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INSIDE THE ARCHIVE

CHECKERING GUNSTOCKS

VEDDER LIGHT TUCK IWB • M1 CARBINE • WINCHESTER MODEL 67A • THE DISTRESSED FINISH

ORIGINAL METHODS. MODERN ACCESS.

ARCHIVE EDITION 165

DIGITAL ARCHIVE EDITION

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PISTOLS

Vedder Light Tuck IWB

BY AMERICAN GUNSMITH EDITORS SEPTEMBER 2017

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Self defense is an increasingly popular reason for gun ownership. With some legal provision for concealed carry in every State, having the effective means of carrying is an important part of the process. Vedder's Light Tuck IWB is a kydex holster providing a sound option. Weighing in at 2.8 ounces without the clip for full-size handguns such as the Beretta 92, this adjustable Kydex holster adds minimal weight and bulk to a carry gun.

Formed of a reinforced 0.080" Kydex shell for strength, the holster body is sleek and keeps placement consistent, allowing for a repeatable draw and easy re-holstering. A full sweat shield minimizes the amount of contact between the gun and the body, keeping the slide sweat free and improving comfort. Full sight channels accommodate all standard sights and loaded chamber indicators. Custom options are available at no additional charge for a modified setup or larger aftermarket sights.

The holster body can be adjusted for retention, increasing or decreasing the amount of force needed to clear the handgun as desired. Vedder uses an adjustable spring steel clip for securing to the belt. In addition to being a tuckable design (the shirt or other concealing garment can tuck over the holster and pistol and inside the belt/waistband, if desired) a steel clip is thinner than plastic clips of sufficient strength would be.

This adds minimal bulk and leaves virtually no print at the beltline for more discreet carry. The holster is adjustable for ride height, featuring three levels of adjustment, allowing users to choose how they carry it, from high above the belt line to down further and deeper inside. Cant can be adjusted to about 30 degrees forward and back, making the holster usable in a number of useful carry positions, including appendix carry, crossdraw, or a more standard 3-5 o'clock position.

Vedder holsters come standard in black kydex but are offered in 75 colors and patterns for a large variety of gun models for right and left handed shooters. The units come standard with two different sized clips to accommodate standard belts up to 1.5" or larger gun belts up to 1.75". The company offers a 30 day risk-free trial, allowing purchasers to return for a refund of the holster price if dissatisfied, and a lifetime warranty thereafter.

Vedder's complete line is available online at VedderHolsters.com or by calling

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RIFLES

M1 Carbine

An overview of the iconic United States military issue Personal Defense Weapon of World War Two.

BY ROBERT K. CAMPBELL SEPTEMBER 2017

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If there has ever been a tribute to American manufacturing ability it is the United States Carbine, Caliber .30, M1. Over six and one half million M1 Carbines were manufactured. By and large, they are reliable and trouble free. The single most common complaint was poor wound potential, but this occurred when the rifle was pushed beyond its role as a Personal Defense Weapon. It isn't a 200 yard rifle, it is a PDW, even though the term was not yet coined in 1942 when the Carbine entered service.

The Carbine is a neat little long gun. It is traditional with the exposed barrel and cut down stock of a carbine, as in Krag and Springfield style. However, the carbine uses a low power cartridge rather than the full-powered cartridge of the service rifle. Tank crew-

men, truck drivers, ammo bearers, and officers had previously been armed with a handgun and the idea was to give these troops a service weapon superior to the handgun but not as heavy and difficult to manage as the Someone has damaged the screw head.

Below center: It was simple to move the barrel band forward. Only finger pressure was needed. 30, M1 was a great success in sales and military use. full-powered, full-size M1 Garand service rifle. Winchester succeeded admirably with the M1 Carbine and it remains popular for personal defense, some forms of competition in special side matches, and for recreation. While normal repairs sometimes center upon a lack of lubrication and a need for cleaning, some shooters will wish to have the rifle accurized.

Increasing accuracy potential is possible and the effort is minimal. Disassembly Remove the magazine and set it aside. Open the bolt. Press the bolt stop on the bolt and lock the bolt to the rear. Check the chamber to be certain it is not loaded, then close the bolt. The first step in disassembly is to loosen (or remove) the barrel band that secures the stock to the barrel. Usually you can just loosen the screw holding the barrel band with no need to remove the barrel band.

Depress the barrel band spring with a proper punch. Use a brass hammer to tap the barrel band toward the muzzle. With this done, remove the handguard by pulling up and out of the lower stock.

M1 CARBINE CONTINUED

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The receiver is removed from the stock by pulling the barreled action up and out. Set the stock apart from the receiver. Drift out the trigger housing pin with a proper fitting punch. The trigger housing may then be removed by pressing the housing straight back and pulling it from the receiver. The recoil spring guide can be used to compress the recoil spring with the tip end of the guide pulled back to compress the spring and moving it from the recess in the operating slide and removing it.

Look close at the receiver and find the notch that releases the operating slide. The operating slide should be pulled to the rear slowly while exerting pressure to move the slide to the right. When the operating slide reaches the notch in the receiver, the operating slide may be removed. Push forward on the operating slide while putting counter clockwise force to the body as you do this.

The operating slide will come away from the receiver when it reaches this notch. Press the bolt fully forward as far as it will travel when in its locked position, then reverse motion and pull it to the rear, rotating counter clockwise while moving the bolt. The left front lug of the bolt must reach a gap in the receiver where it will disengage. The bolt is then pulled forward and up to remove from the receiver.

Occasionally, the bolt will catch during this operation, requiring the bolt to be pressed down and clockwise to move forward. Trigger Housing Hold the hammer back as you press the trigger. Do not let the hammer slam forward; lower it gently. Insert a pin punch into the hole at the front of the hammer spring plunger. Be careful that the punch is only inserted as far as needed. The hammer spring may be compressed and moved either right or left and away from the hammer.

The hammer is moved to allow the hammer spring and hammer spring plunger to be removed. Use an appropriate punch to drift the hammer pin out and remove the hammer. Drift out the trigger pin, tilt the trigger housing sideways and allow the sear to fall out. Be careful here as the sear spring sometimes becomes trapped in the trigger instead of falling clean away. Push the trigger up and tilt it back to disengage the trigger spring and remove the trigger. If the sear has fallen into the trigger, it will now fall out.

The trigger spring can now be removed by pushing from behind. You may also punch it out through a hole in the trigger housing. At the very base of the trigger housing is a small hole to access the safety spring plunger with a thin punch or very small jeweler's screwdriver. Insert the punch or screwdriver and hold the safety spring plunger back. To remove the magazine catch, press it to the right to remove from the trigger housing. The magazine catch spring and plunger may be

M1 CARBINE CONTINUED

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Most will be reliable. pressed out along with the safety spring plunger. The safety is another press fit removed with pressure on the left side. Some effort may be required to do this. The Bolt The bolt assembly may be disassembled for care and cleaning or parts replacement. The extractor is held in place by the extractor spring plunger which must be depressed to drive out the extractor. While it seems simple, it isn't that easy in practice.

Secure the bolt in a padded vise and select one of your smallest screwdrivers to depress the extractor spring plunger. When depressing the plunger it is possible to wedge the screwdriver in place, making for better operation for removing the extractor. With this done, the extractor can be removed with a punch or screwdriver. Press down on the plunger while simultaneously wedging out the extractor. Small parts are inside the bolt and you will find them taking flight if you are not careful.

