

# SHOOTING TIMES

## THE GUNSMITH

By Reid Coffield

### How To Smooth Up A Shotgun Bore

There are some situations where more is definitely better: eating your grandmother's homemade sugar cookies, days spent shooting with your buddies, and smoother shotgun bores! Well, maybe you can get too much in the way of grandma's cookies, but I'd argue with you about time spent shooting and the smoothness of a shotgun barrel bore.

Most of the time when you look down a shotgun bore everything looks pretty darn good. The bore is generally bright and shiny. It couldn't get much better than that, right? Wrong!

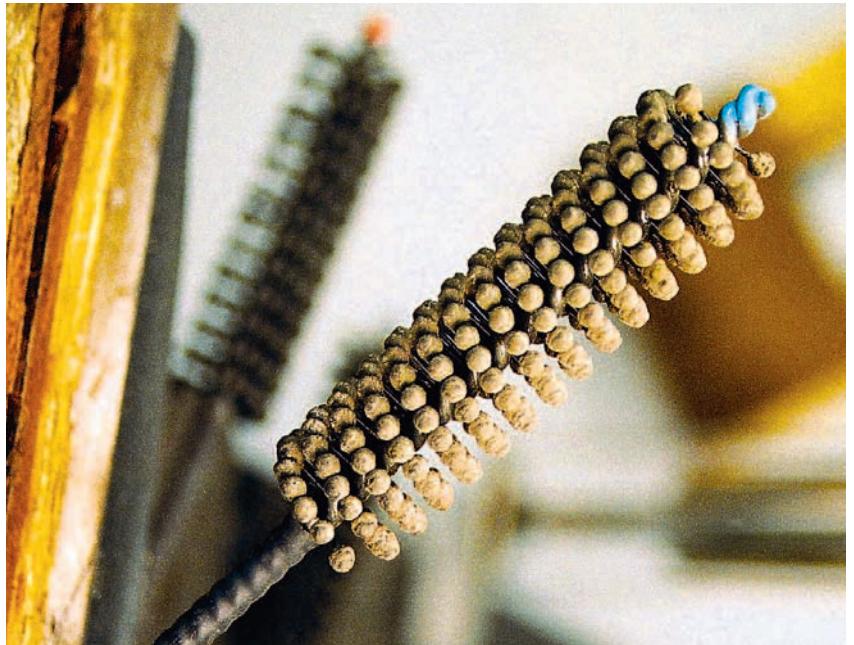
#### Appearances Can Be Deceiving

The appearance of a shotgun bore can be deceptive. Looking through it everything seems to be darn slick. You don't see pits or scratches, so logic says it has to be smooth. Well, yes and no. To look though a bore most of us hold the barrel up to a light. That's great, but much of what we are seeing could be the reflection of the light rather than the actual surface of the bore.

Glare from the light can hide a lot of surface irregularities. These irregularities can range from tiny

scratches and pits to built-up carbon, lead, or plastic fouling. All of 'em, even the smallest scratches, potentially have very negative consequences. Moisture can collect in pits and scratches and can lead to rusting. Even the slightest roughness can accelerate the build-up of fouling. Fouling in turn can further mask continued rusting. If fouling is severe enough, it can lead to higher pressures and contribute to patterning problems.

Even a new barrel may not be as smooth as it should be. Over the



The Flex-Hone, which is composed of hundreds of small abrasive balls mounted on individual nylon bristles, and Flex-Hone Oil allow you to polish a shotgun's bore easily with an electric drill.

years I've seen a lot of new barrels with visible reamer or machine marks. This roughness will invariably lead to excessive fouling as plastic from the shot cup is scraped off and built up with each successive shot.

The bottom line is that the shotgun bore should be as smooth and slick as we can possibly make it. The smoother the surface, the less fouling will build up. That'll make cleaning easier and faster, and it'll even make patterns a bit more consistent.

When I first started gunsmithing, polishing a shotgun bore could be quite an undertaking—in fact, it was a royal pain! It would entail casting a lead lap inside the bore then coating the lap with a fine abrasive. The lap was pushed back and forth, being very careful to stop short of the choke and the chamber. It seemed to take forever. I also made up mandrels made of wood (or metal), attached strips of cloth-backed abrasive, and spun them inside the bore. That was a bit faster, but it still took a long, long time.

Some shops that specialized in shotgun work modified honing machines originally used for the automotive trade. This really made the process faster, easier, and more precise. However, those machines were far too expensive for most of us toiling in small shops.

### Polishing A Bore The Easy Way

A breakthrough occurred in the 1980s when Ralph Walker, a noted Selma, Alabama, gunsmith and writer ran across a tool called the Flex-Hone. The Flex-Hone is a patented polishing device produced by Brush Research Manufacturing in Los Angeles. The Flex-Hone looks like a three-inch nylon bristle bore brush with little balls of abrasive at the end of each individual bristle. Flex-Hones are available in medium to fine grits, or degrees of coarseness, and come equipped with 34-inch-long plastic-coated twisted-wire shanks.

