel are doing some of the break-in work that would be accomplished through following a break-in procedure.

Although there are those who say it's "too late" to break in a barrel after it's already been shot for a while, try it anyway. Clean the barrel very thoroughly, take the rifle and your cleaning gear to the range, and put the barrel through a break-in. Often enough, this will improve the accuracy of a rifle.

Procedure

The process of breaking in a barrel was described as taking a "few pains," and that's, unfortunately, pretty descriptive. Different people have their own recipes for breaking in barrels. I talked to several people about this subject and I'll try to give a "composite" of what they told me, begging their pardons up front for my doing so.

The basics of breaking in a barrel all, in some way, revolve around cleaning the bore between each round for the first few rounds, and then not firing more than a handful of rounds at a time before cleaning it again. This procedure is generally recommended for the first 30 rounds or so fired through a new barrel. Once the break in is done, let her rip! Of course, you'll still need to clean the barrel just about as often as you can (which, for a high power shooter, means after each practice session and tournament). If you follow the composite procedure below, or do something reasonably similar, you're doing fine.

You don't really need to tailor a special load for use in the break-in procedure, but it helps the process to use a bullet that has a relatively long bearing surface. For a .223 Remington, for instance, use Sierra® 80s (or the remainder of that half box of vlds that never shot for you...).

Here's the composite procedure—

1. Shoot 10 rounds. Clean the bore (thoroughly) between each round.
2. Shoot 3 consecutive rounds. Clean the barrel. Let the barrel cool down thoroughly between strings.
Shoot 3 more rounds. Clean the barrel.
Follow this 3-rounds/clean procedure for another 3-5 strings (whatever daylight and your patience will allow).
3. Now go ahead and shoot as many rounds as you want through it (if you have any desire left to shoot that day...). What you'll see in the group size and location should now be a lot more indicative of what you can expect from the barrel come race-day. Clean the bore thoroughly when you get it home.

Although the barrel is "officially" broken in, it is still recommended that you clean the barrel more frequently during its first 100 or so rounds.

Cleaners

Some people prefer chemicals; others use abrasives; others prefer a combination. The point is to get the copper jacket gilding out of the bore--that's what needs to be removed for the break-in to "work"--so whatever you like to perform that task is what you should use. Shooter's Choice Copper Remover®, Sweet's 7.62®, and Pro-Shot Copper® are chemical cleaners that work well to this end. JB Bore Compound® and RemClean® (formerly Gold Medallion) are two popular abrasives.

Remember, let chemical cleaners work by themselves. If you're in there scrubbing the barrel raw, you may be doing more harm to the barrel than any break-in procedure could ever improve.

If you use abrasives (as well as chemicals), make sure to follow the precautions outlined in a previous article, High power Barrel Care. To refresh your memory: use a good rod guide (generally meaning one that's a tight fit to your rod) and a good one-piece rod (generally meaning one that's straight and coated). Make sure you wipe down the rod after each pass through the bore to remove excess abrasive and gunk from the rod body. The damage potential from abrasives is most strong from the rod contacting the bore, and especially in the throat, not (technically) from the use of the abrasive itself.

If you're using a chemical cleaner, chart your progress by watching your cleaning patches. Notice the color of the first dry patch you push through the bore. In the first few (maybe several) shots, they'll come out greenish-blue (indicating the presence of gilding), but when they begin to lose color intensity, you have evidence that your break-in is working.

Effect

Following a break-in procedure should iron out a few of the "hidden" imperfections in your bore. The result should be a bore that's going to better match the bullet all through its trip down the tube, meaning that there should be less abrasion to the bullet.

A couple of benchrest shooters I talked to say they have derived non-fouling barrels following break-in. Of course, benchrest shooters normally don't fire more than 10 rounds between cleanings. A high power barrel that may have 100 rounds put through it will inevitably exhibit jacket fouling, no matter how "smooth" its bore is. A good portion of jacket gilding is from vaporized jacket material; less is residual from abrasion. However, a smoother bore still allows less build-up.

Some barrels will break-in better and faster than others; that's indicative of the tolerances that are all part of even the most careful manufacturing process, and plain old luck. And, on occasion, a barrel may just turn out to be a "fouler," no matter what you do. However, in most all cases, properly breaking in a barrel will improve its performance from the start, and beyond. As one barrel maker put it, "They usually shoot better, and never shoot worse..." The general consensus is that properly broken-in barrels are a whole lot easier to live with--they clean faster, shoot better, and last longer.

Breaking-in barrels is also, realistically, another one of those "technical" things a shooter can do to feel he's giving his equipment every chance he can. Breaking in a barrel gives the assurance that one more little thing has been done to contribute to the total that helps shape a shooter's confidence. The bottom line is to know it's you, not your gear, that's responsible for your score.

I wrote this original article several years ago, but now here's an important addition. I tend now to use a new product developed by David Tubb to "break in" my barrels, and I keep using it to keep them broken in.

TMS™ [throat maintenance system] is truly a wondrous product. Not only will it circumvent and improve traditional break in procedures, but continued use will add about another third to barrel life. It smooths the eroded part of the throat as rounds go through along with polishing the bore.

TMS™

Honestly, it's possible to skip all this with FinalFinish™ TMS™, and do a much better job. These are bullets coated with an extremely fine polishing compound. Just load up a few and shoot them. Done. It's more effective than any break in procedure and will also smooth out the leade. It's easily possible to polish the chamber and it's common for a fine match barrel to have its rifled interior length lapped, but that portion cut by the chambering reamer can't be much done about. That portion also frequently has tool marks and edges. The break in procedure described will help a little, but FinalFinish™ will smooth away the imperfections for good.

TMS™ isn't nearly as "strong" as the lower numbered compounds in a full FinalFinish™ kit so there are no fears (or shouldn't be) about using it frequently. It doesn't remove metal, per se, but acts more like a hone or strap for a straight razor: it smooths over disrupted areas. The intended and prescribed use of TMS™ is to fire a few rounds of it for every so many rounds of ammunition. I use a 2:100 ratio of TMS™ to standard rounds in a .223 and 4:100 in a .22-250, for instances. The faster throat erosion takes hold the more TMS™ will help, and the more of it needs to be used.

In addition, you won't believe how easy the barrel is to clean after TMS™ rounds.