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DIGITAL ARCHIVE
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PRECISION ARMS WORKSHOP

AND THE AMERICAN GUNSMITH ARCHIVE

A TECHNICAL JOURNAL OF CRAFT, REPAIR & RESTORATION

10

ARCHIVE ISSUE NUMBER

INSIDE THE ARCHIVE

KEEPING GARANDS RUNNING

FREEDOM CABINET RAFFLE • REMINGTON 783 • SAVAGE 10 BA STEALTH PRECISION RIFLE • KIMBER AND COLT

ORIGINAL METHODS. MODERN ACCESS.

ARCHIVE EDITION 190

DIGITAL ARCHIVE EDITION

Preserved for the bench.

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FROM THE ARCHIVE

Freedom Cabinet Raffle

BY AMERICAN GUNSMITH EDITORS OCTOBER 2019

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Metal Art of Wisconsin (MetalArtofWisconsin.com), is a family-owned business in Wisconsin offering metal forming, shaping, and plasma cutting. Their custom designed art pieces hang on the walls of numerous studios, banks, museums, churches, hospitals, cemeteries, and memorials all around the world. Metal Art also makes a number of practical designs with their artistic flair. Their 2nd Amendment collection includes metal and carbon fiber Freedom Cabinets.

Both decorative and functional, these American flag-shaped cabinets are available in matte or glossy black with stripes cut from 16 gauge, cold-rolled mild steel, and finished with three layers of clear coat. A number of locking systems secure each strongbox, including invisible RFID lock, key cards, and biometric scanners. Each Freedom Cabinet comes complete with a tough, high-density foam insert that can easily be configured to store guns, valuables, booze, dirty secrets, or anything you want to conceal.

Encased in a steel, lockable frame, whatever you decide to store in it will be safely hidden behind Old Glory. Available in 2, 3 and 4 foot sizes. Freedom Cabinet Giveaway Metal Art is giving away one of their newest models in the 2nd Amendment collection, a Biometric Fingerprint Freedom Cabinet Slider. With outside dimensions of 23 x 15.5 x 3.5 and inside dimensions of 21 x 12.5, the flag is cut from 16 gauge, cold rolled, ground and polished mild steel, then covered in three layers of glossy clear coat.

The steel is inlaid and flush with the surface of the wood for a three dimensional look and is all secured with a high-tech biometric (finger print) locking system. To enter this giveaway, host a small, local shooting event. An easy, quick, scored course of fire held during a local hunter sight-in is ideal but anywhere and any type of shooting event you choose works. Submit a picture of your event along with a short description to the Editor and we'll put you in for the drawing.

Winner will be announced in December. For more information and event ideas, visit AmericanGunsmith.info/metal-art-giveaway-2019 or contact the Editor directly.

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MAINTENANCE & REPAIR

Remington 783

Tips and procedures for working with this newer Remington rifle.

BY ROBERT K. CAMPBELL OCTOBER 2019

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Remington's Model 783 rifle has enjoyed a generally good reputation since its introduction several years ago and seems to be a decent, inexpensive rifle. The 783 is more popular than the less expensive Model 770 but trouble does occur and sometimes repair and modifications are needed. While sending the firearm back to the factory is an option, it takes time and sometimes shipping is expensive. This tends to convince the shooter to bring the rifle to the gunsmith for repair.

A gunsmith with a good reputation and rapport with his customers will see many such rifles that are covered by a factory warranty. It's possible the shooter has little confidence in the factory, sometimes deservedly so. A recurring problem seems to be related to the magazine and feed issues. For example, there is sometimes a bit of play in the rear of the magazine and it may wiggle as much as an eighth of an inch. As a result, the rifle does not feed properly.

The fix, since this is a relatively new gun, isn't always well understood. Generally, the problem is that when the bolt is worked forward to move the cartridge from the magazine to the chamber, the nose of the cartridge takes a downward turn and butts

the nose into the magazine body instead of rising into the chamber and chambering. This is evidently because of the play in the rear of the magazine.

However, I have examined a Remington 783 rifle with play in the front of the magazine but have never seen a rifle with play at both ends—I guess the magazine would just fall out! When a 783 chambered in .308 Winchester showed up at the shop. Occasionally, a feed problem aggravates the owner but is easily fixed. All told, the 783 is a useful rifle worth its modest price and it may be improved by judicious modification. I looked over the problem first by asking a lot of questions and then by examining the rifle.

I loaded Winchester's 147 grain FMJ load and experienced a number of failures to feed. The misfeed problem was the same with Hornady's 168 grain A-Max. While this observation was made on a .308 783, other Remington 783 chamberings are equally vulnerable to this misfeed malfunction. After some reflection on past problems, I entered into a fix. First, I made certain that every piece on the rifle was tight. The stock was tightened to the receiver and the trigger group was checked.

After all, any slop in fitting would indicate that the magazine was not locking into place properly. After this tightening I examined the magazine. It appeared as new, in good shape, and in the correct dimensions. However, after making certain all was tight, the malfunction persisted. I looked at the rear tab that holds the magazine in the stock. It is located on the rear of the magazine body at the upper part of the magazine. After some thought I elected to experiment with the tab.

I was able to slightly bend this part—perhaps an eighth of an inch—and the result was a tight fit. After this fix the malfunctions abated. In another test of a different Remington 783 rifle I also encountered similar feed problems. However, this time I attempted a different fix because it appeared the cartridges were not releasing early enough. The magazine body was pinched just a little near the bottom of the magazine.

Punching the magazine body with a punch on each side, the feed lips were opened up just a bit, perhaps 1/32

REMINGTON 783 CONTINUED

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It isn't difficult to repair and modify. Sometimes considerable effort is needed to take the magazine apart, but the author hasn't broken a floor plate yet. inch. Then I opened the area carefully and slightly with pliers before testing. I repeated this until after the third try I had good feeding. In another case, I purchased anew Remington 783 magazine and it had the same problem as the original. This seems to be a magazine issue and it is hit and miss.

Just the same, I do not know how many Remington 783 rifles were made in total but the issue doesn't seem to be widespread, but none the less not uncommon. Three rifles in six years is what I have encountered and have heard of more. In other words, not every rifle will suffer but a few will. There is an excellent chance the newest production rifles do not have this defect as the 783s I have worked with were about five years old. However, shooters have also reported the problem as soon as their new rifle was loaded.

So, it doesn't seem to an issue that pops up with wear. The rifle is delivered with the malfunction (if it occurs at all) and when fixed the problem does not repeat. Another 783 malfunction I encountered was that the cartridge would not feed at all and would not rise from the magazine. The solution for that proved simple. Remove the plastic floor plate from the sheet metal magazine and find two plastic tabs. There is one on each side of the bottom of the floor plate, exposed when the floor plate is removed.

Carefully pry these tabs from the magazine box. Sometimes only slide pressure is needed to release these tabs from the metal box magazine. The follower is inside the magazine along with the standard "accor-dion" type magazine spring. The end of the magazine spring lies against the back of the follower. Move the back of the spring up against the rear of the follower below the back where the cartridges rest. Insert a penny between the magazine follower and the magazine spring.

