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PRECISION ARMS WORKSHOP

AND THE AMERICAN GUNSMITH ARCHIVE

A TECHNICAL JOURNAL OF CRAFT, REPAIR & RESTORATION

04

ARCHIVE ISSUE NUMBER



INSIDE THE ARCHIVE

THE ACCU-WEDGE

INFRINGED • SPRINGFIELD XD • MOSIN-NAGANT BARREL SLEEVE • SAVAGE 219

ORIGINAL METHODS. MODERN ACCESS.

ARCHIVE EDITION 160

DIGITAL ARCHIVE EDITION

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FROM THE ARCHIVE

Infringed

BY AMERICAN GUNSMITH EDITORS APRIL 2017

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Alexandria Kincaid is a firearms law attorney and owns a full-service law firm (Alex-Kincaid.com, with offices in Boise, Idaho and Lake Oswego, Oregon emphasizing estate and business asset protection, constitutional and criminal law, and firearms law. The firm is affiliated with the Fraternal Order of Police and accredited with the Veterans Administration. *Infringed* is Kincaid's broad overview of how the American legal system works and its effect on gun owners.

As a pro-gun attorney specializing in this area of law, Kincaid is uniquely qualified to cover and explain these issues and does so in detail.

The book opens with "Section I: The American Legal System", an eleven chapter summary of how law works. "Section II: The Federal System's Most Violated Gun Laws" delves deeper into gun law specifics, with chapters detailing the creation and politics behind the National Firearms Act, Gun Control Act of 1968, their impacts, and enforcement. "Section III: Where You Can & Cannot Take a Firearm, and How to Take It There Lawfully" goes into the who, what, and where legal specifics of gun ownership, transfers, carry, transport, trusts, and what you need to know.

Finally, "Section IV: The Second Amendment's Ultimate Protection—Defending Your Life with Deadly Force" details the rights and requirements of what is arguably the most important legal detail for firearms owners: Self defense.

Topics include how to sell or give a gun to someone else without breaking the law, legally transferring or shipping firearms across state lines, legal private party purchases, the legal difference between "possessing" and "owning" firearms, potential legal issues when traveling with firearms, taking guns into the workplace, gun trusts, financial concerns with firearms, the evolution trends in the American legal systems as it pertains to guns, legal concerns with a Federal Firearms License (FFL), and the law about using deadly force to protect your life.

Kincaid is a shooter's lawyer, being a gun owner and writer herself. This book is useful for all gun owners and doubly so for gunsmiths as it presents the truth about legal concerns with firearms. While licensed in Idaho and Oregon, Alex Kincaid Law clients are nationwide. If you need a lawyer about firearms matters, her firm should be at the top of your list. Reading *Infringed* just may help you avoid such a need.

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METALWORKING

Springfield XD

Maintenance and improvement of the Springfield XD 9/40, including installing the Powder River Precision spring kit.

BY DAVID W. MANNEY APRIL 2017

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A customer brought in a Springfield XD to have a Powder River Precision spring kit installed. While not a challenging project for a gunsmith, it can be daunting for the average person. There is a schematic and some brief instruction on a single piece of paper that comes with the kit. The components include a sear spring, trigger, striker safety lever, striker safety spring, two different trigger springs, and two different striker springs.

To change the springs out, the gun will have to be almost completely disassembled. Finish the disassembly and deep clean the gun while you are at it. This is a metric gun, so metric punches area big plus, especially a 3mm punch. The gun used for this had a 6 pound, 8 ounce trigger pull when started and finished with a 3 pound, 15 ounce pull when completed. There was 1/2" of trigger travel before the striker would release and this dropped to less than a 1/8" with very little over travel.

Field Stripping The use of safety glasses when working on this gun is highly recommended. Before starting, check to make sure the gun is unloaded. Drop the magazine and pull the slide back until it locks back. Flip the disassembly lever up, pull the slide back, and ease the slide forward under control until spring tension is released. While pointing in a safe direction, pull the trigger, thus releasing the slide. Pull the slide off the front of the frame.

The recoil spring assembly is taken out by lifting it up off the barrel. Removing to the back, lift up on the back of the barrel and remove backwards out of the slide.

Detailed Disassembly Start disassembly by pushing in the striker with a punch and moving the striker retainer down. Pull the punch out. Holding the striker in, pull the retainer out and remove the striker status indicator, striker spring, and striker spring guide out of the slide. Set aside the striker spring; this will be replaced.

Pull the striker safety retaining pin with a hook. While removing it from the slide, hold down on the striker safety. Once the pin is out, remove the striker safety and striker safety spring. Set the striker safety spring and striker spring aside with the parts being replace. At this point, no further disassembly is required for the kit. To finish disassembly, push the striker retaining pin out through the top. The striker can now be removed out the back of the slide along with the striker damping spring.

Push the loaded chamber indicator pin out to the right while keeping a finger on the loaded chamber indicator. Once clear of the slide, lift up and out the loaded indicator and spring. To remove the extractor, make a hook out of 48 drill rod. Flatten by grinding until it fits in between the extractor and slide. Bend a small hook and hardened it. Insert into the recess in the slide and hook the extractor while pulling out. For the frame, put the disassembly lever down to keep the trigger bar in place.

Push the sear pin out with a punch. Keep a hand over the back of the frame above the sear and pull the punch back out. Using a finger, push the sear, sear spring, and striker safety lever down into the magazine

well. The ejector can now be pulled off the ejector pin. Push the ejector pin even with the inside of the frame. Put the striker safety lever and sear spring aside with all the other parts being replaced. Remove the disassembly lever by rotating and pulling to the left.

Once half way out, rotate it 180 degrees to clear the slide stop lever spring. Push out the two pins holding the locking block into the frame. Pull the locking block up and out of the frame. The trigger assembly can be removed by pinching the trigger and the trigger bar into a "V" shape and lifting up. Remove the trigger bar from the trigger. Put aside the trigger and trigger spring with the rest of the parts that are being replaced. This is the stopping point of disassembly for the trigger kit.

Continuing with gun disassembly, push out the grip safety pin to the left with a punch. Control the grip safety spring as the punch is pulled out. Remove the spring and grip safety down and out the back of the frame. The magazine release is held in place by the magazine catch. Push out the magazine catch pin to the left with a punch. As the punch is pulled out, put a finger on the magazine catch to contain the magazine catch spring from springing out. This completes the frame disassembly.

Reassembly Tips Choose which of the color-matched lighter weight spring sets that will be used. Put in the new striker spring and striker safety spring into the slide. PRP recommends using a dab of grease to hold the

SPRINGFIELD XD CONTINUED

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striker safety spring in the striker safety when putting back in place. This does make it easier to keep the spring in place while installing the safety. The arrow points to the grip safety surface. For the frame, put the sear pin in from the right just enough to hold the new striker safety lever in the frame. Then put the sear in place and push the sear pin in enough to hold the sear. Place the new sear. Once the ejector is installed, moving the sear should not lift up the striker safety lever.

If the grip safety is stuck in the “in” position the sear will also have to be sanded where it engages the grip safety. Sand and polish same as for the ejector. Assemble the trigger assembly with the new trigger and new trigger spring that matches the striker spring already installed. Put the trigger back in by pinching into a “V” shape and hook the back of the trigger bar under the striker safety lever. Place the slide stop lever back into place.

