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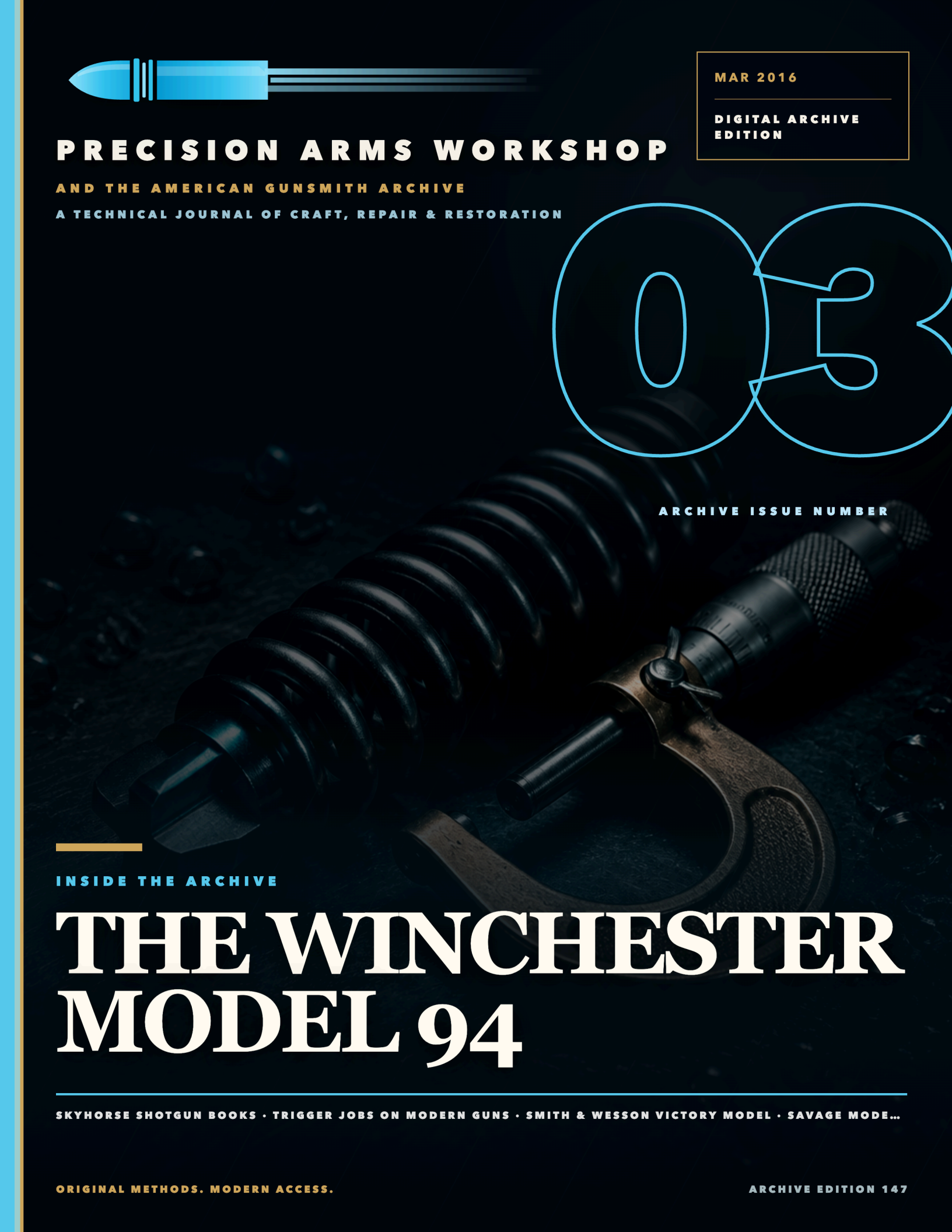

INSIDE THE ARCHIVE

THE WINCHESTER MODEL 94

SKYHORSE SHOTGUN BOOKS · TRIGGER JOBS ON MODERN GUNS · SMITH & WESSON VICTORY MODEL · SAVAGE MODE…

DIGITAL ARCHIVE EDITION

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A complete guide to the searchable editorial work preserved from March 2016.

HISTORY

Skyhorse Shotgun Books

BY AMERICAN GUNSMITH EDITORS MARCH 2016 ORIGINAL PP. 2

Skyhorse Publishing (skyhorsepublishing.com) specializes in outdoor sports, nature, country living, military history, and reference books. If you have regular shotgun work in your shop, or are an aficionado, they have two titles of interest.