This increases the magazine pressure just to the point where the magazine will now function when properly put together. The penny will work loose with use, so it is wise to use Loctite or Super Glue to keep it in place. Do not allow any over flow or slop from the adhesive to affect spring and follower function. Only a drop applied exactly where the penny is bonded is needed.

Stock/Recoil Pad Fix As for disassembly and smoothing, the rifle doesn't need any trigger work because it features the new Remington Cross Fire adjustable trigger. Five screws hold the action together—two in the stock, one in the trigger guard, and two holding the action and trigger together. The rifle is comprised of ten parts including five screws if the bolt isn't disassembled. The bolt is a cylinder that measures 0.695 inches inside of a 1.355-inch action.

The receiver accepts either Remington 783 scope bases or two Remington 700 front scope bases. Be certain to keep this in mind when mounting a rifle scope. The barrel is fitted to the receiver in the proven Savage 110-type mount with a one-inch nut and 0.185" thick recoil lug. The lug is 1.1 inches wide with a half-inch recess in the stock. The stock features free floating pillars and the barrel is free floating.

While applying epoxy bedding to the rifle may help accuracy, the factory setup has proven quite accurate as issued. It isn't unusual for these rifles to group three Hornady A-Max loads into 1.5 inches or less at 100 yards. The Remington Cross Fire adjustable trigger system is supposed to leave the factory set at 3.5 pounds. A single hex screw in the action aids in adjusting the trigger. I have tested trigger weights as high as 4.5 pounds from the factory.

A lever in the center of the trigger prevents lateral discharge and acts as a safety feature. Adjustment seems to run from 2.5 to 5.0 pounds. No work is

REMINGTON 783 CONTINUED

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Far With a little polish it may be improved. The result is a smoother bolt throw and easier operation. needed on this trigger and no work should be attempted. When it comes to modern package guns, all of them, and especially the Remington 783, benefit from polishing the locking lugs for smother operation. There are several ways to do this, ranging from simple to more complicated depending on how rough the action operates. Some firearms benefit from a bit of grease coating on the bolt's locking lugs.

This grease needs to be wiped away and replenished from time to time as it will accumulate unburned powder. The portion of the bolt head that rides against the horizontal planes of the action sometimes isn't nicely polished and will benefit from a bit of slicking up. Applying grease and working the bolt helps but 1200 grit polishing compound is perhaps the best bet and this hand polish really helps modern mass produced actions.

When I work the bolt in the raceway I do not turn the bolt down to lock the action as when I am chambering a cartridge. The procedure is to polish the slide rails, not to polish the lugs at the rear. This rear lug area establishes headspace and should not be filed or polished. A three step polish is to strip the bolt and apply polishing or lapping compound. Then run the bolt into the bolt raceway until the movement is noticeably smoother.

The bolt locking lug interface may be polished but be certain that the bolt remains squared to the chamber when the action is done. You must strive for smoothness and not to change the angles. Finally, the bolt should be reassembled and the cocking piece cocked and released until it is well broken in and smooth. Mixing a polishing compound with Break-Free CLP works wonders when polishing the bolt and raceways.

The Remington 783 isn't the roughest modern action and generally functions well but there is room for improvement. It is also an accurate rifle typically demonstrating well under two MOA in testing at 100 yards. As such, the rifle is worth a bit of attention to get it up and operating to be all it can be. A Neat Trick Not long ago a customer brought his Remington 783 Youth Model .308 into the shop.

While the length of pull was ideal for his teenage son when purchased, the skinny thirteen year old was nowa taller, lanky sixteen year old. I added a Butler Creek Slip-On Recoil Pad (\$14.99 from Brownells) that was hanging on the wall. This added a total of 2.5 inches to the stock without any further work or adjustment. The folks thought I was pretty smart and the tall drink of water that owned the rifle admitted he did not mind less recoil. All in a day's work. AG

PEOPLE & COMPANIES

Savage 10 BA Stealth Precision Rifle

This rifle in 6.5 Creedmoor delivers 0.5 MOA or better accuracy without breaking the bank. I made a simple modification to help me shoot it better.

BY GLEN CALVERT OCTOBER 2019

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When I decided to buy a reasonably priced precision rifle about two years ago, the Savage 10 BA Stealth and the Ruger Precision Rifle were the two main choices available then. Both had proven to be very accurate in gun test articles, averaging better than 1 MOA. I already had a Savage bolt gun that had impressed me with its accuracy. After handling each and looking closely at their designs and prices (Savage had a \$150 rebate), I chose the Savage.

The Savage is a true chassis rifle where the receiver bolts directly to the billet aluminum chassis. The forend is part of the chassis and

does not touch the barrel or barrel nut. The chassis also contains the magazine well and trigger guard. The buttstock tube (AR buffer tube) screws into the rear of the chassis. The barrel is 24" long with a 0.75" diameter at the muzzle. It has 5R button rifling with 1:8 twist and is fluted. The barrel muzzle is threaded and has a knurled cap.

The bolt is their floating head, two lug design. It has the excellent Accu-Trigger. The buttstock has the typical AR six position adjustable length of pull, an adjustable comb, and a flip down rear plate that gives access to a small storage compartment. There is a

three position safety and the magazine holds ten rounds. The empty rifle (without scope) weighs about 9.5 lb. I broke in the barrel with the "shoot around, clean the barrel, repeat" method.

Scope I needed a scope and finding the right one can be a challenge due to the wide selection that is available. Cost, quality, magnification, first or second focal Far

SAVAGE 10 BA STEALTH PRECISION RIFLE CONTINUED

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plane, etc. are choices to be made. I consider the Savage BA 10 a very good value considering its capability compared to cost. Looking for the same value in a scope, I did my research, checking websites and reading reviews. I found that the Athlon brand offers several scopes with features I wanted at reasonable prices. I purchased the Athlon Optics (AthlonOptics.com, Argos BTR 6-24x50 witch has a 30mm tube and a first focal plane (FFP) illuminated mildot reticle.

I wanted the higher magnification and FFP for future long range shooting. I lapped the scope rings and leveled the scope on the rifle. I really like this scope as it tracks well and has good clarity at higher magnifications. My only complaint is that the power and parallax dials are stiff and take some effort to rotate. Modification I typically use a front and rear bag when shooting on the bench. The Savage buttstock does not have a flat bottom to sit on a bag and angles down to a point.

I considered replacing it with one that does have a flat bottom such as the Luth-AR (Luth-ar.com, MBA Buttstock. I have one of these on a rifle and I think it's one of the best available. These typically are fixed to the buf-

fer tube and the length of pull is adjusted with the butt plate. There are hinge kits available that allow the stock to be folded to the side. This would help with a problem I found when using a bore guide to clean the barrel.