Put the locking block back in, spring in with the two legs to the front and capturing it with the sear pin. Take the ejector and try

sliding into place. If it is tight, the sear will have to be sanded down. With a flat surface, start sanding with 120 grit sandpaper until the ejector just fits. Polish up the sear with 220 and 320 grit sandpaper. making sure the slide stop lever spring is flush with the locking block. Lifting up on the trigger will help get the locking block in.

Push in the front pin to lock the locking block back into the frame. Pull on the trigger to align the trigger hole, then push in the trigger pin

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Springfield XD (Specifications subject to change without notice) 1 Frame 2 Slide 3 Barrel 4 Locking Block 5 Trigger Pin 6 Trigger Pin Retainer 7 Trigger 8 Trigger Bar 9 Trigger Bar Spring 10 Sear 11 Sear Pin 12 Ejector Pin 13 Sear Spring 14 Ejector 15 Grip Safety 16 Grip Safety Pin 17 Grip Safety Spring from the right, then align the slide stop lever and finish pushing in the pin. Both pins are seated when the frame spring pops back into place with a click.

Start the disassembly lever with the lever pointing down. 18 Slide Stop Lever 19 Slide Stop Lever Spring 20 Disassembly Lever 21 Magazine Catch 22 Magazine Catch Pin 23 Magazine Catch Spring 24 Magazine Release Button 25 Striker Safety Lever 26 Striker Safety Retaining Pin 27 Striker Locking Plate 28 Striker Spring

Guide 29 Striker Status Indicator 31 Striker 32 Striker Spring 33 Striker Safety 34 Striker Safety Spring 35 Striker Retainer Pin 36 Extractor 37 Loaded Chamber Indicator 38 Loaded Chamber Indicator Pin 39 Loaded Chamber Indicator Spring 40 Rear Combat Sight 41 Front Fiber Optic Sight 42 Recoil Spring Assy (Sub-Compact) 43 Recoil Spring Assy (Service Model) 44 Recoil Spring Assy (Tactical Model) 45 Magazine Follower 46 Magazine Plate 48 Magazine Body 49 Magazine Spring Once it hits the spring, rotate until the lever is pointing up and push in.

You will have to use a finger to line up the lever with the right side of the frame while rotating and pushing in.

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Hard to see the difference. Only after shooting before and after, can you feel the difference. Check that the trigger and sear are working properly as follows: Pull back on the trigger and then push down on the trigger bar. This should release the sear. While holding the trigger back, push down on the striker safety lever. Slowly release the trigger. The trigger bar should now pop back up. If it doesn't, the striker safety lever will have to be filed down.

Take the striker safety lever out by pushing in the sear pin enough to disengage the lever. The tab on the lever will have to be filed where it engages the trigger bar. Using a fine file with a safe edge, make a few passes on the tab, and reinstall and test again. Take a little off at a time as this is small surface and it is easy to take off too much. Reinstall the slide on the frame and test the trigger operation. If pulling the trigger will not fire the gun, the trigger stop will have to be adjusted.

The easiest way of doing this is using a 1/2" wide strip of 120 grit crocus cloth. Place between the trigger and the frame, with the trigger pulled against the crocus cloth, then pull it out. Repeat until the gun fires. Do not take any more than needed as

this will increase the over travel of the trigger. The sweet spot is reached when pushing down hard on the slide and pulling the trigger it doesn't fire, but when you stop pushing down on the slide, it does.

You can use electrical tape if you are worried about scratching the frame. Reassemble the gun and preform safety checks. Safety Checks Check that the slide locks back with a magazine inserted into the gun. Remove the magazine and pull back the slide. It should go forward. If this doesn't work, check that the slide stop lever spring is not binding in the frame. Check the grip safety. Pull on the trigger while not engaging the grip safety. It should not fire.

Release the trigger and push in the on grip safety several times and make sure it does not stick. Check the sear engagement to the grip safety if there are issues. The trigger safety has to be depressed when the trigger is pulled in order to fire. Pull on the sides of the trigger, do not touch the safety lever, and make sure it doesn't fire. A new trigger will have to be installed if this fails. Check the operation of the disconnecter. Pull the trigger and release, then rack the slide.

The gun should recock and not fire. Pull the trigger and hold back. Rack the slide to recock the gun. Release the trigger and the trigger should reengage and fire when the trigger is pulled. Then pull the trigger and hold back. Pull the slide back and slowly let the slide go forward. As the slide is going forward, continuously pull and release the trigger. It should not reengage until the slide is almost in its forward position.

Any failure here means that the trigger bar, striker safety, or sear are out of specifications. With the slide off, recheck your work and see which part is at fault. Test fire the gun. Load two rounds in the magazine and fire both slowly. If everything is okay, load two more, fire the first one, and hold the trigger back to make sure you do not get a second shot. Then load three rounds and fire rapidly. Finally, load a full magazine and test as you would normally.

If it will not fire the last round, the trigger stop will have to have more taken off. Any issues should have already been corrected. If not, go back through the safety checks. AG

FROM THE ARCHIVE

The Accu-Wedge

Can a \$5 piece of red bubble gum cure a fifty-year-old design flaw?

BY JOE CARLOS APRIL 2017

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I have mentioned many times in the pages of this magazine that when Stoner designed the AR platform he probably never envisioned it becoming a target gun. There were design elements that made it reliable on the battlefield and easy to work on, but not as accurate as some of the demands put on it today. One of the most glaring accuracy detractors is the method of attaching the barrel to the upper receiver.

I offered some simple solutions to curing the problem in "The Relationship Of Barrel Extension Diameter To Accuracy In The AR-15" in the March and April 2013 issues. The other accuracy design shortfall is the method of attaching the upper receiver to the lower employing two loose fitting captive pins. Custom pistolsmiths spend time getting the slide-to-frame fit of 1911 semi autos just right. Precision rifle builders glass bed actions.

Yet, a fair number Below center: Thinning of the base of an Accu-Wedge is sometimes necessary to fit certain lower receivers. of AR-15 builders overlook all the play between the receivers of the guns they build despite the fact that tightening the receiver fit of the AR takes less time than properly lapping a slide. Takedown Pin Solutions I

have told two-thirds of the following story several times but I have been holding the final third for inclusion in this article.

When I first came on as the Armorer for the Army Reserve Service Rifle Team I assessed the team's 135 National Match uppers, first asking the team members to thoroughly clean them. Machine rest testing with quality factory match ammo revealed horrible accuracy! In my testing I found many of the uppers arrived quite fouled, so I cleaned the several dozen that I had already tested properly and retested them.

This yielded noticeable improvement, but initially failed to keep records on the degree of improvement, a mistake I learned to not make again. However, even with proper cleaning accuracy still wasn't acceptable. The final part of that story pertains to this article. Prior to trying Accu-Wedges, I would have rated the fit of those uppers as average.

If you saw my machine rest you would swear that, even without an Accu-Wedge, there couldn't possibly be any movement between the upper and lower when everything is clamped in place for testing. The stock and lower is clamped with twelve

locking points and the upper is clamped by seven. Despite the machine rest making accuracy-robbing movement nearly impossible, I found groups were tighter in the third tests. I learned to keep detailed records and used the same ammunition lots.

The Accu-Wedge groups tightened an average of 26%! I can only imagine how much potential these Wedges offer when shoulder fired without the machine rest bracing. Since then, I have never tested an AR without a tight, properly-fitted Accu-Wedge in place. While Accu-Wedges are meant to be a dropped in, some upper/lower combinations may need fitting. The Wedge's bottom sits on a ledge in the lower receiver near the take down pin, a dimension varying among manufacturers.

