

CUSTOM RIFLE **PART 3** CONSIDERATIONS

BY DEAN MAISEY



You've done your planning and figured out what you want in a custom rifle. You've had a rifle built to your specs by someone qualified to do the job, now it's time to take delivery of your new 'pride & joy'. Let's discuss a few tips and methods to get the best out of your new rifle.

TAKING DELIVERY OF YOUR NEW RIFLE

When going through the planning process with your gunsmith you will have agreed upon a checklist (or wishlist) for the components and features of the rifle to suit your requirements. Go through this checklist with your gunsmith now and ensure that everything is all in order. If something is obviously not right or as-per your requests, then now is the time to discuss it. As stated in my previous articles, clear communication early on from both parties will usually help to prevent complications or surprises later. There are a few basics that should be done right though:

- The headspace measurement for the chamber must be within SAAMI specs.
- The trigger and firing mechanism must be safe, functional and reliable.
- The manual safety (if fitted) must also work reliably.
- If the rifle is a 'repeater' (i.e. not a single-shot) then it must feed reliably with the cartridges that the rifle has been chambered for. (It's surprising how often compromises or shortcomings are encountered here, especially when dealing with short/fat wildcat cartridges or other non-standard chamberings).
- The bedding work must be

completed to a high standard for a stress-free action platform.

- The scope mounting system must be installed and aligned correctly.
- The external finishing of the stock and accessories should all be as expected.
- The finishing of the metalwork must also be completed to an acceptably high standard.
- For safety and liability reasons, the calibre designation should be clearly engraved or marked on the barrel, including any special details such as a tight neck or short throat dimensions, etc. (This is to help prevent a potentially dangerous situation of the wrong ammo, or standard ammo, being fired in a non-standard chamber.)
- Ensure that any accessories such as special reloading dies, cleaning gear or other items requested are delivered.

BREAKING IN YOUR NEW BARREL

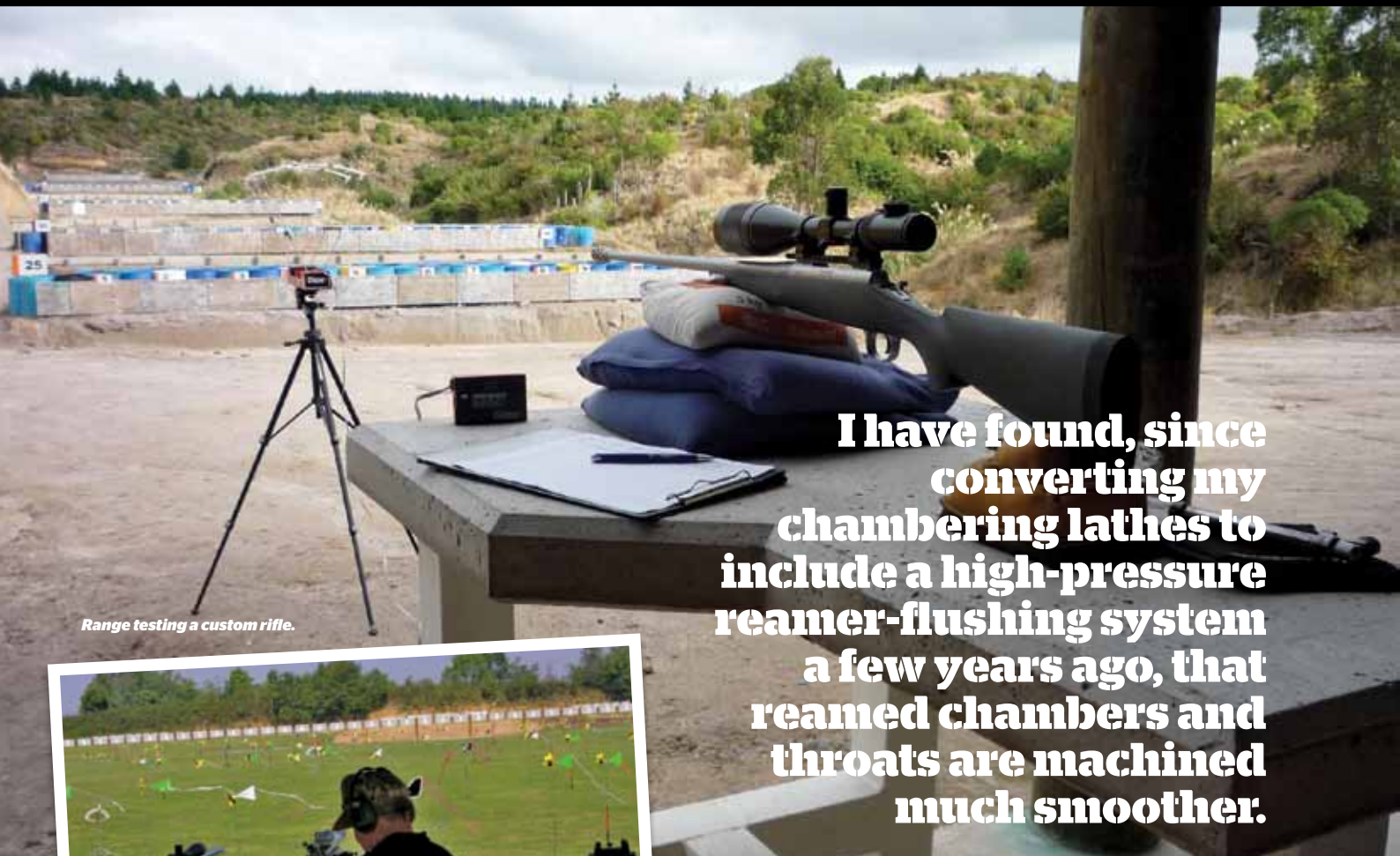
Any new rifle barrel will usually need a run-in period of at least 50-60 shots before the throat area starts to smoothen out and the tendency of the bore to 'copper-foul' reduce. Despite poor advice I read recently advocating attacking your new barrel's bore with Scotchbrite (i.e. pot-scrubbing pads) or Autosol, or other non-firearm-specific