The cleaning rod handle hits the top of the cheekpiece, even in its lowest position, causing the rod to bend and bind slightly, which defeats the purpose of the guide. I thought about removing the cheekpiece each time but found that it is easier to remove the entire stock by pulling down on the adjustment lever so the pin clears the buffer tube. The buffer tube sits nicely on the rear of my cleaning vise and I can clean the barrel without a problem. I decided to keep the Savage stock and modify it.

I added a piece of aluminum flat stock, 0.125" thick and 0.5" wide to give the buttstock a flat bottom and still allow it to be easily removed. I used a piece of wire to try different shapes until I found one I liked. I duplicated it on the aluminum. The Savage buttstock has a vertical slot that looks like it was designed for something similar, like a monopod. I slid the end of the aluminum strip into

the slot past an existing hole (butt plate pivoted out of the way) and marked the hole location on the strip.

I drilled and tapped the strip with 10-32 threads. The screw was installed through the stock into the strip. The front of the strip was slotted to fit over the web of the stock. Another small screw was added through the web to anchor that end of the strip. The added piece is very rigid and the buttstock is much more stable on the rear bag which helps consistency.

My Savage does not have a muzzle brake but doesn't need one because the 6.5 Creedmoor is a mild cartridge and the BA Stealth Precision is a relatively heavy rifle. I'm generally not a fan of muzzle brakes for most rifles. They make a lot of noise and can really blast your neighbors on the firing line. Muzzle brakes, if designed properly, do significantly reduce the recoil on big bore rifles and old military rifles with steel butt plates.

I have a Mosin-Nagant that I could only fire about five shots before my shoulder started to hurt when it was in original form. When I have

SAVAGE 10 BA STEALTH PRECISION RIFLE CONTINUED

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34" group. The first four rounds are within 0.22", last round opened the group to 0.64". sporterized it, I added an AK muzzle brake and a stock with a thin recoil pad. I can shoot it all day now. I had the opportunity to fire a light weight, single shot .50 BMG rifle that did not have a well designed muzzle brake. One shot was enough. Note, Savage is now selling a second generation version called the 10 Stealth Evolution. It has a muzzle brake, atop handguard, and a Magpul PRS buttstock.

Its current MSRP is \$590 higher than the first generation version which is still available. At the Range I started with a few boxes of factory ammo and then reloaded the brass, resizing the neck only. That's one advantage of a bolt gun over an auto-loader. So far, I have tried two types of powder and three types of bullets.

Knowing the bullet seating depth affects accuracy, I measured the length of the cartridge with the bullet touching the rifling and then

compared it to the recommended cartridge overall length (OAL) for each handload. That allowed me to calculate how far the bullet had to travel (jump) before engaging the rifling. Reducing the jump in the most recent test seemed to improve the accuracy slightly.

I learned that measuring cartridge OAL with the tip of the bullet can be less accurate. The accuracy results are listed here. Each pair of data is from the same range session, but the sessions were on different days over several months. This rifle likes the 140 grain ELD-M bullet best so far. I will test other bullets and jump distances in the future. Not surprisingly, I found that I have the largest effect on accuracy.

The smallest groups reflect the capability of the rifle and ammo, the larger groups show the variance due to the shooter. Some days are better than others. Likes and Dislikes I like the solid chassis and that the forend is not the typical AR type. The forend does not permit the support hand to wrap around it

for offhand shooting but this is not an AR. The trigger breaks right at 2.0 pounds which is perfect for me. The rifle shoots well and does not appear to be finicky about the ammo.

As I mentioned earlier, the buttstock is nothing to brag about but it is easily replaced. The magazine is kind of flimsy and the follower sticks occasionally. I disassemble and clean it when that happens. There are better aftermarket mags available. Future Testing I plan on further load development, including a chronograph. The range that I use only goes out to 200 yards currently and there are plans to extend it to 500 or 600 yards. This will allow me to stretch the legs on this rifle and scope.

AG than measuring on the ogive. I bought a comparator to do that and a concentricity tool to measure bullet runout relative to the case. I found that my handloads have a runout of 0.0015" or less, which is within the recommended range of 0.002" to 0.003".

PEOPLE & COMPANIES

Kimber and Colt

BY CHARLIE BRIGGS OCTOBER 2019

ORIGINAL PP. 9-11

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I had a chance to work on and improve two target pistols; one a Kimber converted to handle multiple cartridge types and the other a Colt Woodsman I added an overtravel screw. Here's how I tackled both. Multi-Caliber Kimber 1911 pistols can be built into multicaliber guns. Here's the tooling used to convert a Kimber Team Match 1911 .38 Super to shoot .38 Special and 9mm.

A few minutes study with just a Brownells catalog can be almost depressing when one realizes the huge investment we would have to make to have the entire variety of hand tools and gauges necessary to completely service just a few of the common firearms we might encounter each year; semi-auto pistols, revolvers, ARs and AKs, plus bolt action, pump-operated, and semi-auto shotguns and rifles.

Then, add a few stationary power tools: A lathe requires its own compliment of special tooling, and even more so, a milling machine. Then add in, perhaps, a bead blaster with its associated air compressor, some welding equipment, along with the storage to keep it handy and organized and it really becomes overwhelming. I've been doing this stuff for over 34 years now and I still could use thousands of dollars in additional gunsmithing components!

Far So, probably like many of you, I occasionally team up with another gunsmith whose work I highly respect. Our skills may compliment each other or our tool inventories supplement each other's.

As an example, I was able to help my colleague Mike Diedrich convert his milling machine to variable speed (see my article in the December 2004 issue for related details) and while there at his shop I watched his remarkable transformation of a Kimber Team Match II 1911 pistol originally chambered in .38 Super in to a multi-caliber beauty capable of shooting the far less expensive .38 Special and 9mm rounds. His build was complete with a custom sight rail and cocking serrations.

In American Handgunner, noted gun writer John Taffin talked about the bullet sizes: "I have yet to see a box of bullets marked '.38 Super', however, 'most' 9mm bullets will work. The proper bullet diameter for the .38 Super is 0.356" while the 9mm bullets are normally 0.355", and most .38 Special bullets are 0.357. That is not much difference, however, it does seem to make a difference to some .38 Super barrels.

The only answer is experimenting with each individual .38 Super." Work began on anew customer-provided slide of unknown

manufacture. To hold it solidly in his substantial milling vise, Mike employed the cleverly-designed Yavapai 1911 Auto Slide Jig from Brownells (080-835-002). The jig is shaped so that it can be clamped in a vertical position in the milling vise for flat-topping the slide as desired as well as drilling and tapping for a sight rib or for cutting dovetails.

Then, with the slide still attached, the jig can be rotated 90° and clamped in a horizontal position for milling cocking serrations, and/or work on the ejection port. The jig's internal screws and 1911dimensioned rails securely lock the slide in place. This particular project required starting with milling cocking serrations. Given the stability assured by the Slide Jig, the job probably took no longer to do the actual machining than it did to set up the slide and jig in the mill vice horizontally.