The small extractor spring plunger usually falls straight down. The ejector and its ejector spring usually come out together. I apply tape over the ejector before disassembling the bolt. These parts seldom move more than a few inches from the bolt if you do manage to let them fly—I certainly have and probably will again—and a wide, white piece of paper under the vise usually captures them well. The parts removed here include the extractor, extractor spring, ejector and ejector spring, and firing pin.

The M1 Carbine does not use a firing pin spring; the firing pin floats free. Reassembly is more difficult. To reassemble the bolt, line up the extractor spring plunger first, then replace the ejector. Depress the ejector and then the extractor as the extractor holds the ejector in place. Move the extractor spring plunger into place so that the extractor may be put back into its normal position. The ac-

tion bar or operating slide may be disassembled with a punch with the slide lock driven out from top to bottom.

The slide lock spring may follow or it may need to be shaken out to remove from the operating slide. The gas piston is located on the underside of the barrel. Unscrew the gas pistol nut. A punch may be needed if it does not rotate easily with the first effort. Take down the magazine for cleaning or spring replacement by driving out the magazine floor plate and pressing it forward from the magazine body.

The stock doesn't require more removing the butt plate and recoil shock plate that rides in the stock at the rear of the receiver. Take a look at the stock and give it a good going over. The stock is important if accuracy improvements are undertaken.

M1 CARBINE CONTINUED

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Above center: Commercial stock compared to a GI stock (right.) Accurizing The Carbine The M1 Carbine was intended for use at moderate range as a pistol alternative. I have found that many issue Carbines will group three shots into four inches at 100 yards with good ammo. GI issue ammunition is reliable, as are most generic loads, but not designed for accuracy.

Hornady's 110 grain FMJ .30 Carbine round is a leader in affordable accuracy and their Critical Defense softpoint load is among the most accurate factory offerings. Handloading

and careful experiments can pay off big dividends for the shooter, but that is another story. We gunsmiths will work with the firearm's metal and wood. The action must be modified to recoil to the same point time after time. Inspect the stock and be certain it isn't cracked or warped. Check the barrel band.

There are several types and some are important variations to collectors. The smaller half-inch wide bands are less accurate; the one-inch band is better. The narrow bands sometimes move under recoil before finding a

place they stay for a few shots. Carbines with bayonet lugs use a larger barrel band and this type should be chosen for best accuracy. Next up, the recoil plate or "end hooks" depending on terminology. This part sets in the stock and the action connects to it.

The receiver must be a wedged fit into the stock with the recoil plate fitting under the Insert an M2 .30-06 ball round into the muzzle of the .30 Carbine. As you can see, this one passes the test as the bullet doesn't enter into the muzzle up to the case mouth.

M1 CARBINE CONTINUED

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The wider barrel bands are preferable for accuracy. receiver. This fit is very important. Inconsistency here yields either poor accuracy or decent accuracy with occasional fliers. When fit tight at the rear of the receiver, the barrel will generally run about 1/8 to 1/4" above the stock and pressed down to fit the band and be in line. There is some finesse involved in fitting the recoil plate. You do not wish to press fit the wood to the point of cracking or compressing.

Place the action in the stock and slap the butt end to seat the action. Align the recoil plate and have the barrel band on the stock. Tighten the recoil plate screw. Check to see if the barrel floats or if it is tight on the stock. There are several ways to insure a tight recoil plate fit. One is to bed the recoil plate, which isn't difficult. Another is to peen the plate. Take the plate out, place it on a wooden block, and strike the front edge where it meets the carbine with a brass hammer.

Try the fit, repeating as necessary. This technique has worked to tighten the action and also raise and float the barrel to an extent. Bedding the recoil plate seems to last longer, as the peening technique may require another treatment later. When reassembling, strike the butt plate hard with a wooden board, length wise, to seat the action. The action lug and recoil plate must be seated. More M1 Carbine barrels have been worn with improper cleaning than by firing.

The easy test of a worn barrel is to insert a .30-06 ball cartridge bullet first into the carbine barrel. If the bullet stops, the barrel is usable and may be good. If the bullet goes in the barrel up to the case mouth of the cartridge, the barrel has been damaged and may be very poor for accuracy. Another accuracy concern is a too-thick forward handguard. This happens when the semi circle that butts into the barrel band is simply too thick to allow a good fit.

This piece may be addressed with sandpaper in order to produce a good fit. I always do a safety check of any carbine before firing. After triple checking as clear and unloaded, depress the trigger while working the bolt. The hammer should not fall but be held back unless the trigger is released and then pressed. Ammunition Normally, 110 grain loads must exit the muzzle at 1,980 fps (2,000 fps is standard) for reliable function.

As an example, I experienced function problems in one M1 Carbine due to the ammunition, a foreign produced load at 1,940 fps. On the other hand, Korean surplus ran just fine. In modern ammunition, American Eagle .30 Carbine seems a good buy in 50 round boxes and has excellent performance. I have also proofed the Buffalo Bore 110 grain 2,100 fps load and found it also functions well.

It's worth noting that your customer's non-standard handloads or any load of insufficient velocity may not properly function the action. AG Overall, a robust design.

PEOPLE & COMPANIES

Winchester Model 67A

Here's how to repair and mount a scope on Winchester's Model 67A rimfire rifle.

BY MARK R. HOLLENSEN SEPTEMBER 2017

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Every now and again, a gun will come to you for what appears to be routine work. Mount a scope, check the firing pin, clean, test, etc. Quickly, you find it isn't routine after all. In this case, I was handed an old Winchester Model 67A bolt-action, single-shot rimfire rifle. The gun was in decent shape, having only a shattered firing pin body, some light rust pitting, and a little worn bluing.

In addition to replacing the firing pin, the customer felt compelled to scope mount this old classic for his grandson, giving it to him as a starter gun. And this gun fit the bill perfectly. The Model 67A was made by Winchester from the mid 1930s through the 1960s, replacing the Model 60 in an effort to reduce production costs. The .22 Short, Long, and Long Rifle target variant to this gun is the model 68, which came with a hooded front sight and an aperture rear sight.

Later, the Model 67 rifle could be purchased with the same sights as those offered with the Model 68 target rifle. Many This hook fits onto the trigger that is pinned in the wood stock. parts made for the M68 will fit this rifle, however, be aware of .22 WMR (Winchester Magnum Rimfire) versions and order the correct parts for your particular job. The customer

had assembled a mock up of what he wanted on his M67A by securing the scope he wanted mounted to the top of the rifle with zip ties.

And although the firing pin seemed to be operating properly, he provided me with a newly-manufactured replacement for fitting and installation since the original was shattered at the rear of the firing pin body. The customer also said he'd like to be able to mount other optics one day so his grandson could grow into this starter gun. With this information in mind, along with the provided scope, ring/mount, and new firing pin, I headed to the workbench to examine what he had envisioned.

I did some research on potential mounting solutions for this particular make and model of rimfire and was a little surprised to find that no one makes a scope mount or scope base set specifically for this gun, other than some aftermarket side mounts. The owner was clear that he didn't want aside-mounted scope as that type of mount can preclude making changes or upgrades to optics options down the road.

I did see a one-piece base that was once available from a well-known parts house but it was made for the M68 and was no longer available from them at the time of

this repair job. I began looking at using Weaver and similar bases, checking their charts for specific rifle mounting combinations, and I found there was no such animal for this particular model. I also was unable to find a schematic or any other information pertaining to the gun, other than a little historical information about it.