If the ledge is cut deep, the Accu-Wedge may not sit high enough. I have a Colt receiver with a thick metal washer under the Wedge to get enough support. Other brands of lower receivers require thinning the Accu-Wedge's base. Proper fit needs to be tight so as to require a lot of muscle to close up the firearm. If you are fitting a Wedge for a smaller statured or female shooter, have them present to make sure they can close up their gun.

THE ACCU-WEDGE CONTINUED

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While fitting a Wedge, look at what I call the "tail." Think of the Wedge as a bar stool shape. The circular part on bottom would be the seat and the piece that sticks up behind it would be the back of the stool. If that section sticks up too high it can rub against the bottom of the bolt carrier during function. Don't hesitate to cut off 1/8" or so from the top to prevent this. An Accu-Wedge will not last forever. Eventually it will compress and will not be as effective.

If kept under compression during storage the Wedge will tend to develop a set sooner. Cure this by shotgunning the AR (release the rear takedown pin) and store it with no pressure on the Wedge. Even at that you may want to replace the Wedge every six months or so. Watch your groups and replace if they start to open up with no other obvious reason. Always confirm zeroes after rotating in anew fresh Accu-Wedge.

It isn't unusual for between 1/3 to a full minute change in point of impact after replacing a worn out Wedge. Because the Accu-Wedge is an internal modification, it is legal

to use in most competition events. A device similar to the Accu-Wedge is the Accu-Screw, a nylon-tipped Allen set screw that is precision located in the lower receiver and hidden by the pistol grip. It presses up on the underside of the bottom of the lug in the upper receiver where the takedown pin resides when the rifle is fully assembled.

Sun Devil (SunDevilmfg.com, and Mega Arms (MegaArms.com, offer an Accu-Screw in their lower receivers. Accu-Screws are installed by removing the pistol grip and drilling a hole under the center of the upper receiver rear lug. The hole is tapped and an appropriately-sized nylon-tipped set screw is adjusted to bear upward pressure on the bottom of the upper receiver so as to take as much slop out as limited by the physical strength of the owner to close up the weapon.

Once the tightest setting that the customer can physically endure is arrived at, the pistol grip and accompanying parts is replaced. There is nothing to keep you gunsmiths from performing this modification on your cus-

tomers' rifles. According to Sun Devil's website, they have applied for a patent on the idea but until that patent is finally granted (which may take years) it is my understanding that there is no infringement nor is it unethical for other gunsmiths to offer the service.

If you want to see this job properly done before diving into it yourself, send a receiver to Turners Tactical Arms, LLC (TurnersTactical.com, They also sell lowers with Accu-Screws installed. As with the Accu-Wedge, the Accu-Screw is an internal modification that is invisible and likely fully legal in most competitions. Another option for tightening is the JP Enterprises (JPrifles.com, Tension Pin. Replacing the rear takedown pin, it's placed through the existing upper and lower receiver holes.

A supplied Allen wrench expands the pin inside the holes to tighten them. JP cautions against getting too hoggish on the amount of pressure used as it's possible to damage the innards of the pin. I would also be a bit afraid of causing damage to the receivers.

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Point of impact shifts are possible when changing internal pressure. This Tension Pin will be going out and in during every cleaning. Using just feel on the Allen screw, most shooters will likely apply inconsistent torque to the pin and that may lead to POI changes, though I haven't yet experimented enough with these to say for certain. If it does, the cure is a torque wrench calibrated in inch-pounds used to get the same torque each time.

Since this pin performs its tightening function without the need for a lot of physical strength it might be a good option for some smaller statured shooters. Varmint Lights (Varmint Lights. com, manufactures their X-Shim Kits for AR-15 and AR- 10 rifles. Incremental shims for both front and rear takedown pins fill any gaps between the upper and lower at each of these two locations. For only \$9.99, the company says one kit is good for two or three rifles.

Arma Lite has made National Match Oversized Pivot and Takedown Pins, advertised as being 0.001" fatter than stock pins normally 0.250" in diameter. However, pins available from other common sources some-

times exhibit poor quality control and can run on the skinny side of published specs. The corresponding receiver holes also run various sizes. Measure the dimensions of your pins and receiver holes to see if such oversized pins will actually make a difference for you.

As I was researching for this article, I found Arma Lite's website (ArmaLite.com) listed the NM Oversized Pivot Pin (part #ENM001) for the front but not the rear takedown version. I may have simply overlooked it and Far Use of an inch-pound torque wrench is not mandatory but may be helpful. Match pins are an effective and invisible way to tighten worn receivers. hope it's not discontinued as I've found these worthwhile, especially in tightening worn receivers whose pin holes had stretched with age.

My rule of thumb is if either pin can be pushed in with just my thumb, I replace with a bigger pin. If more resistance is needed I leave them alone. I feel tapping the pins in and out just hastens wear. I've found these Arma Lite NM pins to be a very effective tightening device where warranted and completely invisible, so they are likely legal for

nearly every competition. To minimize their tendency to permanently enlarge the corresponding holes in both receivers, lube them frequently and generously.

I recommend using a Pivot Pin Detent Installation Tool when installing or swapping pins. The spring and detent holding the pin captive are tricky to hold while working into place and I've sent bunches of these into orbit before the Brownells tool came on the market. The tool won't idiot proof you so I still recommend having a few spare springs and detents on hand.

Other armorers place the lower half of the gun in a large cardboard box while working on the pivot pin or use a clear plastic bag over the front of the lower to help catch flying parts. Pivot Pin Solutions Let's look at how we can improve the front pivot pin. Power Custom (PowerCustom.com, offers Receiver Shims, available from Brownells in ten packs for \$15.99 (713-000-108).

These little washers go between the "ears" at the front of the lower receiver and front lug of the upper with the pivot pin pushed in normally. This fills a gap between the

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lower and the sides of the pivot pin lug in the upper, a gap that contributes a lot of horizontal movement, rotational torque, and slop in the final fit. The washers I've measured mostly go about 0.004" thick, with a few a little thinner but none under 0.003". Use your feeler gauges to get an overall gap size, which may need more than one shim. Getting just one of these washers to hold alignment well enough to push the pivot pin through is a little bit of a challenge and two increases the difficulty.

I suppose with practice one may gain a certain finesse in performing this juggling act, though there are three of them shown. I'm certain that "inventive language skills" are also helpful from a morale standpoint. I have tried placing one shim on each side of the "ears" as well as stacking both on the same side. Neither was easy and I have ruined a number of them in my admittedly "all thumbs" learning curve.

If you are willing to compromise and accept more slop, the job becomes "easier" but that is defeating the purpose of using the shims in the first place. Michigan Center Outdoors (MichiganCenterOutdoors.com, also offers

shim packs made up of three assorted thicknesses (0.002", 0.003", and 0.005"). This along with the 0.004" Power Custom shims offer a fair amount of flexibility.

Because I often end up needing spacers thicker than any of these, I also keep shims from MSC Industrial Supply (MSCdirect.com), sized at 0.373" on the outside with a 0.258" hole size. The slightly fat hole size which gives some leeway in clearing 0.250" pivot pins. Stock #76424308 is 0.007" thick and #76424266 is 0.010" thick. MSC also has shims in 0.006" and 0.008" with skinnier 0.250" holes that will just clear the pivot pin but alignment becomes really critical.