abrasive products, I strongly recommend you do not go down this track. In the skilled hands of a competent gunsmith or barrel-maker, some abrasive products such as the finer grades of Scotchbrite do have their place in bore repair or reconditioning applications, but it is definitely not recommended as something the layman should undertake. Unfortunately, I've seen the results of such misadventures with Scotchbrite and other abrasives in their barrels. Be warned - taking such drastic action on your new barrel will likely void any warranty, be it a new custom rifle or a production-grade factory rifle. Any bore lapping or extreme reconditioning should be left to your gunsmith, or to the barrel-maker concerned.

I have found, since converting my chambering lathes to include a high-pressure reamer-flushing system a few years ago, that reamed chambers and throats are machined much smoother and, as a result, the barrels do tend to run-in a lot quicker. Even so, all new barrels will copper-foul to some degree. This is largely influenced by projectile choice (i.e. copper composition), cartridge intensity (i.e. .222 Rem versus 7mm Rem Mag), bore finishing, chamber/throat finishing, rifling design/configuration, and barrel/

bore dimensions. Regular cleaning with firearm-specific copper-removing solutions will dissolve and get rid of copper jacket material build-up in the bore. This then allows successive shots to help to slightly burnish and 'condition' the bore just to a point where copper-fouling becomes noticeably reduced. My advice is to avoid any sort of abrasive bore cleaning methods unless absolutely necessary and as a last resort. Basically, the copper streaking was applied to the bore surface with more pressure (and heat) than you can counteract with manual scrubbing methods. With some abrasives you may also risk potentially marring or prematurely wearing the bore surface while targeting the softer jacket material fouling layer.

The smart method is to simply apply a liberal coating of the copper-removing solution to the bore, and leave it for plenty of time to dissolve the copper chemically. With some products such as Boretch Eliminator or TM Solution (which are both water-soluble) you can leave the solution in the bore for several hours with no problems (provided you are not using moly-coated bullets). They work best given a bit of extra time to soak, and are not simply wipe-in/wipe-out express cleaning wonder-products. Patch »



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Range testing a custom rifle.



Wind flags are important for accurate group shooting.

the bore out dry and you will see a thick blue or green coloured liquid- this is your sign that the solution is doing it's job. If you can still see signs of copper fouling then simply repeat the process. I use Boretech Cu+2 Copper solvent (which is a slightly more vigorous copper remover) for any second or third cleaning passes on heavily fouled bores. It may take some time, but at least you don't risk damaging or 'over-polishing' your rifle bore. I have found some such over-polished bores actually increased the tendency for copper fouling, rather than reducing it. A mirror-finish in the bore is not what we are trying to achieve here. This is applicable to both custom and factory-grade rifle barrels.