I measured the diameter of the "receiver", which on this rifle is also the barrel as it is a one-piece barreled action. I held the scope to be mounted over the top of the receiver area so that I could get an idea of where the scope should be placed when shouldered.

Once I determined proper placement of the scope, I marked the barrel where the two bases would need to go, then measured the receiver diameter at these two locations (between the breech face and the rear sight dovetail) to determine if Weaver had a suitable base with nearly the same base diameter as where they would be attached to the receiver. Based on the measurements, I found the Weaver Model #17 base had a diameter that would fit perfectly on this receiver at both locations, so two were ordered.

The receiver had an approximate diameter of 0.790" at both mounting locations and the #17 base lists a di-

WINCHESTER MODEL 67A CONTINUED

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Remove the pin to the left first, as this is the firing pin guide pin and removal will allow you to pull the “guts” of the bolt out in once piece. ameter of 0.770”, which would mate to the barrel quite nicely. Now for the fun part! The round receiver/barrel made it a little difficult getting it square and plumb with the bore in my sight drill jig. I first assumed that the two cuts in the receiver where the bolt handle closes would be the leveling alignment area, however, I quickly found that not to be true.

Leveling from those two points in the jig left the sights at a slightly off-centered right angle. I removed the rear sight from the dovetail and leveled the barrel/ receiver with the flat of that dovetail. That did the trick. I figured the factory had to align the barrel/receiver plumb to make the two dovetail cuts in the barreled action for the sights. To be certain, I removed the front sight and checked it as well.

Once I found true perpendicular alignment of the receiver and bore, I placed a clamp-on barrel level near the muzzle and set it to level and in agreement with the dovetail levels. This worked quite well. Finally, I checked the sear/extractor still assembled in the receiver/action and the stock stud dovetailed into the bottom of the receiver for plumb. Both were square and plumb with the level.

With the barrel/receiver true with the jig and secured in place for drilling and tapping, both sight base locations were marked where the bases would be installed. I leveled and plumbed the fixture in the mill, spot checking each marked hole location prior to

drilling. The holes were tapped and the bases were installed with each screw given a dab of blue Loctite.

Although a rimfire lacks recoil, I have found over the years that rimfire guns are handled rougher than a prized hunting rifle and bumping and knocking around can dislodge screws or bases. Loctite is easy insurance. With the bases mounted and my previous customer conversation, I topped the bases with adapters mounting on the Weaver rail providing the capability of clamping on 3/8” dovetail rings or mounts.

Since the customer was starting with mounting a rimfire scope with 3/8” dovetail-type rings, it seemed to be a logical choice. When the adapters arrived, I found them to be a bit longer on each end than the bases, so I filed and trued up both ends flush with the bases when mounted. The bases are 0.812” long and the adapters were 1 1/8”. Resizing the adapters made for a clean look when secured to the bases without any mounting compromises.

A quick spray with Brownells Aluma-Hyde II in semigloss black finished the look. The adapters were a good choice for this installation, increasing the overall mounting height of the scope and leaving no need for additional work to achieve proper bolt handle clearance. The only drawback is the 3/8” dovetail does not center perfectly over the Weaver bases.

When the scope is installed it doesn’t appear to be in proper alignment with the barrel, but this doesn’t impact accuracy and the

very small amount off-center appearance doesn’t detract looks too badly. The dovetail adapters and Weaver bases allow a variety of optic choices, including larger one inch or 30mm tubes, a scope with a 40mm objective lenses, or a various sizes of electronic optics as there are a variety of Weaver rings (high, off-set, seethrough, etc.) that can be used to secure a chosen optic.

This made for a very versatile mounting system. Disassembly/Reassembly Since I was unable to locate a schematic or any disassembly instructions for this make and model rimfire, I decided to add it here. Let’s begin by checking to ensure the gun is unloaded (physically look in the chamber), then remove the bolt by pulling the trigger all the way to the rear to release it from the receiver. If you find that the bolt seems to be binding or not coming out, don’t force it to the rear.

Push the bolt forward, then reopen it slowly and only pull the bolt to the rear enough so that you don’t dispatch the extractor/sear. Pull the trigger and remove the bolt. If the extractor/sear moves back from the breech too far, it prevents the trigger from being able to lower the extractor/sear enough to clear the bolt during removal.

With the bolt removed and set aside, unscrew the stock stud screw and lift the barrel/receiver out of the stock by tilting it up at the muzzle enough to get the stock stud clear of the stock, then pull the barrel/receiver forward and out of the stock.

WINCHESTER MODEL 67A CONTINUED

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) The bolt assembly is ready to be inserted back into the bolt body. Note the safety lock friction ring ahead of the safety lock. Don't forget to reinstall this. The reason for this is that the extractor/sear stays in the receiver and is held in place with a flat spring while the trigger stays pinned in the stock. The two must be separated from each other by lifting and pulling the barrel/receiver out of the stock and forward.

With the barrel/receiver out of the stock, note how the trigger is pinned inside of the stock and has a coil spring behind it serving as the trigger return spring. The barrel/receiver gets reassembled into the stock as the extractor/sear "hooks" onto the trigger so that it can operate properly when the barrel/receiver is assembled into the stock again. The extractor/sear must come down when the trigger is pulled to release the firing pin.

To remove the extractor/sear, pull on it downward and towards the rear and it will come out as it is retained in place by the flat spring attached to the bottom of the receiver only. The extractor/sear (flat) spring can be removed by tapping it towards the rear while lifting up on the turned down end of the flat spring, allowing it to move out of the cut in

the receiver. The flat spring moves rearward and lifts off the stock stud. Assembly of the extractor/sear spring is in reverse.

This completes disassembly of the barreled action except for the front and rear sights. If needed, both can be removed by drifting them from their dovetail slots from left to right. Turning our attention back to the bolt assembly, begin by carefully pushing the firing pin guide pin out through the bolt body with a pin punch. Do your best to push the pin out by hand or a few gentle taps with a brass hammer. Giving the pin a hard whack risks breaking the fragile rear sides of the firing pin body.

The firing pin guide pin rides in the firing pin guide slot. Once the firing pin guide pin is removed, back the bolt "guts" out of the bolt body in one piece by pulling back on the cocking knob, officially known as the firing pin head. Keep an eye out for the round safety lock friction ring that fits on the firing pin body just ahead of the safety lock as it is housed inside of the bolt body.

With the bolt body removed and the safety lock friction ring set aside, further disassemble the bolt by sliding the safety lock forward and off the firing pin body. Remember, the safety lock was in place for reassembly. The

"wing" or safety lock tab will be reinstalled so that it is upward in relation to the bolt handle.

In other words, when the bolt is fully assembled the safety lock wing or tab should be positioned at the 3 o'clock position when the safety lock is in the off position and in the 12 o'clock position when the safety lock is on and the bolt is closed and cocked. With the safety lock removed, use a pin punch to drift out the firing pin head pin that holds the cocking button (firing pin head) onto the rear of the firing pin body. Again, go slow and gently here and do not force the pin out.

Too much pounding can damage or break the rear of the fragile firing pin body at the firing pin head pin retaining hole. Gently tap the pin to free it up and ease the pin out, then pull the firing pin head out of the firing pin body. There you'll see a small coil spring inside the firing pin head called the firing pin retracting spring. This small coil spring presses up against the back side of the firing pin guide pin and the firing pin spring and guide (bushing) presses up against the front of this same pin.