Fine Shotguns: The History, Science, and Art of the Finest Shotguns from Around the World by John Taylor offers a global view of top-end shotguns, including those priced like luxury automobiles, from the United States, Britain, and the European mainland with extra emphasis on Spain and Italy. Coverage includes single and double barrel, combination guns, hammer, paired, bespoke, and special-use shotguns.

Visits of various high-end makers are well illustrated with glossy, four color pictures detailing the shops and factories of the big name builders. Construction and gunsmithing techniques concerning wood work, checkering and stock making, metal work and engraving, fit and finish, and other details of how top grade shotguns are made. Finally, sections on maintenance, storage, gunsmithing, care and cleaning, and accessories available for specific models wrap it up.

This is a solid reference for anyone interested in high grade guns. Gun Trader's Guide to Shotguns: A Comprehensive, Fully Illustrated Reference for Modern Shotguns with Current Market Values by Robert Sadowski is a bestselling reference on collectible shotguns. With over two million copies and thirty-six editions in print, this is an exhaustive compilation of cataloged, discontinued, and collectible shotguns from nearly every manufacturer.

Complete with specifications on specific models and variants, along with price gradients based on the condition of the shotgun, this is ideal for those collecting, selling, and trading shotguns of all makes. Starting with a series of articles on various collectible shotguns from Browning, Remington, Benelli, and others, the book opens with collector's notes on noteworthy guns.

Moving into the art of shotgun trading, the Gun Trader's Guide covers what dealers and collectors are looking for, what they want in your shotgun, and what's required to become a dealer. Whether buying, trading, or selling shotguns, this is a valuable reference to determining fair pricing.

ORIGINAL SOURCE PAGE

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PEOPLE & COMPANIES

The Winchester Model 94

BY DICK MAHEU MARCH 2016 ORIGINAL PP. 3-7

ARCHIVE IMAGE WITHHELD

It can be argued that the legendary Winchester Model 94 could be John Moses Browning's finest achievement. Having started out in 1894 with the .32-40 and .38-55 black powder cartridges, this model has come in dozens of configurations, calibers, commemorative versions, and model designations over the years. At 7,000,000 units strong, it is the first sporting rifle to make that number and has become synonymous with the .30-30 cartridge.

The subject of this article will cover the basic differences between an old model 94 chambered in .32 Special and a newer .30-30 Ranger Angle Eject carbine. The .30-30 was graciously loaned to me by the Old Town Trading Post (OldTownTradingPost.net) under the new ownership and management of Dave and Melissa Lorenz and his capable gun guru, Dave Mac Donald. Steel composition of the Model 94 has changed over the years. In 1895, higher pressure smokeless powder rounds were utilized.

The first big changes in manufacture came in 1964 to make the firearm less expensive to produce and are described as pre-64 or post-64 models. The pre-64s, in lesser numbers made, tend to be more desirable to collectors and bring a premium in price. Many enthusiasts won't have anything to do with post-64 models, however, after working on hundreds of these rifles over the years I personally believe some of the changes have been for the good and make note of them here.

The current model 94s are Angle Eject, have aluminum receivers, and are being made by Miroku in Japan. Some of the changes Winchester made after 1964 did not find favor with many followers of the Model 94. In order to increase profitability and do away with labor-intensive work new chief executives of Winchester decided to cease machining the receiver and some small parts out of solid steel billets and go to sintered steel.

The receiver was made of sintered steel which became a problem to blue with conventional methods. The cartridge carrier was made as a stamped part and roll pins used in place of solid pins. After FN Herstal purchased the bankrupt assets of U. S. Repeating Arms, it re-instituted CNC machined parts in 1992. Another good change from 1982 was the Angle Eject receiver.

A cut out was made to the right side of the receiver, the extractor was moved to the top right corner of the bolt face, and the ejector to the bottom left corner of the bolt face to exact an angle ejection. This change allows scopes to be mounted directly on top of the receiver and in line with the bore. In 1992, across-bolt safety was instituted and the half cock notch on the hammer done away with. This was another change I personally liked.

Many others however, did not like this change because it did not look aesthetically right to them. In 2003, FN Herstal and Winchester went to a tang safety on the upper tang that is still being incorporated in manufacture of the model 94. This article will cover the complete disassembly/reassembly of the Angle Eject model with parts differences and information noted with the pre-64s. To begin disassembly, open the action and check that the firearm is unloaded.

Be sure to use properly-fitting gunsmith screwdrivers as the screw slots are of different sizes and can be easily buggered up if improper drivers are utilized. I can't stress this caution enough as I have had to repair literally hundreds of beat-up screw heads over the course of my gunsmithing career! Remove the top tang screw and move the buttstock off to the rear.