I like working with the thicker spacers as they don't tend to kink and bend as severely when getting them aligned, and it's far easier to use a single, thicker washer than to combine two thinner ones. Don't worry about overstocking these shims because they also can be used to take windage slop out of rear sights for the A2 rifles and the Crosman MAR air rifle upper for the AR-15. For more information see my article, "AR-15 Sub-Caliber Training" in the October 2015 issue.

Decades ago, Colt replaced the user friendly, one-piece pivot pin with a two-piece creation having a slotted screw head on the left side. Shooters hated it with many feeling it was a solution to a nonexistent problem and replaced the two-piece pin with a conventional one-piece option. Turns out we may have been short sighted. People who kept their two-piece pivot pins discovered that a little file or grinder work can modify the long section to tighten the upper-to-lower fit at the pivot pin.

The long section normally exceeds the outside distance between the two "ears" of the lower receiver. Screwing the left side slotted section in place, the pivot pin can't back out but the head of the screw never pressures the left "ear" of the lower receiver. However, filing a short bit off the end of the long section of a Colt pivot pin and dressing it down so it's shorter than the distance between the outsides of the "ears" allows it to tighten.

Thus modified, applying a bit of muscle when screwing the pin together pinches the

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“ears” closer together, taking up some of the gap between them and the pivot pin lug in the upper receiver. Since we are dealing with aluminum receivers, that made me a bit nervous and I was afraid of damaging a valuable lower, however, I’ve never found an instance where it happened. When AR spacer shims became popular, I started using them with the modified two-piece pin, taking up as much gap as possible with the washers and leaving only a couple thousandths to be pinched by the modified pivot pin.

I put blue Loctite on the threads and tighten to my desired level. I recommend using Kroil in the tight areas, applying it frequently as you will be “shotgunning” the firearm after each range session for cleaning. Two-piece pins can be had from Specialized Armament (SpecializedArmament.com, as part number is SA08001, or from KNS Precision, Inc. (KNSprecisionInc.com, Double Up! There are two pins holding Stoner rifles together.

To achieve true match grade tightness in any AR, apply one of the tightening methods to each of the two pins. Far too many folks think they can do it by just tightening at one pin location and that ain’t so! Virtually all of the methods I have described are cheap, fast, and simple.

Just as the best way to cure a cold is not catching one in the first place, the best way to cure movement between the upper and lower receivers is to start with a matched receiver pair, such as the set offered by Rock River Arms (RockRiverArms.com, Because ARs are made with aluminum receivers, eventually even a matched receiver pair will need to be tightened back up using the hints in this article but most shooters will likely get years of accurate performance before that happens.

Conclusions As I’ve discussed, I was disappointed with the accuracy of the USAR Service Rifle uppers when I first came on as their Armorer. Having a negligible budget for parts, I instituted an “AR-15 Upper Quick Fix Program” as a low cost but fast accuracy enhancing effort. Many of the fixes can be applied cheaply by shooters, don’t always require a gunsmith, and can be done without a bunch of expensive tools.

In the decade plus that I was the USAR Armorer I effectively cut the group sizes of the Team’s uppers in half and my Upper Quick Fix Program was a huge contributor to that effort. This is the fourth installment in my Upper Quick Fix series, with the previous three being “Match Bolt Carriers”, “Magazine

Checks”, and “Electropolishing And Fire Lapping.” Generally, firearms have more similarities than differences.

There are folks who will try to make you believe that tight slide-to-frame fit in a National Match pistol and a double pillar bedded stock in a rifle aids accuracy, but for some mystical reason upper-to-lower fit Stoner-type rifles can be completely ignored. These folks fumble for answers when challenged or come up with reasons that don’t compute. As a competitor with the Army Reserve Shooting Team I could see a difference in groups and scores when I replaced a worn Accu- Wedge with anew, tight, fitted one.

It’s why I saw a 26% average group reduction when machine rest testing. If you aren’t convinced, try any of these tightening methods, with the cheapest and easiest being a five dollar Accu-Wedge. If you don’t see an improvement, you don’t need to bother any more. Regardless, that piece of bubble gum in your receiver or other improvement won’t make up for the need to ruthlessly apply the fundamentals of marksmanship. AG

RIFLES

Mosin-Nagant Barrel Sleeve

BY ROBERT COLES APRIL 2017

ORIGINAL PP. 12-15

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More years ago than I care to remember I had worked on a rifle for my Uncle Gale. He took me on my first Canada fishing trip and first northern Quebec Caribou hunt. Great memories, and awesome northern lights, too. That rifle was a Mosin-Nagant and I sporterized it for him. Nagants are not the sleekest looking rifles and their 7.62x54R chambering wasn't popular or common in the United States back then.

However, Uncle Gabe said he wanted something unique, so I did the work he requested and delivered that rifle to him. Since then I have kept an eye on those particular rifles, watching prices go up and down along with surplus availability. Recently, I thought that it would also be unique to build a tactical Mosin-Nagant.

In doing research for the project I found that the Southern California Mosin Owners (SoCaMo.com) are running their own streaming television channel available via Roku Streaming TV Player (roku.com)

and at YouTube.com/Mosin-Nagant Channel. Seeing the different gunsmithing project featured and the accuracy potential that could be had, I sought out to build my own based on a Mosin-Nagant 91/30 chambered in 7.62x54R.

I picked up a Century Arms International Russian 91/30 rebuild with a 28" barrel and a very nice looking bore. Most available 7.62x54R ammo will have bullets measuring .311 caliber, however, this barrel slugged at 0.312" so reloads looked to be in order. Inspecting the rifle parts revealed components to be in excellent shape. I started removing the sights from the barrel. Rock Solid Industries (RockSolidInd.com), 62x54R. tactical handle along with a knurled bolt knob finished off the bolt body.

Holes needed to be drilled and tapped on the receiver for a Weaver scope base (beefy 10-24 screws area nice touch). Before modification and assembly work, I polished and blued the receiver to a nice high gloss finish,

along with polishing up all related bolt components. This made for a smooth working bolt. Before getting to the components, let's discuss polishing.

There are several little tricks to smoothing out a Mosin-Nagant action and bolt for super smooth operation and bolt preparation is at the top of the list: Fit, polish and lubrication. and Blue Grass Stock Company (BGgunstocks.com) have some very nice custom parts for building tactical Nagants. After talking with them I ordered the needed items. A threaded Start with lightening the firing pin spring by slipping the spring over a screw driver and running the spring across a grinder wheel.

The spring will rotate on the screwdriver shaft as you make back and forth passes across the grinder wheel. Only a few thousands need be removed. Follow up with a good polish on the buffer wheel. Several components interlock and slide and rub on each other in a

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The detailed process is explained in the Rock Solid instructions and allows any amount of MOA to be set with the mount before the rear screw is drilled and tapped. Nagant bolt. Sharp edges need to be dehorned and everything polished to a bright shine. I found a copper based anti-seize lubricant that gave a good slippery surface along with great cling ability. Look for Loctite Copper Anti-Seize, available in most auto supply stores.

Use a receiver race way tool to polish the bolt inner rails with 600 grit aluminum oxide paper with some oil. This will produce a glass-smooth bolt push. Without removing the original barrel, I chose not to do any bolt lug work as I didn't want to alter headspace with the 7.62x54R I think this added support helps keep the receiver from any rearward movement from recoil. This along with pillars and full stock bedding makes sure things just don't move!