Remove the firing pin spring and guide from inside the firing pin body. Note, the firing pin spring guide goes to the rear of the firing pin spring when reassembling

WINCHESTER MODEL 67A CONTINUED

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The trigger and return coil spring can be removed by drifting the steel pin that runs through the width of the stock. Notice the dovetailed adapters that the scope ring/mounts clamp onto, and will press up against the firing pin guide pin. Replace these two springs if needed. If you are installing a replacement firing pin (as in the case of this particular repair job), make sure the firing pin has no sharp edges and moves freely inside of the bolt body housing.

Check the length of the protruding end of the firing pin does not go beyond the far end of the bolt face area, basically ensuring the firing pin will not impact the back of the chamber when the trigger is pulled or gun is dry fired. Once the firing pin is installed properly, reassemble the bolt. Begin by inserting the firing pin spring and guide back into the firing pin body with the guide towards the rear of the spring.

Next, make sure the firing pin retracting spring (small coil spring) is still in place inside of the firing pin head and insert the head into the rear of the firing pin body. Align the firing pin head pin hole with the hole in the rear of the firing pin body and gently reinstall the firing pin head pin. Don't force it or you will break the rear body of the firing pin. Go slow and make sure the pin is not binding while reinserting.

Now that the firing pin head is installed on the firing pin body, slide the safety lock back over the firing pin body from the front and pull it fully to the rear. Make sure to posi-

tion the safety lock so the wing or tab is in the up position with respect to the pointed end of the firing pin.

In other words, when you insert the firing pin into the bolt body, the firing pin nose should fit into the bolt face and the safety lock "wing" or tab should be in the upright or 3 o'clock position with respect to the bolt handle. Before going forward, replace the safety lock friction spring (round spring) onto the firing pin body and up against the safety lock. With this together, install the very first pin removed—the firing pin guide pin—through the bolt body. This can be tricky.

I recommend using a slave pin, aligning the firing pin head pin hole with the bolt body and safety and safety lock. Insert a slave pin in the hole between the firing pin spring guide and the firing pin retracting spring inside the firing pin head. Once the slave pin is in place, align the pin holes in the body with the firing pin guide pin hole cutout (where the slave pin is now) and install the pin while pushing the slave pin out. Gently tap the pin into place to secure it. That completes the bolt reassembly.

Check to make sure the safety lock wing is either at the 12 o'clock or 3 o'clock position with the top of the bolt body. With the bolt assembled, return to the barreled action. Install the extractor/sear flat spring over the stock stud and lock into place. Install the extractor/sear into the receiver cutout by pushing the extractor portion in first under the flat spring then forward to seat it into the receiver. If you have not already reinstalled the dovetailed sights, do that now.

Once the barrel/receiver is back together, insert the rear of the receiver into the stock first by angling the rear of the receiver downward towards the stock and sliding the extractor/sear "hook" onto the trigger arm that is pinned in the stock, essentially engaging the two. Push the barrel downward into the stock channel and start the stock stud screw to somewhat secure the barreled action into the stock.

Test the trigger to make sure it is pulling down on the extractor/sear properly, and if so, tighten the stock stud screw. Install the bolt. Pull the trigger rearward and slide the bolt into the action. As stated earlier, you may find that the bolt won't go in for some reason. If that occurs, push the extractor/sear forward so the extractor is up against the back of the barrel breech, then install the bolt after pulling the trigger rearward.

If the extractor/sear is back to the rear, it will prevent you from pulling the trigger back enough for the extractor/sear to move down and out of the way of the bolt to fit fully into the receiver. This was pretty much a straightforward firing pin repair and scope mounting job, with a couple of unexpected obstacles. The use of Weaver bases allowed the customer to have additional options of mounting different sizes of scopes or electronic optics to the rifle base mounts.

Hopefully, this information will help you too, when one of these old, nearly forgotten rimfire rifles finds its way to your bench. AG

FINISHING

Checkering Gunstocks

A gunsmith's overview of how he checkers a stock.

BY RAY ORDORICA SEPTEMBER 2017

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The fine art of checkering gunstocks is a skill most anyone with good eyesight and some patience can master. Basically, it consists in scratching up a gunstock with parallel lines and then doing it again at an angle to create diamonds in the wood finish. I have been taught, and always have done it that way, that checkering is to be done on the completely finished wood surface. So yes, it takes some guts to dig your checkering tool into a stock finish that you've just sweated over for perhaps weeks.

Clearly you don't want to start your checkering experience on such a finish. The courage to do that will come with experience. The first gun I checkered was a Ruger 10/22. As I recall I also carved my monogram into that gun, though I believe it was a grave mistake to identify myself on what I now realize was mighty shoddy checkering. But one has to start somewhere, and that's what I did. I recently saw three guns a friend had taken in on trade for some services he had performed.

The three all had neglected-looking stocks with the finish peeling off or missing entirely in patches. Any one of them would have been an excellent place to start learning how to refinish a stock, and/or apply some checkering, or maybe do some recheckering. One was a Ruger 10/22

which I nearly bought so I could say I've done a 10/22 properly, but in the nick of time I realized I have way too many projects in front of me as it is. Tools The minimum required tools are not many. Two are mandatory.

The first of these is a single-line cutting tool, which you use to lay out two master lines on each panel of new checkering. It is also the only tool needed to recheck a gun that already has checkering. The second mandatory tool is a spacer, which cuts two lines at the same time. There are several configurations of spacer cutters, some with a blank guide to follow the first line while the cutter cuts the second line. These are available in right or left patterns but I never use them.

I also have never used a three-line cutter. I prefer the double cutter with no "safe" blade, though it requires a slight knack to manipulate. You can get different spacing of these cutters to give coarser or finer checkering. Most commonly you'll work in the range of 16 to 20 lines per inch. The angle of the cut, which is the included angle of the cutter, is either 60 or 90 degrees, and I far prefer 90 because the grooves are shallower and the individual diamonds are stronger.

Once you have the lines all spaced out and deepened somewhat you'll switch to the single-line cutter to deepen the grooves to the proper depth, which means bringing the checkering diamonds to a point, but no deeper. I use the two-line cutter to deepen the diamonds considerably and keep the spacing correct, and then use the single-line tool to finish the job. A third useful tool is a very short cutter, about a quarter-inch in length.

It's handy for getting into tight places and going around a curved border more easily. If you have long checkering lines on a relatively flat surface you might want a longer single-line cutter, which acts much like a big block plane or jointer plane in that its length helps you keep the lines straight. One more tool I recommend is a small vee-cutter or veiner chisel to get tiny and precise cuts on the border and for very short cuts in the tight ends of checkering patterns.

Of all these tools you'll end up using the single-line tool most. I have a version known as a full view type, but have done many miles of finish-checkering cuts with a common single-line cutter, which is just a single cutter blade inserted in the tool that held the spacer tool.

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Available in a variety of lines per inch, this one cuts 20 grooves per inch. A single-line cutter is available for this tool, rather than spending lots of money for a full view type. A good six-inch steel rule might come in handy during layout. Even better is a thin strip of flexible steel like I have, seen in the photos. It has served me well. It's about six inches long and an inch wide.