Some of them will be tight so be sure and protect the stock from damage while holding the action in one hand and hitting the top of the comb with the palm of your other hand lightly to nudge the stock off the tangs. Remove the finger lever stop pin screw and drift out the finger lever pin with a small pin punch from the access hole above the loading port on the right side of the receiver. Remove the link pin stop screw on the bottom front portion

of the link and drift out the link pin either way. Remove link and lever down out of the receiver while disengaging the rear of the link from the locking bolt. If it is necessary to remove the lever from the link, drift out the finger lever link pin either way. Normally, The old model on the left and the Angle Eject on the right. it should be left in place unless repair is required. The friction stud and its spring in the rear of the link should also be left in place unless repair is required.

If it is necessary to remove it, drift out its pin either way. On reassembly, make sure the stud slot is properly aligned with the pin hole. Disassembly to this point is the same for the pre-64 model. Remove the carrier screw from the left side of the receiver that sits just ahead of the locking bolt. Remove the carrier out the bottom of the receiver. There will be two carrier screws on pre-64 models, one on each side of the receiver.

Remove the hammer screw from the rear left side of the receiver, then move the lower tang/hammer assembly slightly to the rear and remove the locking bolt downward out of its slot in the re-

ceiver. Remove the hammer thumb piece if present on the hammer. It will be either a unit that slides on the hammer tang held by locking screw(s) directly into the right side of the hammer as the rifle illustrated has. Remove the lower tang/ hammer assembly downward out of the receiver using caution to make sure the hammer tang has clearance from the upper tang of the receiver. Remove the bolt assembly out the rear of the receiver.

On pre-64 models, with the hammer let all the way down, remove the mainspring screw and mainspring from the lower tang. Do not remove the mainspring strain screw. This sets the tension on the mainspring and should be left alone. Remove the hammer screw. While holding the safety catch up and pulling the trigger, remove the hammer up through the receiver. Drive out the lower tang with a brass rod or wooden dowel and mallet. The locking bolt and bolt assembly can now be removed from the receiver.

The lower tang/hammer assembly of the post-64 rifle is one improvement I really like over the old model. It comes out as one assembly and does not need to be disassembled for routine cleaning. Trigger pull and hammer tension can be easily adjusted by replacing the hammer and trigger coil springs in this unit. Back to Angle Eject disassembly. Remove the spring cover (loading port) screw and spring cover from the right side of the receiver.

Remove the carrier spring screw accessed through the loading port that resides on the left inside wall of the receiver. Remove the carrier spring out of the receiver. On reassembly of this spring, the loop of the spring must be facing downward toward the bottom of the receiver. Look at the proper alignment of the cartridge guides before removal of their screws. The guide troughs must be angled forward and facing each other inside the receiver in order to function properly when reassembled.

Remove the cartridge guide screws from the left and right sides (externally) of the receiver and remove the guides down and out of the receiver. This is another improvement I like greatly in the new model. In pre-64 models the cartridge guide screws are on the inside of the receiver and very difficult to remove and replace. The left guide screw was offset and had to be accessed through the loading port. A special offset screwdriver had to be made to properly access this screw.

Once it was out, another very slim screwdriver is needed to access the right guide through the now open screw hole of the left guide, a very testy procedure for anyone! The spring cover and screw are removed just like the new model. The receiver is now completely stripped. To disassemble the Angle Eject bolt, remove the firing pin straight out the rear of the bolt. Remove the two small screws from the bottom of the bolt to remove the extractor.

Remove the small roll pin at the front bottom of the bolt to remove the ejector and its spring. Restrain the ejector and spring when pulling out the roll pin punch so they don't go into orbit, never to be seen again. This is a very powerful spring! On the old model bolt, remove the extractor pin and extractor. Remove the firing pin stop pin and firing pin. Remove the ejector pin and ejector and spring, once again, be sure to restrain the ejector and spring. All three of these pins can be removed either way.

Do not disassemble the bolt routinely, only if repair is needed. Unless necessary for repair or rust removal, do not routinely disassemble the Angle Eject lower tang/ hammer unit. If necessary, cock the hammer and you'll see a small hole at the back of the hammer strut. Place a small pin in the hole to capture the hammer spring in its assembly, then slowly ease the hammer forward. Both pull the trigger and push up on the trigger stop to let

1. Barrel with ramp 2. Front sight 3. Front sight cover 4. Rear sight 5. Rear sight elevator 6. Magazine follower 7. Magazine spring 8A. Magazine tube 8. Magazine plug 9. Magazine plug screw 10. Receiver 11. Cartridge guide, right hand 12. Cartridge guide, left hand 13. Cartridge guide screws (2) 14. Finger lever pin 15. Finger lever pin stop screw 16. Breech bolt 17. Firing pin stop pin 18. Extractor pin 19. Extractor 20. Ejector 21. Ejector spring the hammer fully forward.