The stock will be full-length bedded, along with two inches of the barrel forward of the receiver. round. The stock I ordered was a Special Force Tactical in maple and it's loaded

with nice features including swivel studs, aluminum pillars, and adjustable cheek piece with a soft rubber recoil pad. It's a very nice looking stock. Drill, Bed, Sleeve Next was drilling the beefy holes for the 10-24 tap. A detailed process is explained in the instructions included with the Rock Solid mount.

This setup allows any amount of MOA to be set into the mount before the rear screw is drilled and tapped. It is ready to put on the rifle and installed once elevation rise is determined. Now on to bedding. I always add an extra recoil lug bedded into the stock just behind the front receiver lug recess. I think this added support helps keep the receiver from any rearward movement from recoil. This along with pillars and full stock bedding means things just don't move!

A 5/16" threaded rod was cut to fit full width of the milled slot and epoxied into place. The stock was full-length bedded up to two inches of the barrel forward of the receiver. The barrel channel can accept a 1.25" bull barrel sleeve. There was plenty of extra wood on the Bluegrass stock to allow for the cut. I used a

Timney trigger (TimneyTriggers.com, as it is the only aftermarket adjustable trigger that has great reviews for Nagants.

Adjusting down to 1.5 pounds of pull was easy and no slam fires happened during testing. Adding an aluminum trigger shoe helped dress up the looks along with providing a wider pressure point for the trigger finger tip. With the receiver and bolt work done I focused my attention to the barrel, I didn't like the small diameter and pencil-looking barrel, however, I didn't want to invest in anew barrel either.

Looking back in my archive of American Gunsmith I found an article called "Barrel Sleeving A New Way" by Norman Johnson in the October 2012 issue. I like to experiment with different things when working with guns and the concept of sleeving a barrel to improve accuracy and dull vibration harmonics really interested me. I researched other theories on barrel sleeves along with types of compounds to fill the void between the barrel and outer

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25" bull barrel sleeve. There was plenty of extra wood on the Bluegrass stock to allow for the cut. sleeve. Nodes of vibration and barrel whip are all very interesting subjects. One interesting fact was the need to displace heat generated during firing the bullet through the barrel along with the ability of the compound to withstand the shock of recoil.

While digging through the data I found a company that does exactly what I was planning to do, The Straight Jacket Barrel System from Teludyne Tech (Teludyne Tech. com, is the name of the product. However, the price tag was more than I wanted to spend, so I ordered up some material from a local supplier and headed out to the shop for some machining time to build my own.

First, I fully bedded with Pro-Bed 2000 (Pro-Bed2000.com, Pillars were factory installed and the rear pillar was cut to allow clearance of the Timney trigger. Pillars were factory installed and rear pillar cut to allow clearance of the Timney trigger. Bluegrass saved me

time by offering installed pillars. 25" stainless sleeve and muzzle cap. Bluegrass saved me time by offering installed pillars. I cut an 11-degree target crown on the original military barrel, then sized it with a stainless sleeve and muzzle cap.

I had already ordered a 1 1/4" stainless steel tube and cut it down to 28" long to cover the entire military barrel. Turning to a depth of three inches, the inside diameter of the sleeve was shaved to 0.003" under the barrel outside breech measurement to provide a nice tight press fit. Along with this sleeve I made a muzzle cap to fit around the barrel muzzle and inside the sleeve. I used an over-sized washer and turned it to a snug fit for the muzzle and the sleeve.

An important note here is metal coating to prevent corrosion from the heat displacing compound. The barrel must be properly coated to protect it from any form of weakening. After epoxy coating the barrel with Brownells Aluma-Hyde II (#083-002-012WB) and mix-

ing up some hydraulic cement, the sleeve was pressed on. I used brass turnings mixed in with the cement to act as heat sinks to transfer heat away from the barrel to the outer sleeve. This hydraulic cement was prepared as directed with 1/3 brass turnings added.

Small remnants from lathe work are ample size. Tap the sides of the sleeve during filling to raise any air pockets to the surface. Hydraulic cement is used because of it expands during the drying process. This ensures a very tight bond between barrel and sleeve. Plug the bore with putty to prevent cement entering the bore during filling of the empty cavity. As with any cement curing, the "cream" water will form on the top during the hardening process.

It only takes about 30 minutes for hydraulic cement to start hardening. Soak up the water with a piece of paper towel and press in the muzzle cap within about 15 minutes of pouring in the cement. Once

MOSIN-NAGANT BARREL SLEEVE CONTINUED

ORIGINAL PAGE 15

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Original caption: Bottom: Final build of the finished Mosin-Nagant. of the sleeve.

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I used a washer of oversized dimensions and turned it to a snug fit for the muzzle and the sleeve. cured, the sleeve is solidly attached to the barrel and ready to assemble to a complete rifle. Completely rough up any surface to be in contact with the cement to allow a grip for bonding, such as the underside of the muzzle cap and inner surface Sub-moa at 100 yards. That's more like it!

With the barrel sleeve filled with compound and muzzle cap installed, let things cure. Once out to the range with a newly built rifle and some factory ammo, I am happy if this rig will print one minute groups. I can always try further load development to tighten up groups. During the first range session, the sun was gleaming through the leaves with temperatures in the upper 50s. A 25+ mph wind was blowing across the bench to keep things interesting.

A quick check at 50 yards easily zeroed the Leatherwood Uni-Dial 4- 16×50 scope. I then went out to 100 yards to set the initial zero. 148 grain bi-metal jacket Wolf white box ammo started the range day and the first 100 yard results had groups printing around 1.25". Saying I wasn't very impressed with the accuracy would be an understatement. I did note the barrel was not very hot after several rounds and cooked through to the bore.

Switching to the same type of ammo in Wolf's black/red box really turned the day around! The first three rounds made a nice crescent 1/2" group. I thought that was a freak thing judging from the previous rounds fired but timing the shots again for a second group put another single ragged hole at the bull's eye. That's more like it! The blonde Russian Mosin-Nagant started to really settle in and drive some impressive groups with that Wolf ammo.

Steel case, bi-metal jacket bullets at economical prices that shoot darn good. What's not to like about that? When someone questions what are you going to do with an old, beat-up surplus Russian gun, just smile and start putting on along sleeve! After several range trips I found a very interesting trick to do for consistent grouping of Wolf or other cheap factory ammo. Such ammunition is mass produced, and disassembling and measuring bullets revealed that they are among the most out-of-spec component.

I measure bullet diameters of my Wolf ammo as loaded, separating them into likesized lots. This will lead to smaller groups as the bullets of each of your lots is the same. The diameter that works best will depend on your rifle's particular bore. AG

FROM THE ARCHIVE

Savage 219

Working with a Savage single shot that showed up in a bag.

BY PAUL MAZAN APRIL 2017

ORIGINAL PP. 16-17

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Sometimes you see it coming, sometimes you don't. That one customer or shooting buddy that walks in sheep faced with a bag or box in his hand. He will rarely admit that he took the gun apart and can't get it back together. It always seems to be his kid or his brother-in-law that did it, but there it is, a bag that contains a bunch of gun parts. Sometimes it is simply, "Can you put this back together?" Other times it's, "How much will you give me for this?" Either way, it is always trouble.

Most times it's a cheap old gun you don't really want and rarely are all the parts present but, hey, the guy is a regular or a friend so you swallow hard and buy the darned thing. I recently acquired a Savage 219 single shot in a bag in exactly this way. I have no interest in single shot shotguns but this one came with four barrels: .30-30, .22 Hornet, 12 gauge, and 20 gauge. There were also two stocks, four handguards, and a bunch of new parts. Being a sucker for a deal, I bought it.