When used with the special Flex-Hone oil, these abrasives really do a great job on a shotgun bore. In a matter of minutes I can smooth up a bore that would have previously taken me hours. Fortunately, Flex-Hones are available from a number of distributors, including MidwayUSA (Dept. ST, 5875 W. Van Horn Tavern Rd., Columbia, MO 65203; 800-243-3220; [www.midwayusa.com](http://www.midwayusa.com)) and Brownells (Dept. ST, 200 S. Front St., Montezuma, IA 50171; 800-741-0015; [www.brownells.com](http://www.brownells.com)). If you are a serious shotgun shooter or just like to have your guns perform at their best, this is definitely a product you'll want to try. The cost of a Flex-Hone ranges from around \$28 to about \$60, depending upon where you buy 'em.

While using the Flex-Hone is quick

and simple, there are a few points you need to keep in mind. First, the Flex-Hone will not remove deep pits. If your barrel is severely pitted, you will probably have to first ream out the bore. You would open it up until you cut below the bottom of the deepest pit. On deeply pitted barrels, this could actually make the barrel wall so thin as to make the gun unsafe. If you have a deeply pitted barrel, have a knowledgeable shotgun specialist take a look at it. He should have the equipment to determine the depth of the pits and the safety of the barrel.

If you have a ported barrel, you shouldn't use the Flex-Hone over those ports. The small abrasive balls at the end of the nylon bristles may drop into the port openings as the Flex-Hone passes over them. The abrasive will quickly cut away the nice sharp edges around the ports, leaving larger, shallow, tapered openings. Believe me, this will not have a good effect on wads!

It is also best to keep the Flex-Hone away from the shoulder in the barrel where the rear end of the screw-in choke tube skirt is seated. There is a sharp shoulder, or ledge, and the back end of the choke tube fits perfectly against it. This prevents gas, plastic, and fouling from working under the choke tube. If that ledge is ground or polished down, you could create a situation where gas,



Reid says to position a marker flag on the Flex-Hone shaft at the breech end of the barrel so that the Flex-Hone does not pass over barrel ports or a screw-in choke tube.



As the Flex-Hone is turned in the bore, the individual abrasive balls wear down.



**Before inserting the Flex-Hone into your handheld drill, you'll want to strip the coating from the end of the shaft where it will be held by the drill chuck.**

powder, or fouling could work its way under the tube. In extreme cases this could seriously damage the tube or ruin the barrel.

Okay, so how do you use the Flex-Hone? Begin by securing your barrel in a padded vise. Make sure there's a trashcan under the muzzle because you'll have oil dripping out of it. If your barrel has a screw-in choke tube or is ported, place the Flex-Hone along side the barrel so that the bristle end of the brush is just behind the end of the choke tube or the beginning of the porting. Take a piece of masking tape and secure it around the shank of the Flex-Hone even with the barrel breech. This tape warning flag will serve as your indicator as to the location of the Flex-Hone bristles. As long as the tape does not go into the chamber or barrel breech, you're okay!

Now pull the Flex-Hone back and position the rear of the bristles right ahead of the chamber. Place another strip of masking tape around the shaft even with the end of the breech. You don't want to pull the Flex-Hone so far back as to get beyond this marker because you would then be in the chamber. The bore-diameter Flex-Hones are not really large enough in diameter to do the best job of polishing the chamber. There are Flex-Hones specifically designed for that job.



**Attach the Flex-Hone to a hand drill and place it in the barrel. Running at a moderate speed, work it back and forth with a smooth even motion for a couple of minutes. Carefully remove it from the barrel, add more oil, and continue polishing.**

Now it's just a matter of applying some of the Flex-Hone Oil to the bore. Although you could use any good-quality cutting or honing oil, I strongly recommend using the Flex-Hone Oil. It enhances the polishing action of the abrasive, and it makes the Flex-Hone last a lot longer.

Secure the end of the Flex-Hone shaft in your electric hand drill. You'll want to strip about an inch of the rubber coating off the wire shank so your drill can get a good grip on the shank. Slowly turn the Flex-Hone as you insert it into the barrel and then, and only then, increase the rpm of the drill. If you speed up the drill before you insert the Flex-Hone in the barrel, a couple of things can happen. If the bristles have a good coating of oil, you'll spray it all over the room! The Flex-Hone shaft can also bend and do some pretty serious damage to anything within reach.

Once you have the Flex-Hone in the barrel running at a moderate speed,

work it back and forth with a smooth, even motion. Let it run for a couple of minutes then carefully remove it from the barrel. Add a bit more oil and do some more polishing. Don't clean out the oil or slurry that has formed in the barrel. This slurry is important and helps in the polishing. Once you have finished with the medium grit, thoroughly clean the barrel. Inspect it and polish more if necessary. If it looks good, repeat the process with the fine grit Flex-Hone. Again, clean thoroughly to remove all traces of abrasive when you have finished.

If you do this properly, you will see the difference, and most importantly you will notice the difference, when you clean your shotgun's barrel after shooting. You should see less fouling both from carbon as well as from the plastic wads. The Flex-Hone is really a great tool for the hobbyist as well as for the professional gunsmith.

Until next time, good luck and good gunsmithing! ↵



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