You can hold it against the wood and run the cutter up against its long side to cut in your master lines and thus get them dead straight. It has angled ends which you can also use to gauge the angle of the diamonds throughout your stock but generally my diamonds are slightly more pointed than the angle on the end of this steel strip, so I don't use it for that. The recommended diamond proportion is often said to be 3.5:1, but sometimes you might want to vary that.

To find your tools, check out direct shipping from Dem-Bart Company (dembartco.com), for great prices and a mighty clean and easy-to-use set of web pages. You might also take a look at Gunline Tools (gunline.com), for your checkering needs. They have a grand selection of hand checkering tools that should give you whatever you need without wrecking your bank account. Again I say you don't need much.

I recommend a two-cutter spacing tool, a single-row cutter to deepen your work, a short cutter for tight spots, and an old toothbrush to clean off the dust from your work. The small cutter part of each tool from either Dem-Bart or Gunline is replaceable and it's a good idea to replace it once it gets dull, which might take one stock or a dozen, depending on the stock finish and wood quality. Whatever you do, make sure the cutter is absolutely tight within the tool. Loose cutters give headaches and massive blunders.

I recommend setting the tools up to cut on the pull stroke. In my research for this article I found some incredible rip-off prices online for some of these simple tools. The full-view single-line cutting tool that I use to deepen my checkering and for recutting older checkering is a loop of steel wire with the cutter suspended in front, so you can see what you're doing a bit more easily. This is by no means necessary. I saw one of those full-view spacers offered at \$90 on eBay.

Even at half that price I suggest you look into making your own. I've had my tools for nearly fifty years and they were dirt cheap back then and the prices by Dem-Bart and Gunline today are still mighty reasonable for tools that won't wear out in ten lifetimes. Getting Started How to begin? Keep it very simple at first. Let's say you've

got a rifle stock you want to checker along with all the tools you might want, per my recommendation or per the suggestions of others. The first thing to do is decide on a pattern.

The easiest is a simple diamond pattern with few borders and no tricks. If you saw the photo of my .338 OKH in my stock refinishing article, that's a fleur-de-lis pattern, and I would not recommend you start with anything that complex. Once you've decided on a stock to checker and a pattern to put on it, mark the edges of your chosen pattern where you want it to go on the stock. Use something that you can see easily but doesn't mar the wood. Sharpies work on some finishes as does masking tape or a very soft pencil.

Crayons or chalk are other possibilities. What you need to see is the edge of the pattern so you don't go past that with your many cuts to come and you'll need to be able to remove the marking from your finish later without destroying the finish. One of the necessary tricks to checkering is to set up a light to the side of your work. A relatively sharp source will give you the shadows you need to see what you're doing. A few minutes testing ought to clarify that for you.

Forend Lay out the pattern on the forend of your stock. To lay out a simple diamond pattern, the top line will

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The upper tool is the veiner, av-shaped chisel for getting into tight spots and various other tasks. be parallel with the top edge of the stock and the bottom will be either another straight line parallel to the bottom edge of the stock's profile, or will be determined by the extended edges of the diamonds. The front and back edges of the pattern are formed by where the checkering lines stop. It's common to wrap the checkering around the forend but I'd avoid that for your first efforts.

If you Be sure the cutter is tight in the holder. Wobbling causes massive errors. Do not checker the edges next to the tape and try to fill in the blanks up to that. The lines will never line up and you'll have a mess. want checkering under the forend, just add a third panel there. With the pattern laid out and marked on the stock the next operation is to

set the diamond angle by laying out two crossing "master" lines near the middle of the pattern.

That determines the angle of the diamonds and—for some patterns—the final configuration of the bottom edges of your pattern. The next step is to cut those two master lines with a single-point tool. I use a flexible steel plate, wrapped around the stock and secured with my fingers or with masking tape so that one of its edges follows the contour where I want the first master line to go. Cut a shallow groove right along the edge of the steel.

If you don't have a steel guide, draw a straight line with a soft pencil or pen using any straightedge, or maybe a slice of thin cardboard, to keep it straight. Then carefully cut that line with your single-cut tool. Reposition the guide to give the other master line and, making sure the resulting diamonds

will be parallel with the barrel axis, cut that second line. Don't go past the pattern edge with your cuts. That's one key to good checkering: Keep all your cuts within the pattern.

Overruns are ghastly and not easy to fix, though putting a heavy border on your work can sometimes do that. Strive for borderless checkering and build good habits early. One trick to avoiding run-over edges is to start the tool at the edge and pull it toward you, away from the edge. Here's another important point: The final edges of your checkering pattern must always be determined by the gradually spreading lines that you space out, one at a time.

Except for the aforementioned top and bottom lines, or in the case of curved lines on the pistol grip, do not cut the pattern outline and then try to checker up to its edge. This will give

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This is an example. The checkering is already there and doesn't need any more master lines. For a wraparound pattern the master lines would be on the bottom of the stock, not the sides. 416 Taylor getting some checkering on its forend. The two-row cutter has spaced all the lines and will deepen them somewhat more than they now are. you a mess and lots of headaches. Let the checkering lines determine how the pointed edges will appear.

I have a modern rifle made by a major manufacturer that has mighty nice-looking checkering areas. However, if you look closely the well-done checkering cuts within the checkering areas do not match the edges of the layout. The diamonds merely fit vaguely into the spaces allotted for the checkering. In other words, the angle of the ends of the pattern on the forend is not a match to the angle made by the checkering itself. That's ugly!

As soon as you do some of your own checkering I suspect this kind of commercial work will look as shabby to you as it does to me. Once you have the two master lines laid out and cut within your chosen pattern, pick up the two-cutter spacer and run it along one of the master lines, making a second line to the left of the first one. Although a double-cutter spacer like I use will cut in either direction, I prefer to go to the left with new lines.

Generally the tool will cut wood either by being pushed or pulled but I do most of the work on the wood on the pull stroke. The trick with the double cutter is to slightly rotate the cutter axially so the cutter on the right side digs into the master line and makes it deeper until the second cutter touches the stock. Rotate the tool gradually back the other way (counterclockwise) until the second line is as deep as the master line. Move the cutter over to the left and make a third line.

Don't go full depth with any of the cuts yet. Keep doing this, going left (or right if you prefer) until you reach one edge of your pattern. Turn the stock around and cut from that same master line. Some older English-style checkering had flat tops on the diamonds. That's not what you want. line all the way to the other side of your pattern. Tackle the other master line, again going to the edge of your pattern on both sides of the master line.

In this manner you'll get used to always going left (or right if you find that easier). This quickly gives you some good control of the grooving technique, which basically is to put the cutter into the master groove and gradually rotate the tool to deepen each new line. It's easier to do this in one direction rather than both. At least for me it is. Checkering Cradle? I must mention a tool many checkers find handy: The checkering cradle.

This is a fixture that grasps the stock with care and firmness yet permits the workman to rotate the stock easily so the cutting tools stay basically on top all the time. Long years ago I had a comprehensive version of this in the form of a stool with an elevated clamp system, so I could sit on the thing and control the stock in front of me. After a few months I gave the doggoned thing away and have done all my checkering ever since then in my lap, usually seated on the couch or in a comfortable chair.

That's how I did my \$40,000 Churchill .470 double rifle and how I'm doing my .416 Taylor, which you see in the photos here. If you want a cradle, make your own, or spend lots of money and buy one from Brownells. If you get a chance to try a checkering cradle by all means do so. However, just because you don't have one doesn't mean you can't do good work. Back to work.