The finish was mostly gone and the barrels had some light pitting on the outside but the bores were excellent. It seems the owner had decided the gun needed a makeover after many years of use and bought new parts and wood in an effort to rebuild it. He did a pretty good job refinishing the wood and I had no doubt, based on the high gloss

finish, that he had finished it with Birchwood Casey Tru-Oil. Evidently, he came to grief when he tried reassembling the gun.

Never having seen the interior of a Savage 219, I soon learned why. Assembly can indeed be a bit tricky. If you're lucky, you're faced with a model that you have worked on before; if you're not, you're faced with figuring out exactly what goes where and in what order. This is where your Internet connection can save the day.

As we all know most guns have an order that the parts must be assembled in and it is infinitely easier to find an assembly guide online than to fumble around and learn the sequence by trial and error. In the case of the Savage 219 there was very little information readily available. None of my assembly/disassembly guides had any information on it and there was little available via the Internet.

Fortunately, I was able to locate a schematic on the Top The original stock showed someone's attempt to personalize the gun by carving a deer on the stock. Bottom This was one of those rare instances when all the parts are actually present. Web and that at least showed me how all the parts went together. I laid the parts out on my bench in the same relationship they were in the schematic I found and that got me started.

I had to use trial and error in getting the sequence right and I probably had the gun together and apart four or five times before the sequence became clear. The secret is patience. If you are sure the parts you have come from the gun in front of you, don't take a shortcut by filing or grinding apart that won't fit. Accept that you are doing something wrong and figure it out.

In this case, I could not get the striker assembly and bridge into place without bending the firing pin and the legs on the bridge were too long to slide into the slots in the receiver. It took awhile for me to realize that the solution wasn't shortening the legs of the bridge but assembling it with one leg in the slot in the lower frame for the trigger so the assembly lined up closer to center for it to slide into place.

I also learned that the sear must be positioned through the slot in the bridge before the bridge is tapped into place. Once assembled, everything seemed to be working and I congratulated myself until I noticed the firing pin protruding through the standing breach. Everything was working as it should. The firing pin retracted as the action was opened and the sear engaged the striker exactly as

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A sanding block and abrasive paper was used to bring the finish to a shine, removing scratches and some light pitting. It should, but when the action was closed the sear slid out of the recess in the striker and the firing pin went forward. It turned out that everything was assembled correctly but the new striker was not fitted to the sear and would not hold the firing pin in the cocked position. Once more, I had to take the gun apart and fit the sear to the notch in the striker.

This wasn't really unexpected but I tend not to cut on parts until I have seen how they interact in the gun. If you have done much trigger work you know that in many cases you will have the gun together and apart over and over as you adjust the sear engagement and adjust the angle until you achieve the trigger. A .22 Hornet for varmints, .30-30 for deer, 20 gauge for upland game birds, and 12 gauge for waterfowl. pull you are looking for.

Many of the jigs available for the more popular guns like the 1911 make the job much easier, but for old guns the jigs simply don't exist and it is a monumental waste of time to design and make a jig for a job you will probably never do again. Initially, after eyeballing the angle and making my first adjustment, the sear held the striker as it should but the trigger pull was a bit heavy, to say the least.

By cutting and trying and removing very small amounts of metal, adjusting the angle, and relying on stones rather than files at the end, I eventually got a nice clean 4.5 pound trigger. That may seem heavy to some but as an old Service Rifle shooter that is the weight I'm used to and comfortable with. I'm pretty sure this old dog could learn anew trick or two but then I ask myself, "Why?" It works for me so I'm not going to try fixing it. Your final step is to safety check the gun.

Make sure that with the safety off the sear won't disengage and allow the gun to fire if dropped or bounced around. Once you are

sure it is safe, finish the assembly and take the gun out and shoot it to ring out any problems you might have missed. Yes, it is possible you missed something in the shop that will show up at the range. Did you check the ejector? Did it work with a shell fired in this gun?

It's better to find out now that it needs adjustment than in the field when you want to be shooting prairie dogs rather than gunsmithing. Besides, going to the range to check the gun and loads out is fun and isn't that why we do this? Taking my Savage 219 "bag gun" to the range revealed it turned out to be a nice multi-barrel gun project as both centerfire calibers shoot very well. Both the .30-30 and .22 Hornet performed with the first load I tried.

This project turned someone else's problem into a versatile and good shooting gun. AG

FROM THE ARCHIVE

SHOT Show 2017

Our Technical Editor's editorial from Las Vegas.

BY CHICK BLOOD APRIL 2017

ORIGINAL PP. 18

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Original caption: Top: A one-cock air rifle at 1,000 fps, yet whisper quiet. ing down to spread more scat on the firearms business, already the most regulated nationwide. Perhaps the worm has reared up and will be fighting back harder than ever. Say why? On the very day our non-binding survey was taken, a bill was introduced in the House enabling coast-to-coast reciprocity for CCW permits.

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It sounded like every steam pipe in the cavernous Sands Expo complex had all burst simultaneously. A quick reality check revealed it was a collective sigh of relief being expelled by the large assemblage of exhibitors and visitors. Might be a good idea to add your voice as well. In case you need a reason why, consider these facts: The White House, Senate, and House of Representatives have all turned red.

This, we felt, called for as many visits as could be arranged on short notice with major manufacturer or importer executives and developers/users of new technology. We even added the opinions of some old buddies about their expectations for the year ahead. There was general consensus that sans Hillary and company, all challenges to the Second Amendment would end consideration in the SCOTUS round file.

Running a close second was confidence there'd be no massive increase in regulations bear- "Tight" is too loose for tolerances here.

We have a sneaking suspicion word that bill could be looming got leaked to exhibitors at one or more previous SHOT Shows. CCW firearms have been abundantly on display in recent years. 2017 was no exception. We've already reported on several. There are more to come, along with feature articles on such things as one target pistolmaker's means of repeatedly achieving tolerances virtually unheard of outside of the American Pistolsmiths Guild.

Some of these coming attractions are hinted at here with teasing photos and deliberately less-than-descriptive captions. One of the reasons we travel to SHOT and similar industry gatherings is to get a better-than-average handle on what could be looking for the services of a gunsmith. After all, that is where you get into the action. AG

RIFLES

Magpul Bottom Metal

Fitting and using Magpul Hunter 700 bottom metal with a Remington 700 BDL stock.

BY RYAN HOOVER APRIL 2017

ORIGINAL PP. 19-20

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I run RH Custom Guns in Fredericksburg, Texas (RHCCustomGuns.com) and recently had a client of mine wanting a more affordable box magazine system for his daughter's pet .243 rifle. He said, "I'd like to find something that uses Magpul mags so I can get extras that are less expensive than the traditional metal-type box mag." He was definitely on to something. Now, I know that the parts from Magpul aren't actually made of metal.

However, we gunsmiths typically refer to a trigger guard, floorplate, and magazine well as "bottom metal" so I will use that term throughout. Also, it sounds better than "bottom polymer." After a little research, I discovered that Magpul has recently released a new polymer trigger guard that has the ability to accept the company's AICS-pattern P-Mag. This is a polymer magazine designed to fit in any Be sure to center the screws through the holes in the stock. Here you can see the tabs that need to be sanded off.