Whenever you do this maneuver, with or without a pin in the strut hole, be 22. Ejector stop pin 23. Firing pin 24. Hammer screw 25. Hammer 26. Hammer stirrup 27. Hammer stirrup pin 28. Upper tang screw 29. Carrier screws (2) 30. Carrier 31. Carrier Spring 32. Carrier spring screw 33. Link 34. Link pin 35. Link pin stop screw 36. Friction stud 37. Friction stud spring 38. Friction stud stop pin 39. Finger lever 40. Locking bolt 41. Firing pin striker 42. Firing pin striker stop pin 43.

Finger lever link screw Model 94—Pre-64 (Speci ications subject to change without notice) 44. Lower tang 45. Safety catch 46. Sear and safety catch spring 47. Sear and safety catch spring screw 48. Safety catch pin 49. Mainspring 50. Mainspring screw 51. Mainspring strain screw 52. Trigger 53. Sear 54. Sear pin 55. Spring cover 56. Spring cover screw 57. Peep sight plug screw 58. Rear band 59. Rear band screw 60. Front band 61. Front band screw 62. Buttplate 63. Buttplate screws (2) 64. Buttstock (not shown) 65.

Forearm (not shown) sure to restrain the hammer from flying forward and damaging parts. Tap out the hammer bushing either way with the appropriate size punch and remove the hammer. Tap out the trigger/sear pin either way and remove the trigger, trigger spring, sear, and hammer block. The trigger and hammer block are pinned together and removal routinely is not necessary unless repair is required. This is another improvement over the old model that I like.

A hammer block and rebounding hammer is a good safety measure. Many years ago, I loaned a friend my lever action rifle on a hunting trip and drilled him on the proper letting down of the hammer safely while chambering a dummy cartridge. When we arrived at the hunt and loaded, he let the hammer slip and fired the gun! Luckily, he was in front of everybody with the gun pointing into the ground. Without the muzzle pointed safely this could have resulted in a tragic event.

All the more reason I personally like this improvement. Remove the trigger stop pin. It's a small roll pin that captures the trigger stop and trigger stop/sear spring. The hammer strut assembly and trigger stop/sear spring are all one unit. The back of the spring is the hammer spring seat. Some people try to pull the hammer spring /strut assembly out before removing the roll pin and inadvertently deform the trigger stop/sear spring. Remove the trigger stop. The lower tang/hammer unit is now disassembled.

When reassembling the trigger/sear assembly use a slave pin short enough to just capture the trigger and sear together. Make sure one end of the trigger spring goes into its slot in the trigger and the other end into the slot in the sear. Set the assembly in place with the slave pin showing in the trigger pin hole and tap the trigger pin in place, driving out the slave pin.

When replacing the trigger stop roll pin, place a small pin punch through the tang, trigger stop, and trigger stop/sear spring using it as a slave pin left to right. Now tap the roll

1 Barrel 2 Breechbolt 3 Buttstock Complete 4 Buttplate 5 Buttplate Screws 6 Carrier 7 Carrier Screw 8 Carrier Spring 9 Carrier Spring Screw 10 Cartridge Guide, Left 11 Cartridge Guide, Right 12 Cartridge Guide Screws 13 Ejector 14 Ejector Spring 15 Ejector Stop Pin 16 Extractor 17 Extractor Retaining Screws 18 Finger Lever 19 Finger lever Link Pin 20 Finger Lever Link Screw 21 Finger Lever Pin 22 Finger lever Pin Stop Screw 23 Firing Pin pin in, right to left, driving out the small pin punch and capturing the assembly.

Set the hammer in place and push in the hammer bushing. Cock the hammer and remove the pin placed in the strut to capture the hammer spring. Restrain the hammer while releasing it from the cocked position. Complete disassembly of the lower tang assembly in the old model is fairly straight forward.