AMMUNITION (LOAD) DEVELOPMENT

This is a subject in itself, but we have touched on a few main

points in previous articles:

- Use bullets that are fit for purpose. i.e. use hunting bullets for hunting applications and target bullets solely for target applications. Bullet companies spend a huge amount of time and money testing their bullets and designing them for their intended purpose. If some companies (such as Sierra) issue public statements advising against using their 'match' bullets on game, then it is usually for good reason. Heeding this advice may help to avoid wounding or losing animals due to poor or un-ethical bullet choices.
- Use quality brass, well prepared and (if possible) neck-turned just enough to ensure consistent neck-wall thickness.
- Experiment with different recommended powders for your given cartridge, but remember that some powders are temperature-sensitive, which can limit their versatility. Loads

that are slightly 'hot' in cold or mild weather conditions, could be over-pressure and dangerous in hot weather. Play it safe and keep your powder charges within reasonable limits.

- Mild charges and occasional neck/shoulder annealing will increase case life, and often delivers better accuracy as well. Simply chasing velocity for velocity's sake may result in disappointing accuracy and limited case life.
- Take care when setting bullet seating depth (or clearance from the rifling). For hunting rifles it is usually best advice to have at least 0.010" (or more) projectile clearance off the rifling. Bullets that are jammed hard into the rifling lands may stick if a fully chambered round is extracted unfired, resulting in powder granules spilling through the breech and action area while the bullet remains jammed in the bore. NOT a good situation to have to deal with in the field.
- Extreme velocity spreads may be reduced by using standard 'large rifle' primers instead of magnum primers in some short-magnum or standard-magnum cartridges. Usually the average velocity readings are about the same anyway.

- When testing at the range - USE WIND FLAGS. I cannot emphasise this enough. Even some basic form of wind reading device is better than nothing. It's impossible to shoot decent small groups consistently and with some repeatability without them. Attempting to do accuracy tests without windflags is a waste of time and components, unless you are not aiming for perfection and just want to establish a basic or reasonable load to go hunting with.

WHAT ABOUT WARRANTIES?

Assuming you have taken the logical step of employing the services of a qualified gunsmith to build your rifle, you will have expectations and rights under the Consumer Guarantees Act to ensure that your rifle performs as promised, and is fit for purpose. So what if it doesn't, or something goes wrong?

Seventeen years ago, while I was a gunsmithing student at CST in Denver, an article introduction written by Invercargill-based gunsmith Nelson Collie in a 1996 issue of NZ Guns Magazine struck a chord and has stuck in my mind ever since. By kind permission of Mr Collie (and the



Bullet seating dummy rounds.



Checking that the rifle feeds properly.

magazine's editor) I reprint his original statement:

"I'm going to start with a message in support of gunsmiths, and business ethics. On the rare occasions a customer has not been satisfied with what I've done for him they've either modified my work themselves or had one of their mates fiddle with it, sometimes successfully, sometimes not. If you're not satisfied with a job the first person to tell is the one who did it. It's his right to have the first opportunity to correct the fault at no charge. After all, once a job has been tinkered with by several people it's hard to tell where the responsibility really lies."

These are wise words from Mr Collie, and I totally agree with his sentiments. The timelessness of his statement is reflected in the fact that it is just as relevant today as it was seventeen years ago. In fact, it may surprise some to learn that having remedial work undertaken by someone other than the original 'contractor' (and without their consent) may void any rights of redress under the Consumer Guarantees Act, and hence negate any warranty. Not to mention the likelihood of

offending the original gunsmith by even sending the rifle to someone else for assessment before consulting them about any concerns first. This would all be common-sense and common-courtesy stuff for most people, and naturally most gunsmiths would not be too keen on others tinkering with their work, especially if it means they may be blamed for something later that wasn't their fault. Triggers are a particular area of concern in terms of liability.

Apparently now (if I've been reliably informed) insurance companies may also not honour any claims arising for expenses where remedial work has been done by someone other than the original contractor, and/or without their knowledge.

Basically, if you're not happy or not sure about something with your rifle then talk to your gunsmith about it first. Whatever the reason, patience and understanding can go a long way to resolving any issues.

With proper load development, care and maintenance, your new custom rifle should give you years of reliable and satisfying performance. **R&R**

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(* Results are indicative from testing on our purpose-built apparatus with factory-loaded ammunition: 7mm Rem Mag 150gr and .300 Win Mag 150gr. Measured results compared with competitors products (approx. 49-62% recoil reductions) using same test procedures and ammunition. See our YouTube videos online. Results will vary with different ammunition selections.)

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