If you've followed along with my suggestions, you'll now have your checkering pattern lightly roughed in, with flat-topped diamonds filling your pattern. Go over it again with the same two-line tool, deepening the cuts gradually and keeping them even. When you're nearly done, pick up the one-line

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416 Taylor. The lines that are parallel to the bottom of the pistol grip cap on this side are the vertical lines on the other side and vice versa. Don't try this at home. Note also the squareness of the resultant diamonds and the curved (English) back border to the panel. The checkering wraps unhindered across the top of the grip. cutter and, being careful to keep the cutter precisely perpendicular to the wood surface, deepen the cuts until the diamonds are just pointed.

Do this deepening gradually, over all the pattern in several passes. Are you doing a good job? How to tell? One way to check is to look across the pattern at right angles to the stock and see if the shadow lines formed by the diamonds are straight and parallel. If they are wavy you've got some uneven diamonds. Be sure to use a brush to clean out the dust as you go. I do a lot of huffing and puffing as I go along but an old toothbrush also works well.

Pistol Grip For the layout at the pistol grip you'll probably want to have curved edges. But not necessarily. It's up to you. On my .416 Taylor I wanted to wrap the checkering over the top and chose a method that ended up giving the diamonds a more-nearly square shape. I lined up one master line with the bottom of the pistol grip and when the pattern got to the top of the grip that line became the off-angle master line for the other side.

This gave a harmonious look to the pistol grip, though the diamond angles are not what one might expect. The back edge of the grip panel is curved forward, again opposite to what you might expect. I saw this on a British gun long ago and liked the effect and so incorporated it here. The front curve of the panel simply runs with a single-groove border up the grip. That's the sort of thing I suggest you do to both the front and rear curves of the panels.

I recommend you do not attempt to wrap the checkering on the grip on your first checkering job. Let This is the forend of author's Westley Richards shotgun. Note the vertical lines, perpendicular to the metal at the top edge of the photo, are in fairly straight rows. This is not too bad. It's a rechecker job, not new. the checkering cuts determine the edges of the front of the pistol-grip pattern, where it generally ends in points instead of curved edges.

An easy way to make your checkering eye catching is to leave an unchecked island of wood within the pattern. When done with taste this looks really good. On the negative side there are that many more opportunities to bugger it all up with overruns. An Alternative One good way to start your career in gunstock checkering is to get only one tool, the single-line cutter, and rechecker an existing stock. Recheckering is a snap compared to doing all-new work.

I'd stay away from the impressed checkering like that used for a time by Remington. There's no easy way to keep it all straight. Recheckering is simply cleaning out and pointing up worn and dirty old checkering so that it looks good again. The only tricks are to keep it straight, don't go too deep, and don't be in a hurry. When you're done with the job, clean out the grooves again with that old toothbrush. When the grooves are all re-cut and all clean, put some linseed oil on the fresh checkering.

Don't be stingy with the oil. Brush it along both groove directions with your toothbrush. After it soaks in awhile, wipe off whatever you can get off with paper towels. As noted, the spacing may be had in various widths, giving different lines per inch to your checkering. Spacing cutters may be had to cut from 16 to 24 lines per inch. Coarse checkering might be more appropriate for a rough-use gun that might be handled with gloves on, or for softer woods.

Finer checkering is more appropriate for a gun with finer appointments. I have not found a great difference in difficulty between doing fine and coarse checkering except that soft woods don't take kindly to really fine checkering. I'd suggest staying between 16 and 20 lines per inch, and be sure to keep

CHECKERING GUNSTOCKS CONTINUED

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all the checkering spacing on the stock the same. When I redid the checkering on my old Westley Richards I had a bad job to clean up. Some fool had decided the checkering looked better if it was darker than the surrounding wood, so he stained it or put shoe polish or axle grease or ink or paint into the grooves. Whatever it was it was really nasty to get out and I had to get it all out because the checkering looked muddy, streaked, and generally lousy until I did.

Books As to good reference books, probably the greatest book on checkering is 416 Taylor would be a simple one to start with. The white line would mark the bottom of your pattern without doing the wraparound shown here. The edges of the grooves form the bottom edge and the top is a simple straight line parallel with the top of the stock. Monty Kennedy's *Checkering & Carving of Gunstocks*, which has been reprinted several times. I have the 1952 edition and more recent editions can be had for under \$40.

Another good book I ought to have mentioned in my piece on refinishing my Westley Richards 10-bore is Al Linden's *Restocking a Rifle*, however, unlike Kennedy's

book, this hasn't been reprinted since 1969 and those older books go for around \$200 today. Both contain incredibly valuable information that you won't find so condensed anywhere else. I hope this has inspired you to take up the gentle art of gun checkering.

If enough good workers do this then there won't be any more gunstocks to checker anywhere and I won't have to continue to go blind checkering yet another gunstock. I feel obliged to leave you with one important thought. I've done an awful lot of stock checkering over a great many years and I can tell you there are very few enterprises in which I have been involved that are more tedious and thankless than gunstock checkering.

The better you get at it the more picky you get and that means increased tedium to get it all just exactly right. Eyestrain is always high, though with proper lighting that can be somewhat alleviated. Probably no one but another checkerer will be able to recognize outstanding checkering work but I have found it to be a reward in itself. You look at your work in later years and say, "Yeah, I did that!" Then go have a stiff drink. You earned it.

AG

FINISHING

The Distressed Finish

BY ROBERT K. CAMPBELL SEPTEMBER 2017

ORIGINAL PP. 18-20

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When a customer wants a gun refinished, they usually want it brought to a bright, new luster as a general rule. However, some shooters, particularly cowboy action shooters, want a distressed or “battleworn” finish. The end result of such a finish when properly applied gives the appearance of either hard use in the field or of firearm that appears much older than it actually is. If this is among your first finishing efforts, take it slow and easy and follow the steps exactly.

It is important to have a solid idea of what the firearm will look like before you begin. Your customer may have seen an example of a distressed or battle-worn finish. I can always tell the difference between a finish job done and a truly worn and used gun, but all the same, make certain the customer is aware of what the finished product will look like. Also, note that this type of effort produces individualistic results. While the job may be similar, this isn’t like the art of bluing an old Colt.

Sometimes the process makes for less-than-identical results, but that is the charm of it. I began with a Lyman 1849 Navy .31 caliber revolver. This replica of the Colt Baby

Dragoon is interesting but not too expensive so it could be used as an experiment. The first step is removing the old finish. I used Scotch-Brite to polish the finish away. This takes time and must be done carefully to produce the proper smoothness before applying bluing. Next, I considered where to apply aging marks.

I held the pistol as it would be in normal use while considering holster wear and other concerns. I took the revolver in hand and even dropped it on the floor a time or two. At these contact and wear marks, aging was applied. Using a large Allen wrench, I took the flat of the wrench hard against the angles of the octagon barrel and other high points. This created a worn look that belied the quiet life of this revolver.

This may be done with any other firearm, though newer designs such as the 1911 and AR-15 have this described as a battle-worn look while older revolvers have it described as a distressed finish. It takes some practice to use the Allen wrench correctly. I recommend practicing on an old flat of metal.

