Fire Lapping

I never recommend that some one try to lap by hand. Shilean will only let their most experienced guys do it and claim that even some of their work has to be down graded after because it doesn't meet tollerances. Shilean has one of the best reputations for "bore tollerances" as far as diameter goes. But also the worst reputation concerning consistency of twist rate. This is what you CAN'T control by hand. What good does it do to solve one problem and create another?

If you are talking about fire lapping, then I am much more familar with that because I have fire lapped maybe 50 to 60 barrels. The lap compound sold by LBT works fine. The keys to it are regardless of who's kit you buy.

1. Always use lead instead of copper.
2. Stop and slug often. Shoot slow and low pressure.
3. Quit BEFORE you get to where you want to be.

The problem with copper is rapid erosion that is hard to monitor without ruining your throat and cutting valuable height off your rifling.

The problem with two is that after you rough up the bore, it is hard to feel if you have solved your problem which is the only reason to fire lap in the first place.

The problem with three is that after you rough up the bore, you have to start all over with barrel break -in. Shoot clean, shoot, clean. And the jacketed will close the pores of the metal as it wears away the rough spots. You can lose another .0005 during this time. So if you lapped to where you want to be, you are screwed.

By Bass Ackward

The best tool of all for measuring a bore is a set of pin gauges, which is cheaper and more versatile than a proper bore micrometer. A set of .25 to .5 by thousandths can cost under $40 on eBay. They will measure only a land diameter, but that will detect a constriction, and you don't have the problem of needing different micrometers to measure barrels with different numbers of grooves.

I think a bore tapered the wrong way is much worse than small departures from either absolute correctness of diameter or consistency of twist. After all, people get good hunting accuracy with gain twist barrels, and there are dark stories of people doing the same after accidentally installing one back to front. Within the limits good makers can do this in a barrel intended to be constant twist, I don't think it's anywhere near the worst thing that can be wrong.

A technique which I've never heard of anyone trying, and mention as a subject for experimentation, is fire-lapping with sections of anodised aluminium rod. The coating simply is aluminium oxide, although so thin that my small slitting saw has survived a lot of cuts in 8mm. rod without bluntening. With its hardness and low inertia, I don't believe it would upset at all.

.375 barrels have their own size all ready, and 6/16 should be right for .303. I don't know about the same in a .30 calibre, but testing with increasing loads and a 1/4in. long slug of the stuff should tell you if pressure signs are high.

By Ballistics in Scotland

This is a quick and easy bore clean / polish technique that has worked very well for me, and for a few others too. It was written up in the CBA's 'Fouling Shot' magazine, and others have since reported excellent results with the technique. But if you aren't a CBA member, here's the short version:

The first trial occurred because I bought one of those Yugoslav 8x57 rifles that were being sold as new, unfired
military surplus for a pittance. Well, to judge from the cosmoline and condition, I believe that’s exactly what it was. But the bore, though obviously not worn or pitted, wasn’t very smooth either. I could perhaps illustrate it as looking more like the surface had been finished with 400 grit wet-or-dry paper. It may have been new, but it sure wasn’t polished either.

I’d done a lot of reading about fire-lapping, but for the life of me, I simply couldn’t see the logic of pushing abrasives as coarse as what I’d seen recommended down a good bore. And the reports of throat enlargement lent some credence to my reservations.

No doubt I could have used the rifle as is correction - as WAS - for the rest of my life with jacketed bullets, but I’m a cast bullet enthusiast, and have been for decades. I wanted to use it with cast bullets, and a rough bore isn’t commonly considered optimal for them. So I gave the concept of fire-lapping some serious thought. It seemed reasonable that the finer the abrasive, the less likely I was to encounter serious enlargement problems, and I was willing to accept a longer process for this assurance.

I’m a long-time fan of JB Compound too, and it seemed like a reasonable choice for the trial. I was thinking of using cast bullet, mostly because I could hand-lube their grease grooves with JB, but then again, I had all those pulled slugs from milsurp ammo - I decided to use them instead, and simply use a bore mop between shots to introduce the polish.