Next, with the slide still clamped to the jig, the pair was re-clamped vertically in the milling vice and holes were drilled and tapped for an Aristocrat sight rib (Brownells 044-000-024WB). The rib adds a little to the slide's sight radius, is adjustable for both

KIMBER AND COLT CONTINUED

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More machine work on the slide would come later. Next, Mike directed his attention to the new customer supplied barrel. Using a 1911 Lug Fitting Kit (Brownells 080-000-089WB). The rod-shaped Barrel Holder uses a set screw to lock the barrel in the slide to allow cutting the barrel lugs with the carbide cutter in the crank-shaped part of the kit. The Slide Pusher part of the kit (with the screwdriver-looking handle) holds the slide forward against the barrel, while the crank is turned to cut the lugs.

Then, using Dykem marking fluid and small pieces of modeling clay squished between the barrel and the slide, determine where the interference spots on the barrel lugs are. File these parts of the barrel very carefully to eliminate these spots. As I often remind customers who ask about the hours involved in fitting parts, "it's a lot easier taking metal off than it is to put it back." Now to the frame.

Mike used the Everglades Ammo 1911 Frame Rail Stoning Tool (Brownells 100-015-690WB) which, using the included 320 grit stone, fits the frame rails to the slide close to the final dimensions. 800 grit

lapping compound between the slide rails and the slide completes this part of the project.

Final machine work on the slide required milling a two degree slope on the underside to accommodate a taller disconnecter, then again using the Slide Jig, lowering and flaring the ejection port; an absolute necessity, considering the additional cartridge length of the .38 Special. Lastly, all the parts were cleaned again with brake cleaner, then warmed to about 100° F, and sprayed lightly but evenly with, you guessed it, Brownells Gun-Kote (083-051-002WB).

Both Mike and I have had excellent results with this ultra-thin, self lubricating epoxy finish. It contains molybdenum disulfide and each layer is only 0.0004" thick so it does not cause problems with close-tolerance surfaces. It's tough, too. Brownells says the only way to remove it is to abrasive blast the parts! After drying, the newly-coated parts were baked at 325°F for one hour, then reassembled and test fired. Results? The customer reported no problems feeding or extracting and accuracy is excellent!

As aside note to readers, I have featured Brownells tooling and components here because, well, they have the tooling and components, but I was in no way compensated by them. However, they did graciously assist me in creating the illustrations incorporated in this article, for which I thank them sincerely. Obviously, what skills I may have once had as a draftsman have long since evaporated!

For further information, see Mike's website, Mike Diedrich Gunsmithing, LLC (Fix-MyGuns.com, or contact me directly at Colt Trigger Overtravel Now let's switch over to installing an overtravel stop on a Colt .22 target pistol. Two of my favorite sources detailing Colt target pistols are the comprehensive The Gun Digest Book of Automatic Pistols Assembly/Disassembly by Kevin Muramatsu and the previously published The Gun Digest Book of Firearms Assembly/Disassembly Part I—Automatic Pistols by J. B. Wood.

BOTH EXPLAIN THAT THE COLT MATCH TARGET AND THE COLT WOODS-



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man Target were all derived from the Colt Woodsman, originally created in 1915. In 1927, the Woodsman name was officially adopted by Colt. The original Woodsman was made in Sport and Target versions while later production used the names Huntsman, Challenger, and Targetsman.

The subject of this article is the latter, however, most, if not all of the work discussed here will be applicable to other makes and models, providing additional improvements to customers' guns, and of course, additional profits for the gunsmith. Begin by detail stripping the pistol for access to the area behind the trigger. Once done, a hole for the new overtravel stop has to be drilled and tapped through the frame from within.

A small flat for starting the hole can be machined using a small end mill in a Dremel tool. In this particular case, a 1911-style overtravel screw in the trigger would not be possible as the Colt's trigger doesn't have enough meat in it to tolerate an overtravel screw itself. Instead, drill and tap from inside the frame. A small end mill in a Dremel works well to get started. Note, the optic rail shown here had been added previously.

Once creating a small hole in the frame with the Dremel's small end mill, tap for a small bit of threaded stock. After screwing in, the installed, adjustable overtravel screw is visible just behind the trigger and just left of the magazine release. There was a concern that a necessarily-small hex head option might "round out" before actual trigger travel had been established. My colleague Mike Dietrich's steady hand used a Dremel cut-off blade to cut a screw slot in the threaded stock for adjusting it.

Once adjusted so the trigger pull stopped just after reset, the screw was secured using Loctite. I enlisted Mike's help as my older and less steady hands would have required the use of a milling machine with a slitting blade to cut the screwdriver slot. With some small variations, either book's instructions for the disassembly and reassembly will apply. One other thought: When inserting the magazine catch and sear spring, be sure the upper tip rests on the sear, with the hammer strut behind it.

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MAINTENANCE & REPAIR

Gauging and Services

The U. S. Army gauges and services weapons annually to ensure that they are fully mission capable (FMC) at any given time.

BY STEPHANIE A. MARTZ OCTOBER 2019

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Recently, someone asked me why Small Arms Repair Technicians service weapons. I answered with a laundry list of reasons. The first reason that always comes to mind, due to being in the military, is safety. Gauging is the main way to ensure that no dangerous issues are seen. Then came the main reason, and the one that gets me up in the morning each day to go to work. That reason is to keep that weapon fully mission capable, or in my terms, keep it functioning to the best of its ability.

In doing that we are not only helping the weapon but the Soldier. Before I continue, in case you're wondering: Yes, the Army spelled this as "gaging" and "gages" since forever ago, however, the recently published M16/M4 Unit and Direct Support Maintenance Manual (Army Technical Manual 9-1005-319-23&P) has since changed the spelling to "gauging" and "gauges." Annual gauging is done to pre-

vent catastrophic failures. This is your usual headspace, barrel erosion, barrel straightness, and other gauges.

There are two tolerances that we look at for most gauges and that is the warning and reject specifications. If a weapon passes the warning line but does not pass the reject, that weapon is good to train with in the States but not to deploy. If it fails both the warning and reject, it is immediately deadlined and cannot be fired until repaired. While gauging is as simple as putting an object into another object, specifications can change a lot due to type of equipment and ammunition.

For instance, M240-series machine guns have different gas port erosion gauges depending on if it's a short or long barrel. Also, the Army has adopted the new ammunition M855A1. With new ammunition comes new wear limits. As with anything, it's important to stay on top of information when dealing with a strict entity such as

the military. Services are where a well experienced firearms maintainer makes their money. Within the Army there are two manuals used to go over inspections on weapons.

There is a -10 and a -23&P. The -10 is the Operator's Manual, meaning that the operator of the weapon has access to the manual and should be inspecting according to that manual's inspection list before and after putting the equipment into operation. The -23&P is the Unit and Direct Support Maintenance Manual, directing the higher echelons of maintenance and includes National Stock Numbers (NSNs) for parts.