Accuracy International type shortaction magazine well. To top it off, the Magpul bottom metal was less than a third of the price of traditional metal detachable magazine systems and it came with a five round magazine! Not knowing if it would fit, I contacted Magpul directly to ask what they thought. It could be made to fit, they told me, but they did not recommend it. My client immediately wrote their recommendation off as lawyer-speak and said he'd be glad to be a guinea pig for the project.

If it didn't work, we could always install different bottom metal. I ordered the parts and inspected the rifle to see if I thought it would fit. After some inspection, I determined that it could be done and the profile really wasn't that much different from others. With my client's approval, I proceeded with the work. First, I have to say that Magpul probably doesn't recommend this type of install because it is not for the unskilled.

It took approximately three hours of work both on the mill and on my bench to fit it. On the Magpul part, there are two tabs on

the bottom metal in about the middle of the magazine well. Sand those off to the surface of the rest of the part. These are used to key into Magpul's Hunter stock and are not necessary on a BDL stock. After going through the requisite safety checks, disassemble the rifle.

While not exactly necessary, I've found that removing the trigger and bolt stop assemblies helps to keep those parts from getting too dirty from sanding dust. It will save some later headaches. The most difficult part is ensuring that the bottom metal is going in level to the action of the rifle. The curved and angled surfaces on both the bottom metal and the stock make this a bit of a challenge. I've found that using Forster's inletting guide screws (Brownells # 319-415-700) greatly aids in this.

After the rifle is disassembled, install the inletting screws and place the stock on the rifle. The screws should stick out below the bottom

MAGPUL BOTTOM METAL CONTINUED

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of the stock and you can slide the bottom metal over them. Be sure the part is aligned correctly to the action (not the stock) and trace around the part of the bottom metal that touches the stock. This is the first section you need to work on. Place the stock in the mill and mill out as much as you can while still leaving your lines. After this, use files to slowly remove material up to your lines until the bottom metal starts to go in to the stock.

Note, it is easy to think you need Looks and works great! to file past your lines because the piece will not go any further in to the stock. It is more likely that you either are cocking the bottom metal as you try to seat it or that you are not filing straight down. Be sure to work as straight as you can. I recommend using inletting black (Brownells # 457-001-050), which is a black paste painted on to the part you are inletting.

When the part is pressed into the stock, it will leave a black mark wherever it touches, showing where to remove material. Trust the black mark. If there isn't a black mark, it isn't touching there. Once you get the bottom metal let in far enough that its outer edges are touching the surface of the stock, trace all the way around the outline of the piece. Using the mill or files, remove material up to your line. You did remember to file straight, right?

Now it's just a matter of testing the bottom metal, removing material, re-applying inletting black, and repeating until it's right. The Magpul bottom metal is fully inlet when the front and rear areas where the screws go through are touching the original inlet surface on the stock. In other words, the entire bottom metal will not be flush with the bottom of the stock. Do not go any deeper or the

magazine will not fit. After you are satisfied with the fit of the bottom metal, test for function using dummies.

On the rifle I did, the box magazine had to have a bit of material sanded off of the top of the feed lips to seat correctly. This did not affect feeding at all and may or may not be necessary on other rifles. The only complaint I have about this system—and it's minor—is that the magazines do not fall out when the release is tripped. I assume this is a function of the material the parts are made out of. At least you won't be losing mags in the dirt. All in all, I found this a very rewarding project.

I am now able to offer my clients an affordable upgrade at less than half the cost of some of the more common bottom metals. My client went away very happy and I look forward to informing Magpul about how well it works. Good gunsmithing! AG

MEASUREMENT & INSPECTION

Making A Group Gauge

Here is a handy tool to measure group size when you're out at the range. A few simple tools and an hour of your time is all it takes.

BY PAUL MAZAN APRIL 2017

ORIGINAL PP. 21-22

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Every gun writer, competition shooter, reloader, and hunter loves to brag about how small a group his favorite rifle and load will shoot. Sometimes I listen to those stories and want to ask to see some of those groups, but whether they really exist or not doesn't matter. When I go to the range I like to try out new loads, bullets, and powders just to see if I can improve on my own personal record with a gun. To do that, groups must be measured. One of the fastest ways I've found to do that is with a group gauge.

A group gauge is a clear piece of plastic with circles etched into it representing 1/2, 1, 1 1/2, and 2 inches Bore a hole in the center of the plastic piece. in diameter. To use, the gauge is laid over the target and centered on the group being measured. By moving the gauge so the inner edge of the farthest holes apart are just touching the same circle, the

gauge indicates the size of the group. However, before you can use the gauge you need to have one so let's get the materials together and make it.

You will need a sheet of plastic 1/16-1/8" thick and large enough to cut a 4"x6" rectangle out of it. For tools, you'll need a sharp knife to cut the plastic, a compass to scribe the circles, a ruler to set the compass, a black marker, paper towels, and mineral spirits. Cut a 4"x6" rectangle from the plastic, locate the center, and use a knife tip or a drill to make a small hole. This will be the center of your gauge.

Set the compass to 1/4" between the metal point and the pencil tip, place the tip of the pencil or lead in the hole, and use the metal point to scribe a circle. Work slowly when scribing the circles, cutting small arcs at a

time. Go over the arcs and then the complete circle several times to make the lines as deep as you can. This first circle will be a half-inch across. Next, set the compass to 1/2" and repeat the procedure for a one-inch circle.

Then again with the compass set at 3/4" (1 1/2" circle) and at 1" for a twoinch circle. This creates four scribed circles to indicate your group size when placed on the target. If you normally shoot black bullseyes, leave the scribed circles as they are. If you shoot red or similar lighter colored sight-in targets, the next step is to blacken the scribed lines so they stand out against a lighter background. To darken the scribed lines, take a permanent marker and trace it over the lines.

I also scribe the numbers 1, 2, and 3 on the gauge so as to indicate the size of the circle to their right. It isn't necessary to

MAKING A GROUP GAUGE CONTINUED

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be neat when tracing the lines but do try to get ink all the way to the bottom of the line. Once the lines are blacked in sufficiently well, moisten a paper towel with mineral spirits and rub off the ink that remains on the surface of the plastic. As long as the paper towel is just damp and not soaked, it will leave the ink in the bottom of the scribed lines and make the lines easy to see. In use, lay the gauge on your target over the group.

Center it so that the inner edge of the two holes farthest apart in the group touch or are in the same proximity to the smallest circle I like to space mine so they are 1/2, 1, 1 1/2, 2, and 3-inch circles. You can make as many as you like spaced for your guns and range. The scribed numbers represent the size of the circle to the right. Neatness doesn't count, just be sure the ink covers the bottom

of the scribed line. they can both be near. This lets you easily ascertain the approximate group size.

For this project, a picture is truly worth a thousand words so refer to the illustrations. This is an easy project to make a gauge that I find helpful. AG Far In this case, the two holes farthest apart are both inside the 1" circle, giving us a group size of about 7/8". That way it is handy whenever I want to log accuracy results.

MACHINING

Reader Forum

BY AMERICAN GUNSMITH EDITORS APRIL 2017

ORIGINAL PP. 23-24

Rifle ID and Higgins Restoration I need help to identify a .22 bolt-action, magazine-fed rifle. While it appears to be a military training rifle, there are no markings apparent. The barrel is stamped "IMC2 1989 M-0316" and there is a cleaning kit under a trapdoor in the butt plate. The striker is broken and could be rebuilt by a machinist but I'd rather obtain anew one, if I had positive identification of the model. Concerning "J. C.