I pulled down some ammo, weighed the charges, and reduced it to provide a safety factor. It was well I did, because I did obtain some substantial pressures on the first few shots. But when I ran a patch down the bore to check progress, I was astonished to see that it gleamed like someone had coated it with mercury! But measurements with lead slugs before and after didn’t show any bore enlargement. I suspect that there was some - polishing being a metal removal process - but it was apparently darned little! I wrote it up for the Cast bullet Association, and they’ve since published reports that others have tried it with excellent results. One guy had about ruined the bore of his match rifle, but restored it’s finish and accuracy with this process.

Equipment:
Cleaning rod
Cleaning solvent
Bore mop
Patches
Cleaning solvent
JB compound
Specially loaded ammo (See special notes below)

Procedure:
Take everything to the range, as proceed as follows:
1. Remove the bolt from the rifle.
2. Coat the bore mop with JB compound.
3. Swab the bore to leave a LIGHT coating of JB compound throughout.
4. Replace the bolt.
5. Load with special ammo and fire.
6. Repeat for about half a dozen rounds, swabbing with JB compound between each shot.
7. Clean the bore to check on progress / improvement.
8. Repeat as necessary.

Special notes:
1. Used with some common sense, this process works beautifully and quickly: It will leave a bore mirror bright if everything is done correctly, but will result in little or no enlargement. But it CAN be hazardous if the following warnings are not carefully observed.
2. You MUST NOT use factory ammo. This procedure will elevate pressures, and if factory ammo is used, the results could be very dangerous.

The reason is at least two-fold: the JB compound will increase the friction between the barrel and the bullet quite a bit, requiring much higher pressures to push the bullet down the bore.
Also, the paste will reduce the clearance at the case neck. If the chamber neck area is too heavily coated with JB compound, the case won't be able to expand and release the bullet properly. This can also raise pressures quite a bit.

My first trials used military ammo from which I’d removed a fourth of the powder charge. Even so, I experienced very high pressures for about three shots, though I didn’t notice the pressure signs (badly flattened primers) until I’d finished. After that, the cases all had perfectly normal pressure signs. I found that removing at least 1/3 of the powder charge from a factory round seems to give very satisfactory results in my experience, but I will probably use a 50% powder charge for extra safety from now on. And a heavy coating of JB compound won't work any better or faster than a really thin coating, so use some common sense.

3. I used jacketed bullets, and got fine results. A new rifle (nut with an obviously rough bore) gleamed like chrome after about five or six shots. A pitted bore will undoubtedly require more shots. And I strongly suspect that if you want to use cast bullets, you may get somewhat slower but still safer results.

4. Cast bullets may have another advantage too: The 6.5 Carcano's generally have a BORE of about 0.264, and a GROOVE dia of about .270 to .272 in my experience. Handloads with .264 jacketed bullets require base expansion to really grip the rifling and spin the bullet. With light loads, all you may be able to do is polish the tops of the lands. Cast bullets will expand much more easily, and fill the bore grooves for more uniform polishing. Or if you use milsurp jacketed bullets, they are larger than .264, and may work better too.

5. As an extra safety margin, I recommend firing the rifle from the bench (not the shoulder) with the bolt and breech covered with a couple of sandbags. I think this should be adequate to provide greatly improved safety even if everything else goes wrong.

Sorry about all the potential hazard warnings, but they ARE just potential - not necessarily probable - hazards. I think the process is plenty safe if used by someone with ordinary experience and caution, or I wouldn't mention it to you. But I have no way of knowing the level of caution you consider appropriate. So this information is for your information and consideration only; it is not a recommendation to be implemented blindly. Use at your own judgment and risk.

Molly

I've used the 320 grit silicon carbide in a grease paste and I think it works just fine.

A couple of things that I can add to what's been said: Using a soft lead bullet with the grit embedded into it helps to cut the tightest restrictions of the barrel first as it sizes down to that smallest diameter. So as you progress round after round you will get a slight taper towards the muzzle. The other thing is in using squib loads (keeping velocity low) is if you get a cast bullet stuck you can tap it out fairly easily with a brass rod.

I had an old mauser barrel that was a tomato stake candidate for accuracy and following the instructions much like BA has above brought it back to near MOA accuracy for jacketed bullets. Truely amazed how a tight patch slides down that old barrel with nice even pressure on the rod. Still searching for that cast bullet/load........

Just my opinion, but I think damage to the throat can be minimized by not using excessive loads and using only the necessary amount of grit needed to get it embedded into the slug and no more.

Nels