The -10 Operator's Manual is a very short, basic inspection that hits some of the more common deficiencies found on that type of weapon. The -23&P Unit and Direct Support Maintenance Manual goes much more in depth. While going step by step from Far



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M4/M16 Bore Erosion, M4/M16 Barrel Straightness, M2A1 Firing Pin Hole, M2A1 Oil Buffer Rod, M2A1 Headspace, M2A1 Master Headspace, M4/M16 Firing Pin Hole, M4/M16 Firing Pin Protrusion, M4/M16 Headspace, M240 Firing Pin Protrusion, M240 Headspace, M2A1 Firing Pin Protrusion, M240 Bore Erosion, M240 Throat and Muzzle Erosion, Trigger Pull, M249 Barrel Erosion, M249 Headspace, Spring Lengths and Specs Tool, Mk-19 Bore Constriction, M2A1 Bore and Throat Erosion, M249 Firing Pin Protrusion. 56 ruptured cartridge removed with a 7.62 Ruptured Cartridge Extractor Tool from a M249 barrel during a gauging and services trip.

The Headspace Gauge failing to seat inside the barrel is a clear indicator of a ruptured cartridge. a manual is nice, it will never replace someone with experience and knowledge to see the little but important things or things outside the maintenance scope. Knowledge on maintenance is important, however, knowledge on how the operator is employing that weapon is just as important. For instance, often we will have optics and accessories mounted on the weapons when we are gauging and servicing.

Ultimately our end goal is to give that customer, or Soldier, the best product and experience we can while still making sure that they are falling in line with Army guidance and treating the weapon properly. Part of delivering that product and experience is working with them and their attachments. We often make sure that an attachment is mounted properly and to note where it is mounted if we have to remove or not remove it.

One example, many Soldiers will tie down their M68 Close Combat Optic (CCO) with para-cord and wrap it under the gas tube. As the weapon gets hot the gas tube heats up, melting the cord. So now you not only have to replace the gas tube due to damage but will probably have to retie down the optic as well. Also seen with the CCO, if mounted on the M4 we will see CCO mounts without the correct spacer on the mount.

While that is not necessarily our maintenance area, it is part of the weapon system and due to our knowledge and experience we are able to help the Soldier out with Far

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Soldiers often remove the castle nuts and endplates to install their own endplate with a quick detach mount. The wear on the castle nut spanner spacings is an indicator that a Soldier may have removed the nut with their own wrench. The whole system including accessories, mounting systems, etc. Providing the higher-than-operator level inspections each year is so important.

Being able to get eyes on every weapon within the state each year shows us where we may need to focus on outputting more information or where we can feel comfortable and confident with certain units. Not only that, servicing the weapon each year actually helps the government save money and time. Think about this in civilian terms. Just like a car, guns have a preventative maintenance schedule.

Glocks, for instance, have suggested round counts for replacement of each individual piece to ensure zero catastrophic failures. This can be due to wear, bending, or cracking. The Army doesn't necessarily keep those round counts so we are there to inspect and replace when we see those same issues arise from wear, bending, and cracking. If we replace these parts before catastrophic failure or before apart affects another it can save us money on ordering parts and time on working on the weapon.

As I stated in my previous article, we have seen a massive positive correlation between annual inspections and a lower amount of deficiencies found in the years after. To give you an idea how this works, I'll use a Colt-manufactured M4 with Knight's Armament

Company M4 Rail Adapter System, B5 SOPMOD stock, and Ma Te c h Back-Up Iron Sight as an example with a maintenance and functioning checklist that allows operators to fully inspect their weapon while not disassembling anything beyond -10 (operator) level.

Clear the weapon using proper safety procedures. Inspect the externals of the weapon from front to rear. On the upper receiver assembly, start with the compensator. Twist it for movement as it should not move. Verify the three ports of the compensator are on top and centered. With the front sight base, inspect it for any bends or wear. Twist for movement, it should not move. With the barrel, inspect the inside for abnormal obstructions. Twist for movement, it should not move.

With the Rail Adapter System, inspect for burrs and cracking. Verify the screw and retaining clip are installed. On the upper receiver, function the ejection port cover for proper opening and closing. Verify the retaining clip is installed on the ejection port rod. The sight needs to be verified that it is tight and in the correct slot on the rail. Function the aperture for proper tension and the windage and elevation knobs, listening for clicks and seeing movement.

With the lower receiver assembly, verify the end plate is installed and staked to the castle nut. Twist the castle nut for movement, it should not move. Function the buttstock for movement and retention. Inspect it for cracks, verifying the sling swivel is installed. Twisting the sling swivel should not move.

Field strip the weapon. With the bolt carrier group verify gas tube alignment and that the forward assistance functions the carrier.

Verify the extractor spring and buffer are present in the bolt and not bent or broken. Inspect the bolt's locking lugs for cracks or breaks and the firing pin tip for breaks. Check that the gas rings are present and perform a gas ring wear test. Inspect the bolt for pitting, wear, and abnormal obstructions. Function the ejector with a punch, verifying movement and that no crunching noises are heard, and that the ejector is flush with rim of bolt. With the carrier, inspect for wear, cracks, and pitting.

Check the carrier key for proper staking and inspect for dents. Pull on the carrier key, it should not move. Inspect the firing pin retaining pin for wear and bends. Check the visible internal structures of fire control group, looking for wear. Verify the springs in the lower receiver are installed correctly. Inspect the recoil spring for bends or damage and that it is of proper length. Reassemble. Lubricate all lubrication holes and perform a proper function check including with an empty magazine.

The main gauging checks performed by a Tech include headspace, firing pin protrusion, firing pin hole, barrel erosion, barrel straightness, receiver pin holes, and trigger pull weight. None of this detail will surprise a working gunsmith but a Tech's job is to make sure Soldier's weapons are receiving the preventative maintenance they need to be reliable for training and combat. AG

RIFLES

Keeping Garands Running

How to keep America's classic battle rifle running well.

BY ROBERT K. CAMPBELL OCTOBER 2019

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Then Lieutenant General George S. Patton Jr. said of the U. S. Rifle, Caliber .30, M1 (more fondly known as the Garand after its designer) in a January 26, 1945 letter to Major General Levin Campbell, Chief of Ordnance at the War Department, "In my opinion, the M-1 Rifle is the greatest battle implement ever devised." I agree, there was nothing to compare with the Garand manufactured during the course of World War Two. Today, the rifles are sometimes worn and in need of parts replacement.

M1s are often accurate and accurizing is a concern, but there are basic considerations that need to be covered before we worry about that. If the rifle isn't functioning correctly, a hand loading program isn't going to help. Most Garand rifles are over sixty years old, notwithstanding the new production Springfield M1 rifles that are basically identical. Some Garands in circulation are made of combinations of new and older parts in "kits" used to put the rifle together. As such, performance may vary.

It is generally agreed that later model production, from the Korean War forward, is the most desirable and consistent as a shooter. Just the same, even rifles from the end of that production run and other rifles such as the Beretta versions—all of which were nice peacetime rifles—are getting pretty old. Some are tired and in need of replacement parts and there is always the possibility of a rifle put together with less than first quality parts.