While this works well enough on most firearms, a firearm with an original finish that is very hard, such as the Glock, will resist most attempts at age marking the finish or even outlining such markings so as to appear worn. This is a real challenge. It can be done but let’s walk before we run. As always, every step is taken with safety in mind and nothing done to compromise the firing qualities or safety of the firearm. When applying marks with the Allen wrench, remember you want a worn finish, not a gouged one.

Honest wear is different than abuse. It also pays to take a good look at firearms that have survived the long haul. I have a collection of such guns as wall hangers no longer in service that serve as references. After removing the finish, soak the firearm in a proven material. I use three parts white vinegar to one part sea salt. This concoction removes most of the finish and makes for a good base coat for a worn finish.

With the initial mix in quarter hot steaming water, drop the gun (sans grips or other furniture) in the container. On an aside, my work shop is outside my house off to one side in the back yard with a gate leading to

THE DISTRESSED FINISH CONTINUED

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it. I sometimes do simple jobs in the study of the house. Since this mixture doesn't contain harsh chemicals or have any odor save vinegar, I just placed the pot in the laundry room. Because I enjoy continued matrimonial harmony, I wouldn't use anything that might discolor the sink in the kitchen and use a collection of very old chamber pots for this type of job, such as the type in wide use prior to indoor plumbing.

Turns out they are perfect for soaking parts and mine have new purpose after about a century of disuse. Some interesting color combinations occurred. My sweet wife went into the laundry room and saw a revolver resting in a chamber pot covered in fluid of a

yellow hue. As always, she took it in stride without a lot of questions, but the one she asked was interesting.

Returning to the living room, she asked, "What exactly are you doing with that handgun in the chamber pot?" I replied, "I am removing the finish." She paused and said, "Well, that should do it." After allowing the revolver to soak for twenty-four hours, I dried the piece with an old electric hair dryer I picked up at an estate sale and examined it. There were light and dark spots in the metal.

It had not been polished "to the metal" and my result would not do for Colt blue but was ideal for the distressed look I wanted. Having removed the factory finish and soaking the

gun in my vinegar/salt solution, I was prepared to continue. The next step was to prepare the gun for a reblue with a Blue Wonder Gun Blue cold bluing kit. Always wear proper eye and hand protection when dealing with these chemicals! Blue Wonder's instructions include a warning to remove pits and scratches for best results.

Well, I wasn't worried about that in this case as imperfections are kind of the point, but this revolver was not pitted or scratched at any rate. I cleaned and degreased the revolver thoroughly. This takes time and it is best done with mineral spirits and a good rub down. The next part requires a bit of finesse and is critical. The Blue Wonder cleaning gel gets applied to the

THE DISTRESSED FINISH CONTINUED

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areas intended to be blued and the firearm heated to about 130 degrees. This is hot to the touch, though not enough to burn, and it works well for setting-in solutions. Heat expands and draws rust and other particles from metal pores. Once heated, the hot gel is wiped from the metal and the gun should be clean and free of rust and dirt. Be careful not to touch the surface with bare skin or oily deposits will be left, resulting in a failure of the blue to bond to the metal. Shake the Blue Wonder gun blue thoroughly.

Use a cloth to carefully apply the blue with a thick, heavy, and wet coating. Use the same saturated area of the cloth so that This is not an unattractive handgun. it doesn't absorb the blue. Apply it evenly and do not attempt to rub the blue in using pressure, rather, rub it thoroughly and let the wet solution adhere to the metal. After allowing the solution set a few minutes, begin again. Depending upon the desired darkness of the finish, you'll need several coats.

As I wanted a darker color, I knew it would take at least six coats and ended up using ten. Allow the finish to dry thoroughly for several hours, preferably overnight. The next step is applying Blue Wonder Developer to the areas that have been blued. This material is applied gently without being rubbed in. The developer dries and sets the blue into the metal, providing a deep, blue, dark finish. When finished, let the gun set for eight hours or so to allow the blue and developer to set in.

After this, a liberal coating of gun oil. The result was a finish that did appear to have been hard used over. With the finish done, I addressed the grips which were too bright and nice to match the revolver's new look. I sanded the grips lightly using a wooden dowel wrapped in sandpaper to wallow out a few very small lines in the wood to give the appearance of use. After all, 100 years of handling takes it toll on wood. While this is difficult to duplicate, I gave it a good try.

The spots worked in are shallow but noticeable, which is the intent. The next step seems odd one but it worked with aging wood. I rubbed a bit of grit and gravel from the driveway into a warm rag and rubbed the grips. Not hard, just a little roughen them up. Then I held spots of the grips over a candle flame just long enough to produce a smoldered section turning the wood a nice black, which was then wiped off and examined. This is certainly a process warranting first practicing on scrap.

With the wood blackened in places, this treatment leaves a nice streaked appearance just where the revolver would have been held in anticipation of meeting a threat. Over time, oils and perspiration create such time rather than a shop-made distressed finish. staining, and my artificial means gave a similar look. When done, I was left with an inexpensive revolver that looked unique and was a good baseline for later experiments and more projects involving a distressed finish.

AG

PEOPLE & COMPANIES

Marlin 336 Firing Pin

Parts replacement poses unique differences among firearms. Here's how replacing the firing pin on a Marlin Model 336 lever action went.

BY NORMAN E. JOHNSON SEPTEMBER 2017

ORIGINAL PP. 21

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Part of my service as a firearms technician includes sighting in all manner of guns. This picks up markedly as the firearms deer season nears. It was such an occasion when a hunter brought in a Marlin Model 336 lever action chambered in .30-30 Winchester. The rifle had been regularly sighted in for the past several years, requiring but a shot or two to attain zero.

As I chambered around I looked his way and said, "The old 336 is about as dependable a rifle as a hunter can carry afield." Moments later, as I pulled the trigger, the rifle failed to fire. Ire-cocked the hammer and... nothing! The same thing happened with the next cartridge. There wasn't even a firing pin mark on the primer. On initial inspection it was determined the end of the firing pin had broken off, including that portion from the tip taper extending out through the bolt face.

This is a highly unusual occurrence with the Marlin 336. These firing pins are a good deal of precision workmanship goes into such apart. Part measures 3.722 inches in length. Tip breakage of this part is a rare occurrence. made of semi-hardened steel, about the hardness of an ordinary knife blade, but not so hard a standard file won't remove metal from it. Dry firing a rifle can eventually break a firing pin, but this wasn't the case here as this rifle hadn't been dry fired.

Bolt/Firing Pin Removal Only partial disassembly of the rifle is necessary to remove and replace the firing pin. This will include removing the bolt from the rifle, which is quite uncomplicated. Always be sure the rifle has no rounds in the chamber or magazine. Lower the finger lever and remove the lever screw located on the lever tang beneath the receiver. The bolt assembly can then be withdrawn from the receiver. The bolt consists of seven parts including the bolt body.

To disassemble Below that, an exploded view of Marlin Model 336 bolt. (1) rear firing pin, (2) front firing pin, (3) firing pin spring, (4) rear firing pin retaining pin, (5) front firing pin retaining pin, (6) breech bolt. To remove the bolt, first remove the spring-loaded extractor from its race and set it aside. There are actually two firing pins (the front and rear) retained by separate retaining pins that fit the race within each respective firing pin. The rear (shorter) firing pin retaining pin is removed first.