Higgins Restoration" by Norman Johnson (February 2017), I had an older Model 583.25 brought into my shop with the forend split as described in the article. With nothing missing, it should be a simple fix with epoxy and pins. I noticed Mr. Johnson did not use pins with his Score High Pro-Bed 2000. Given the two guns are so nearly alike with the same damage, I wonder if the stock from the trigger guard all the way up is too thin for the magazine tube?

It seems the stock bolt pulled in tight causes a lot of upward pressure on the forend where it contacts the magazine. I can relieve that by adding a shim or glass bedding in the recoil lug area for a free float effect. According to The Blue Book of Gun Values the M583.25 is the same as the H&R 121 discontinued in 1942. H&R sold the rights to Sears, Roebuck & Company, having it manufactured by High Standard. Blue Book doesn't say when. My guess is the M583.25 was made for Sears by H&R.

I could not find any references for the M585.22. Thanks to all American Gunsmith authors for publishing interesting articles. This along with the Reader Forum gives me a glimpse into their shops and projects. Christian Stauffer Author Norman Johnson responds. The ID request for this .22 bolt action rifle is a bit puzzling. Given the stampings described, I be-

lieve it is military oriented. While in the Marine Corps (1952-54) I recall rifle familiarization with very similar rifles.

You may well be forced to improvise a repair solution for this rifle. It may help to send your query with photos to The National Firearms Museum Fairfax, VA 22030, nramuseum.org.) Concerning the J. C. Higgins restoration project, I used no pins on the repair. A good, clean, dry repair results in wood contact as strong as the wood ever was. The owners were thrilled with this repair and treasured their copy of American Gunsmith describing the restoration.

As for the Model 583.25 and the underside of the stock being too thin, that is likely a valid concern. Aside from some sort of reconstruction efforts as suggested, all we can do is repair these stocks as we find them with a little TLC. Unfortunately, many such guns receive a great deal of abuse. Letter From Brownells I happened to be reading through the June 2016 issue of American Gunsmith recently and came across your very kind mentions of us in the Reader Forum section.

The first was a reply to a gentleman who was inquiring about cold rust bluing and the second concerned someone wanting to reline a Savage/Stevens 1915. Thank you for pointing them in our direction! It really pleases, me to know you think of us as number one. Dad was just trying to earn a few extra dollars to feed me and my sisters and it grew larger than he ever could have imagined.

It's quite humbling even after all these years to know what the business has become—even more so to know good folks like you regard us so highly. Hillsboro, OH Thank you for your continued support of us, it's very much appreciated. Don't hesitate to get in touch with us if there's anything we can provide for upcoming projects. Frank R. Brownell, III Chairman,

Brownells Genesis Of The Henry Rifle The February 2017 article about the 1860 Henry rifle has a couple of errors.

The original 1860 rifle was chambered in .44 Rimfire, not 44-40/.44 WCF. It held 16 rounds of .44 Rimfire loaded with 26 grains of powder and a 200 grain bullet. The .44 WCF did not come out until 1873 for the new Winchester 1873 rifle, was loaded with 40 grains of powder and was the first centerfire cartridge for the Winchester Repeating Arms Company. The article further states use of the .44 S&W Special cartridges in the new Henry, but this is incorrect. 44-40 does not interchange with 44 Special.

Always use only the correct ammo for the firearm, as marked. Finally, Hunt and Jennings should also share credit for the design of the Volcanic, not just Smith & Wesson. Joe S Foley, Author Chick Blood responds. Perhaps "genesis" was too biblical a term to employ since the bones of the article was to bring attention to errors in the owner's manual and the correct method of achieving its basic functions as well as fundamentally servicing the rifle.

You are quite correct regarding to Smith & Wesson's .44 Special being non-compatible with a .44-40 chamber. The .44 S&W is a straight case and the .44-40 is a bottleneck, though it was adapted by Colt in the same caliber and load for use in their revolver. Along with the 1873 Winchester, I reckon that makes for two guns that won the West. The S&W input was provided by a technician who should have known better. It took me longer than it should have to realize the guy was mistaken.

By the time I did, the publication had gone to press. I hope this response will serve to end any concerns and know your letter has prompted me to respond as above with the following historically checked and double-checked facts added. Brownells.com

READER FORUM CONTINUED

ORIGINAL PAGE 24

I'll begin with your mention of Hunt & Jennings. Hunt's contributions were the ill-fated "Rocket Ball" ammunition and an advance (some say) in lever action technology. A bit of both probably moved Messrs. Smith and Wesson to buy the patents and establish the Volcanic Repeating Arms Company. Jennings patented an improvement in after being hired by Horace Smith to improve Hunt's lever action design. Jennings did so and soon partnered with one Cortlandt Palmer to produce the resulting rifle.

Only two of these exist today. It was Benjamin Tyler Henry who extended the S&W partnership by convincing them and their new temporary partner, Oliver Winchester, that the future lie in cartridge-firing rifles. Oliver didn't need big time convincing. The result was his buy out of Volcanic and the establishment of New Haven Firearms.

Benjamin went with Oliver and in 1860 the first Henry Rifle reached the public. It was chambered for a .44 caliber Henry rimfire cartridge with a 25-26 grain charge pushing a 200-216 grain projectile. The Henry led to the 1866 "Yellow Boy." Your comment about correct ammo can only be preceded by, "Alcohol and shooting or reloading don't mix." And consider that hereby done. Pin Gauges I need some help finding something called pin gauges for measuring chambers on my handguns.

Direct your search engine to "Handgun Chamber Pin Gauges" and you'll be rewarded with along list of pin gauge sources. As for exact chamber dimensions, specifications for all U. S. manufactured firearms and ammo must comply with those established by SAAMI (saami.org, Quality Punches Which roll pin punches should I buy that won't bend? Those cheap brass punches are practically worthless. Arthur D.

De Invest in a set of Starrett roll pin punches (Starrett.com, They are of steel but can damage a metal surface easier than lower grade brass tooling. Brownells still of-

fers hollow starter punches that envelope smaller diameter pins of all varieties to assist or by mail at Big Sandy, TX 75755. in getting them moving on their way prior to applying a roll pin or other punch to complete the installation.

S&W J-Frames I have four Smith & Wesson J-Frame revolvers that I'm trying to improve the triggers on but I can't seem to get the weight of the double action pull down. I have used the lightest Wolff springs throughout. The insides now shine like mirrors and the single action pulls are exceptionally good, all done without taking metal off of the key contact parts and just eliminating high spots. The DA pulls are smooth but unduly heavy. Single and double action light the spark on each trigger pull without exception.

These are my own revolvers, so I'm not concerned about customer liability and I'll put the Smith springs back in if I ever decide to part with any. Any suggestions? Joseph Mike Lawrence Lawrence The J-frames sound like they're a reliably functioning quartet of revolvers. We recommend they be allowed to remain as such. Should you pursue further single action trigger work, never reduce the pull on any S&W revolver to less than 2 1/2 pounds.

A pull of lighter than this can be heavied up a bit by lightly stoning the top of the trigger hook with seven or eight strokes using an Arkansas (not an India) stone. Conversely, an overly-heavy double action pull can be lightened by degrees with only one or two light strokes using the same stone to round off the rear bevel of the trigger. Test and repeat as necessary until you've achieved the desired lightness without compromising consistent primer ignition.

Combine that measure by replacing the factory rebound spring after consulting Wolff (if you haven't done so already) and brightly polishing the sides and bottom of the rebound slide plus their contact surfaces in its frame slot. Confirm proper function with test firing. AG

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