Even though the new production Springfield M1 is a fine rifle, high round count versions just may give the same problems as older Garands. There is nothing wrong with the Springfield, but some of us prefer deploying steel and walnut with a little history. Whichever rifle you choose, Garands are firearms we all like to shoot and shoot a lot. Many shooters desire to own and shoot them but don't always know what to look for in used rifles and after picking up an example at the gun show they may be disappointed.

I hope this report is a help in servicing a fine old rifle, as the information may have been lost save for the resurgence of popu-

larity of the old warhorse. I have done considerable research, and I have to admit I enjoyed it a great deal. Plus, I know how to keep my modest battery of Garand rifles operating and any others that I am called upon to service, examine, or modify. We will now go straight to the problem areas of the Garand, including how to detail strip one and handle shooting problems.

As is common with many firearms, there are several possible causes for each malfunction and a single rifle may have several faults. Disassembly Clear the rifle and be certain it is not loaded. Remove the sling. Pull the trigger guard down until it clicks and locks open. A small pry bar of some type is often needed to nudge the trigger assembly out. The trigger assembly is then pulled out and down from the rifle. Pivot the barreled action up and out of the stock.

Little effort is needed but some stocks are tighter than others. Press the follower rod forward and unhook it along with the action spring. The forks easily

KEEPING GARANDS RUNNING CONTINUED

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come free. Note how the operating arm and other parts hook and fit together. A pin is removed as is the inner guide; be certain to remember how it fits. The bullet guide sets in notches in the receiver. Remove it toward the receiver along with the follower arm. Remove the follower assembly. Push the operating rod toward a notch in the receiver, allowing a tab to clear the receiver channel. Pull the operating rod from the gas cylinder. Rotate the bolt to clear the receiver.

The clip latch isn't difficult to remove, however, be careful not to bend it. The clip latch pin is removed by depressing the clip latch with the thumb to remove the pin. The assembly is then freed from the receiver. The stock will keep this assembly in place when you are firing so it isn't difficult to remove. A gas wrench is helpful when removing the gas cylinder from the gas plug. Too much force on the cylinder will affect barrel splines. This is all that is needed for normal assembly.

Loading Procedure Garands demand proper ammunition be used. Handloaders know medium burning powder works fine and attempts to hot rod the Garand results in a bent operating rod. Slow burning powder cannot be used. At present, the best factory ammunition is Hornady Match (#81170) using the 168 grain A Max bullet and specified for use in the M1 Garand. Using ammunition that is too lightly loaded will result in a short cycle while ammunition that is too hot will damage the rifle.

It is critical to learn the proper procedure for the Garand with en bloc clips. These are true clips, although most folks persist in calling magazines "clips" as well. Since many Garand shooters were never exposed to the procedure taught when it was issued, a primer is sometimes needed to prevent bent parts. Begin with the bolt locked to the rear. Holding a filled en bloc clip between thumb and forefinger, move to the bolt.

As the hand lines the clip up with the slots in the receiver, the thumb presses down as the back of the hand nudges the bolt back. The clip locks in place just as the back of the hand nudges the bolt to the rear, releasing the bolt to fly forward and load the rifle. Without this proper sequence, internal parts related to the magazine may be damaged. Clip Ejector It is not unknown for a clip ejector to have a sharp point, sometimes from the arsenal and sometimes from honest wear.

The ejector may not allow the clip to be fully depressed into the magazine if the ejector is too sharp and its tip may be filed or ground if needed. More frequently, debris in the magazine causes problems. A few words on function. The clip latch moves the operating rod out of engagement as the rifle is loaded. If the rifle doesn't load properly something is wrong in the loading apparatus. The operating rod catch may be sticking. There are hooks on this catch that must

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be examined for breakage. A new part is the only answer. As for ejection difficulties, there are several possible causes. A rough chamber is always a possibility. For several reasons the M1 chamber is more prone to corrosion than a bolt action rifle. Camming action in loading is not as strong with an automatic as with a bolt action rifle. A copper brush and a liberal dose of Shooter's Choice MC-7 Bore Cleaner may be used to clean the chamber. Another tip for proper function is to polish the bolt.

The bolt may be polished on the rear with a polishing cloth. The forward bolt lugs may be stoned for function and ejection. Extractors should also be checked at this point. Extractors are usually trouble free in the M1 but things happen with the best of rifles. Trigger Action There are obvious problems

with the Garand hammer. When the hammer will not stay cocked, the hammer hooks are probably broken. The only recourse is replacement. As for trigger action, there is a means of working the action to an extent.

When the rifle is cocked, the hammer hooks to be filed are those toward the front of the engagement. These forward hooks may be filed with a needle file until they are smooth. We are actually reducing engagement so take care. Do not change the angle but only make the hooks smoother for a lighter release. Gas System Wartime Garands had more than one gas cylinder design, but they all work basically the same.

Potassium chlorate priming compounds used in military .30-06 Springfield ammunition along with environmental issues often caused

corrosion. The Pacific theaters were particularly harsh. When this corrosion attacked the gas cylinder, the result was often short cycles as corrosion allowed excess gas to flow past an eroded gas piston. The result was less energy to operate the rifle. There were several stop gaps used during the war, which are more or less field expedients.

One was to cut perhaps 3/8" at a time off the operating rod spring to allow more exuberant recoil and a greater likelihood of function with less gas pressure. This kept warworn Garands in action. Given in 1942-43 that many M1903 rifles remained in use while Garands were relatively scarce, scrapping one for malfunctions wasn't an option.

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Another fix often used in wartime—and I admit no experience with this one—was to clean up the corroded piston, weld up the front, then polish to 0.527 diameter. This was an expedient when spare parts were not available near the front line. If done properly there is no reason it would not work. With the availability of good quality parts from Amherst Depot (Amherst-Depot.com, and others, such work is no longer necessary. The gas piston should be 0.527 in diameter and the cylinder 0.5320 in inside diameter.

An oversize gas cylinder may occasionally be encountered, a situation that causes the same problem as a corroded piston. Gas runs around the oversize cylinder and gas pressure is lost. The only thing to be done is to change the gas piston and/or cylinder. Note, minimum tolerance between the gas piston and

cylinder is 0.005. Do not attempt a tighter fit! There must be a certain amount of blow by or the action will cycle too vigorously.

Short cycles are far more common but a too-tight piston and cylinder may batter the rifle. A similar battering problem can come from overly hot handloads. A bent ammunition follower is another cause of malfunctions. A common cause of a bent follower is an attempt to jam the filled en bloc clip into the magazine; it must be carefully lined up. Bent followers should be replaced, however, I have enjoyed some success by carefully straightening the follower with a pair of needle nose pliers.

A sure tip off of a bent follower is ejecting the clip on the seventh round when using standard eight-round en bloc clips, leaving a single cartridge in the ejected en bloc clip.

The follower guide may sometimes stick, causing malfunctions. A thorough cleaning and lubrication may help. If the cleaning and lubrication is not successful in restoring function the part may simply be replaced. Other malfunctions may occur because of a dirty gas piston but don't use gun oil or just any cleaner.