Be careful to drive the retaining pins straight out with a properly-sized punch. The main or longer firing pin retaining pin is then driven out releasing the two firing pins and the firing pin spring (a flat, curved, leaf-type spring). Inspect the parts carefully for breakage or excessive wear. On the rifle described here, the firing pin tip was totally broken off, leaving only jagged edges, however, it was the only part in need of replacement. (Continued on page 23)

MARLIN 336 FIRING PIN CONTINUED

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Firing Pin Parts Replacement Reassembly of the Model 336 firing pins and spring are in reverse order of take down. As shown by the illustrations, there are five bevels or Lever must be fully closed to fire rifle. Removal of finger lever screw permits removal of lever and withdrawal of bolt. As bolt is removed, ejector can be removed from inside of cartridge port. Note the angled view of rear firing pin through slot at rear underside of bolt. This feature renders the firing pin nonfunctional as bolt is withdrawn.

Underside of bolt cocks the hammer as finger lever is moved downward and forward. Closing of the lever leaves the hammer back, ready to fire, and must be carefully let down with thumb and trigger finger to a safe posi-

tion if not fired. This maneuver should be practiced with an unloaded gun to totally familiarize the safe use of such a hammer. The broken front firing pin is pictured below the trigger here. cutouts in the primary (front) firing pin.

The spring unites and aligns the two firing pins, allowing the rear firing pin to tip downward as the bolt is fully withdrawn. The illustration of the withdrawn bolt clearly shows this. Replacement of the firing pin retaining pins and extractor allow the bolt to be started into position, mating and controlled by the finger lever. The finger lever screw replacement finishes the job. The lever should then be worked several times and the hammer let down and tested in half-cocked, safe position.

As I reassemble a rifle, I normally coat the parts with a light film of gun oil. Following this I continued sighting in the rifle. Function was perfect and the hunter was back in the deer woods with no further interruption. Conclusion Each gun we take on is a somewhat different entity. Those appearing simple can sometimes be quite complicated. The Marlin 336 falls somewhere in the middle.

There is a slim chance you'll ever need to replace a Marlin 336 firing pin but it's good to know just how to go about it should the need ever arise in your shop. AG

PEOPLE & COMPANIES

Savage Case Extraction

Work on a Savage Model 112 revealed case extraction problems. Installation of a well-placed shim on the bolt baffle assembly solved it.

BY NORMAN E. JOHNSON SEPTEMBER 2017

ORIGINAL PP. 22-23

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In working with a Savage Model 112 long-action rifle that was chambered for Winchester Super Short Magnum cartridge, I found that case extraction difficulty was experienced with some full loads. The WSSM cases are made to somewhat thicker wall specifications for this series of cartridges. These cartridges also have a somewhat higher-than-standard working pressure over many of their counterparts.

The final phase of extraction became a problem with one particular Savage Model 112 rifle chambered for a super-short Magnum cartridges. Not infrequently, getting to the root of a problem can be very perplexing. We can

study a problem leading to confusion, yet it will turn out the solution is quite simple if we but apply a bit of inventiveness. This case was an example of that. During the final stage of bolt lift, the camming action of the bolt handle works in tandem with a cam at the rear of the receiver.

Sandwiched between the bolt handle and the receiver is a part named the rear baffle. It was obvious this baffle was too short and case extraction wasn't fully completed upon final bolt lift. It turns out a properly-placed shim 0.035" thick eliminated the problems. Making The Shim A feeler gauge was used to determine the gap thickness needed between

the front surface of the bolt baffle and the rear surface of the receiver. The bolt body and the locking lugs must pass through the shim.

On this rifle there was ample working surface for placement of the added shim. A pattern made from heavy draft paper was drawn and The simple installation of a 0.035" shim alleviated the sticky case extraction problem on this Savage Model 112 rifle. transferred to 0.035" stainless sheet stock to form the irregularly-shaped shim. Using this pattern, the shim was cut out. Following shaping to contour the shim more precisely, the part was placed in position to test actual extractor function. With the part work-

SAVAGE CASE EXTRACTION CONTINUED

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From this position the bolt handle cam has the needed increased leverage against the bolt baffle to assist in final extraction. ing well, it was then cemented in place with J-B Weld and allowed to set for several hours before installation and use. Conclusions

Sometimes even finished firearms require adjustment or tweaking. This was the case with the Savage Model 112 rifle due to extraction difficulty with high-pressure Winchester Super Short Magnum ammunition.

Seeing through some of these problems is the obvious solution and a bit of creative thinking doesn't hurt in performing an unusual, but effective, procedure. AG

PISTOLS

Reader Forum

BY AMERICAN GUNSMITH EDITORS SEPTEMBER 2017

ORIGINAL PP. 24

P64 Makarov I have a P64 Makarov that locks back on the final round, sometimes in the middle of firing a magazine. It is very hard to clear. I question that it is wear related because otherwise the pistol seems sound and looks to be in really good condition. I like this pistol but do not trust it for being dependable. I enjoy the articles you present and appreciate any help you can send my way.

As an aside, my daily carry is a CZ 75 Compact and I am one of those fortunate guys that has a great choice to choose from. Try a detailed cleaning first. Takedown/reassembly appears in The Gun Digest Book of Automatic Pistols Assembly/Disassembly. H&R 900 Series Revolvers I would like to find someone who could repair my H&R Trapper pistol. If you think you might be able to help me I will send you serial number and anything in the way of information you may need.

Brownells has one of the longest lists of active gunsmiths in the business, Chatting with a Brownell Tech might lead to an ideal contact to handle the needed repair. Also try Gunsmiths. Regional- Directory.us and Gunsmith Info. com/gunsmith-locator. Stoeger M2000 I have a Stoeger Model 2000 and am having trouble with the cartridge lifter interfering with and locking the bolt back. Any advice? Mike Mike's Gun Shop Dale Cation From the information we have on hand, this shotgun is not gas operated.

Instead, it employs a delayed blowback system much like the one used in the Benelli design. Unless things have changed, both Stoeger and Benelli are ingredients in the Beretta USA mix and the delayed blowback system is measurably cleaner than a gas-operated design.

We're assuming the Stoeger you have has seen considerably service. It is possible that damage to the cartridge lifter may have occurred.

Further, the lifter spring might have Bruce Maxon joined the damage or been incorrectly reinstalled after a detailed clean up. Of course, all of this assumes the Stoeger/Benelli similarities we suspect truly exist. It's probably best to check in with Beretta USA techs on this but we have no reason to believe the Benelli operating system has changed. Should that be the case, the Stoeger 2000 and Benelli 1200 function the same. It is an amazingly simple design and widely credited with the success of those models.

FEG-R61 I have a FEG-R61 chambered in .380 and am looking for a firing pin, spring, and spring cup. So far, I have not been able to locate these items. If you have any idea as to where I could come up with them? David C. Kaufman Arlington, WA Bob's Gun Shop is a good source for offshore-produced gun parts. Gun-Parts.com, Royal AR 71768. S&W Victory Clearance?

What should the gauge clearance be for minimum and maximum specifications with a feeler gauge between the barrel and the cylinder on the S&W Model 10 Victory model .38 Special? Joseph Tavolacci In order to prescribe an ideal range of cylinder gap clearances, it is important to establish how the revolver is primarily intended to be used. For PPC and duty use, the cylinder gap range should be 0.005 to 0.006. For Silhouette and similar sport shooting at distance use, a gap of 0.0015-0.0010 is preferred.

For IPSC, 0.0025-0.0035 is ideal. For a brand new, never fired revolver, the range of the gap clearance should be 0.004-0.008. AG

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