Gas pistons must be thoroughly cleaned with bore cleaner as well as the gas cylinder. Inspect before reassembling. A step often overlooked is drying the gas piston after cleaning. Leaving the parts wet with lubricant may cause short cycles. Proper lubrication of the Garand is essential but the gas piston runs dry. Regarding proper lubrication, certain procedure must be followed or the rifle simply will not function. Areas of interest include

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the locking lugs on the bolt, rear of the bolt, and the cocking lug recess that lies in the operating handle. A light oil film will suffice to keep these parts moving properly. This is the baseline for function. Another cause of malfunction is dirt, brass shavings, varnished lubricant, and similar corruption entering and becoming encased in the locking recesses of the receiver. This foreign matter prevents the bolt's proper action. Clearing and cleaning is the proper cure for this problem.

The gas port may be cleaned after removing the gas cylinder. There is an old Army method of cleaning the gas port that sounds a bit rough at first but old timers swear by it. This procedure must be performed at the firing range and done while observing all safety rules. With hearing and eye protection in place, check the rifle is unloaded. Lock the bolt to the rear. With a fully assembled rifle, put two to three drops of oil in the muzzle and allow to seep down over the rifling and past the gas port.

Load and fire twice. The oil is forced through the gas port and cleans the port. Clear the rifle and lock the bolt to the rear. Check the

cylinder, swab the oil out, and repeat if necessary. This field expedient seems to work well enough, however, it may not be the best way to clean the port. When cleaning, take care not to enlarge the gas port. The normal dimension is 0.0805. If the port were to be enlarged, the action of the rifle would be adversely affected.

Remember, rearward action, the cocking stroke, is controlled by gas pressure. Accidentally enlarging the port would result in accelerated action and battering. You may even damage the rifling if you clean too aggressively. I mention this because power drills and all manner of improper tools have been used to clean the gas port. I am sure the idea seemed good at the time... Finally, do not neglect gasp is ton alignment. If dropped, the piston may be damaged.

If out of alignment, proper gas seal is not possible even if all parts are in specification. Moving to the bolt, the ejector must lay flush across the face of the bolt until the cartridge has been fired. An ejector that is too long or that is blocked by debris may cause feeding problems. A sure sign of a too-long ejector is

the point of the bullet nose contacting the area at the top of the chamber during cycling rather than cycling into the chamber properly. The first round must feed freely into the chamber.

Check first for debris, congealed powder, and other sticky things under the ejector that prevent proper function. Replace the ejector if needed. Variations The Tanker Garand did not actually exist save for a few prototypes, none of which seem to have survived. This is a shortened Garand that seems to have much appeal among shooters. The same concerns apply. The rifle will function normally with standard gas tubes. Regular lubrication is all that is needed and the piece, if properly set up, will work well.

The Garand is a rugged, reliable, and worthwhile rifle. But like any machine it will wear with hard use. Whenever I bring this rifle to my shoulder I respect the history of it and the men who used it. When I place one on the bench, it is with genuine affection I attempt to cure its ills. I feel that it is an honor to keep such an old warhorse healthy and running! AG

PEOPLE & COMPANIES

Hogue Over Molded Stock

A hard look at Hogue's rifle stocks molded from durable synthetic rubber. Are they a viable improvement?

BY ROBERT K. CAMPBELL OCTOBER 2019

ORIGINAL PP. 20-21

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Original caption: Top: The original Ruger M77 Mk II with wood stock was serviceable but could stand improvement. The stocks have proven rugged in hard use. They do not scratch easily. The stock has a soft feel and offers a good firing grip.

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A decade ago Hogue (HogueInc.com, 800/GET-GRIP), a noted maker of custom wood, rubber, and synthetic grips and other firearm accessories, introduced a line of rifle stocks. They are most famously available for the Ruger 10/22 and enjoy a wide range of models for bolt action rifles as well. Claims are made that the stocks

increase accuracy while decreasing recoil. Let's take a look. The stocks feature a full-length CNC machined bedding block of aluminum construction. It is basically built-in pillar bedding.

The rubberized stock is comfortable, and while not heavy, they have a solid feel. My opinion is these stocks are superior to com-

mon hollow stocks. The Hogue Over Molded does not rattle and does not have a hollow sound. The finish is nice and even.

The Over Molded stock seems immune to cleaning solvents and lubricating oils.

HOGUE OVER MOLDED STOCK CONTINUED

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The Hogue Over Molded stock makes it a dream come true. After installing quite a few Hogue Over Molded stocks I find that the majority are free floated without any type of difficulty. Occasionally, as might be expected of mass-produced items, some trimming around the action or the magazine box has been required. It is difficult to say if the stock itself or the rifle's dimensions were off. The loading block is cleanly machined from high-quality aluminum. There is no play or loose motion.

The stock has no flex or wobble before or after mounting. The aluminum block is properly positioned to be certain there is no contact between the barrel and stock making it a true free floating stock. The Hogue Over Molded is more complex than it first appears. The stock is rubber on the outside but the actual chassis is fiberglass. The rubber and fiberglass are chemically bonded and rigidly mated together. Installation First, be certain the rifle is unloaded and then be certain that the rifle is unloaded.

Before proceeding—and this will save a lot of sweat and perhaps a thrown invective or two—is to be certain you know how many

stock screws there are. Some of you old hands will laugh but it pays to check. In this instance I was working with a Ruger M77 Mk II long action in 7mm Remington Magnum. The trigger guard featured a bolt in the front and the rear of the trigger guard that needed to be removed and placed in order on the work bench, one behind the other, as installed.

Next was a stock bolt screw in the front of the magazine floor plate assembly set in the stock at an angle. Ruger contends this angled arrangement makes for added tension and aids in providing a solid base for the stock lug. It seems to work as designed. This bolt is usually very tight in the original stock and requires considerable effort to break loose. The trigger guard is lifted out of the stock. Next, the magazine base plate assembly is lifted out. The barreled action is removed by tugging from the stock.

The magazine body itself rides freely on the bottom of the action. Be certain you understand how it fits to the bottom of the action as it usually falls off the action. It is straightforward the way it slips on. When the barreled action is returned to the stock be cer-

tain the magazine sleeve rides properly on the bottom of the receiver. The action should be snug and tight in the Hogue stock. Tighten the trigger guard.

I usually tighten one screw almost to full tightness, then snug the other up, and alternate until both are at full tightness. The magazine floor plate is placed into the stock. Remember the stock screw is inverted under the muzzle end wedge of the magazine floor plate. This screw is tightened last. The final step is to snap the magazine floor plate shut. Then grasp the barrel and wiggle the action. There should be no play.

As for accuracy improvement, this rifle had been fired extensively before adding the Hogue Over Molded stock. The accuracy load had been the Black Hills Ammunition 154 grain Hornady SST load. Average accuracy for three round 100-yard groups was 1.6 inches. After fitting the Hogue Over Molded stock the fit and handling was deemed superior. Firing off of the bench rest for

PEOPLE & COMPANIES

Reader Forum

BY AMERICAN GUNSMITH EDITORS OCTOBER 2019

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Special Considerations The Hogue Over Molded stock is available for Ruger 10/22 heavy barrel rifles. Since the barrel is so heavy it will benefit from pressure bedding. Hogue offers the Over Molded 10/22 stock with two contact areas that accomplish this. The first step is to install the stock with the action nearly as tight as possible. The barrel will be free floating at this point, probably not pressured bedded. If you need less pressure then file these contact areas.

If you need more, you may need to shim up the stock to have more contact. AG h. *Fitting the barrel bushing i. Fitting Extractor j. Fitting firing pin & pink. Shaping

and tuning Extractor l. Fitting Slide Lock m. Fitting Fire control components/ Magazine Catch i. Trigger ii. Sear iii. Disconnect iv. Hammer n. Fire control components o. Fitting Grip Safety p. Blending Grip Safety and slide q. Fitting sights r. Fitting Grips s. Slide and frame blending t. Test firing Tactical Mistake?

I read "Hunting Tactical Rifle Stock" by RK Campbell (May 2019) and wondered why anyone would do that. I realize beauty is in the eye of the beholder, and I'm admittedly old school and don't care for the look or

READER FORUM CONTINUED

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feel of plastic guns. More than that, does the tactical style offer any advantage in the field? Given all the bad press military/assault look-alike weapons get, I would be inclined to go the other way and retrofit AR-15s with a traditional wood stock so it doesn't look "evil." Does anyone offer such a conversion? Like it or not, at least one court has ruled that a gun's appearance is more dangerous than its function: bit.ly/2WxOs8s Neal Matheson From author RK Campbell.

As for politically correct rifles, I'll let those better skilled than I delve into politics. I do not go in the face of anyone just because I can, but neither do I let PC rule my selection of firearms. I think the rock-solid Marlin 60 is pretty low on the list of anti-gunners. As for the high quality stock I tested in that article, trying it once will reveal the ergonomics are better than the original wooden stock.

The commonality with the ubiquitous AR-15 is nice as well (For AR-15 wood stocks, see "Wood- Stocked AR-15s", August 2018— Ed.) The Hunting Tactical stock puts the Marlin 60 on an even footing with the Ruger 10/22 with its huge aftermarket selection. I am all for innovation and diversity in the firearms field and this is a good example. And, brother, the Second Amendment ain't about hunting and target shooting! Parker Shotgun ID I need some help identifying a shotgun.

The owner thinks it is a Parker but I'm not so sure. Any help would be appreciated. Bob Lowery Author Paul Mazan responds. Parker shotguns had earned such a reputation for quality that a number of makers started putting variations of the Parker name on their shotguns. This pictured gun is a prime example of one of those guns. There are several clues that tell us this is not an original Parker shotgun. The first is the back action locks. I have never seen or even heard of a genuine Parker with back action locks.

The second is the "I. Parker" name on the left lock. Parker shotguns were all marked on both sides of the receiver. The third clue is the buttplate as Parker never used the one shown on this gun. Parker shotguns had either a plain black plate with horizontal lines, or with a dog's head carrying a bird, or a steel skeleton plate. The only exception would be on a special order gun that the customer requested a recoil pad. Parker used only the pad that had Hawkins in raised letters on it.

The last and definitive clue are the markings under the left barrel. The top stamp that looks like a fancy EL is a provisional Belgian black powder proof. The Eover LG over a star in an oval is the final black powder proof from the Liège-Belgium proof house. This tells us that the barrels were made and proofed in Belgium—most likely by Henri Pieper who marked his guns with several variations of the Parker name. Parker Brothers in

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Connecticut made all their own parts in house including the barrels. It was of controlling the quality of their guns. All these clues including the Parker practice of marking the barrel rib just forward of the breech with the type of steel are definitive proof that this gun was made in Belgium and not by Parker Brothers. I wish I could tell you that your customer had found the Holy Grail of Parker shotguns but the truth is he has a Belgian-made knock off.

All the information I have on the Belgian-made guns says that they should not be shot with any load including black powder and puts their value at \$100-\$300 dollars for anyone that would like something to hang over the fireplace. I am currently restoring a Parker and have another on the way that also needs restoration. This will give me three original Parkers.

A Trojan (the least expensive shotgun they made and representing 45% of all the Parkers), a VH (the next one up in the line), and a GH (a couple of grades higher.) Every Parker was hand made. The parts were forged in house and hand fitted to each gun. For all practical purposes there is no interchangeability of parts Stock Crack A customer brought in a Stoeger Coach Gun chambered in 12 gauge that keeps cracking and breaking at the same place even after replacing with anew stock.

The stock cracks on the top right side next to the receiver and has done so with the original stock and two stock replacements.

It breaks in the same spot every time. As you can imagine, my customer is frustrated by the costly fixes. He is using this shotgun for Single Action Shooting Society competition. Any idea as to the cause? Recommendations for a permanent fix? As designed, the stock is thin at that spot and can not be readily repaired. From Sergey Lyalko.

Most probably the customer fell on the gun holding it in the hand. I had such a case. The best solution would be to migrate to a fiberglass stock. However, if the wooden stock is required, then glass bedding the action is a really good reinforcement of the inlet area. From Shawn Mc Williams. It's difficult to tell but it's probably a stress riser. Looking at the fitment of the receiver, there will be a point right where the crack starts where the metal is proud.

It could be the stock but not likely given multiple failures. All that's needed is the slightest uneven area where the recoil load is focused. This frequently happens at a radius (curve). The only way to fix it is to take a file and clean that proud edge to make it nest evenly on the metal, the stock, or both. The worst thing would be is if Stoeger simply did a suck job designing that interface where the two pieces meet. Given that Stoeger is not the benchmark for world class gunmaking that may be the case.

If your customer reloads I would encourage going to a to reduce recoil energy. Cowboy Action matches don't need anything heavier. Another thing would be using lightweight fiberglass cloth such as used for remote aircraft to epoxy inside the stock to add strength and keep cracks from propagating. From Ray Ordorica. Without seeing the insides, all I can say is there is either a problem with inletting (too much wood removed) or insufficient metal surface of the action in contact with the wood.

Either is a lousy design. I have owned and shot many boxlock guns that are 100-150 years old and most of them have been fired a great number of times. None had problems with stock splitting. Most were of English make. Power ranged from 20-gauge to 12-bore and .470 Nitro full-power double rifles. Ken Rice Your options are to either add wood or steel to the back of the action... somehow. Glass bedding might help but not if the gun's design is wedging the stock apart. From RK Campbell.

There is an outside chance the barrels are slightly canted the wrong direction, transferring recoil in an off-standard curve. I would examine the receiver closely and see if there is a burr or something butting out from the receiver. If the old stock can be repaired—depending on how bad. I would sand across the spot on the receiver that matches the crack line and also relieve the stock a bit. AG

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