Remove 24 Firing Pin Striker 25 Firing Pin Striker Stop Pin 26 Forearm 27 Friction Stud 28 Friction Stud Spring 29 Friction Stud Stop Pin 30 Front Band 31 Front Band Screw 32 Hammer and Sear 33 Hammer Bushing 34 Hammer Screw 35 Hammer Spring 36 Hammer Spring Guide Rod 37 Hammer Spur Assembly 38 Link Complete 39 Locking Bolt 40 Lower Tang 41 Magazine Follower 42 Magazine Plug 43 Magazine Plug Screw Model 94—Angle Eject (Speci ications subject to change without notice) 44 Magazine Spring 45 Magazine Tube 46 Rear Band 47 Rear Band Screw 48 Receiver 49 Sear and Hammer 50 Rear Sight Assembly 51 Front Sight Cover 52 Rear Sight Elevator 53 Front Sight 54 Telescope Front Sight Plug Screws 55 Spring Cover 56 Spring Cover Screw 57 Trigger w/Hammer Block Assembly 58 Trigger/Sear Pin 59 Trigger Spring 60 Trigger Stop 61 Trigger Stop Pin 62 Trigger Stop Spring 63 Upper Tang Screw the safety catch screw to release the safety catch/sear spring.

Remove the safety catch pin to remove the safety catch. Note that the safety catch in the Angle Eject model is called the trigger stop. The job they do is the same for both models. Removing the sear pin removes both the sear and trigger. Reassembly is in the reverse. To remove the internals of the magazine, remove the magazine plug screw, being sure to restrain the plug and spring from flying out. Slowly release the plug, spring, and follower to remove them.

Remove the magazine tube by taking out the front and rear band screws and pulling the tube out the front. The forend can be removed once the magazine tube is fully removed. Front and rear sights can be simply driven out of their dovetails either way. Reassembly of the Angle Eject is in reverse of the disassembly with these specifics noted. When reinstalling the cartridge guides make sure they are level in their receiver slots and the screws tight. If not, they can interfere with carrier operation and damage internal parts. The same goes for the spring cover and its screw. This must also be tight to preclude interference with the carrier. When installing the bolt in the receiver, make sure the firing pin is oriented correctly to receive the finger lever pin through the bolt and lever hole. Because the lower tang/hammer assembly rotates on the hammer pin it needs to be properly aligned when installing the buttstock.

If you disassembled the magazine assembly make sure to install the follower ahead of the spring and feed the spring a little at a time, keeping it unkinked until placing the magazine plug in the tube to capture the spring. Orient the plug while holding it fast and install the plug screw. Be sure to install the tangs of the locking bolt into its slot in the back of the link as you work the lever/link assembly up into the receiver.

The old and new models look and handle the same although the internals tell a slightly different story. By studying the accompanying schematics and pictures the differences will be apparent. It's this gunsmith's opinion that this venerable classic rifle will continue to be manufactured and sold, just like its Browning cousin, the 1911, as long as this old earth remains as we know it! AG

FROM THE ARCHIVE

Trigger Jobs On Modern Guns

Smoothing up a trigger system is harder than it used to be. More and more part restrictions are the reason. Here's how to overcome them.

BY CHICK BLOOD MARCH 2016 ORIGINAL PP. 8-10

Remember the good old days? Used to happen every time a customer would walk in lugging along gun and announcing it had a rough trigger. Knowing the correction wouldn't demand countless man hours. I'd tell the lugger, "No huge problem," and take in the job.

Back then, I knew all I had to do was detail disassemble the firing system, slip on my Optivisor, locate the rough spots, smooth them away with fine and superfine polishing grits, air blow away any grit residue, lightly lube all internal parts, reassemble the system, and test fire. That was then, when firing systems resembled the old locks in muzzle loaders and replacement parts for them were readily available. Fortunately, they still are.

With the exception of replica black powder models, "back then" is making a beeline toward extinction. My first hint of this came my way quite a few years back with the introduction of owner-adjustable trigger pulls. I get at least a dozen guns in from major manufacturers and importers every year for articles appearing here. Signs that "parts prohibition" was looming began showing up in the form of an epoxy-like material blocking any entry within the trigger housing.

The blockage is most apparent with owner-adjustable trigger screws. The stuff doing the blocking is proprietary to the individual manufacturer. The same is true of the dollop of color announcing the presence of the blockage to all observers. Both these measures exhibit a visual alarm to factory service personnel that the firing system may have been tampered with beyond acceptable pull adjustments. By whom and when doesn't matter.

Some unknown has been foolish enough to believe overcoming these barriers and violating the integrity of a trigger mechanism are mere child's play. They are not. And anything as easily perceived as damaged epoxy or a dollop of the wrong color risks cancellation of any warranty. A Let ' s avoid the lost warranty trap. Take a closer look at the housing. You may find other holes through its walls and can ignore the trigger The only specialized tooling required was a mainspring vise (A).

To date, that much remains true. Brownells stocks an identical copy of it. adjustment screw with its secret epoxy and dollop of color. That happens to be my choice for staying out of the trap. If you decide otherwise there are other options to take. The first and most assured is to send the gun back to the factory or importer with a note citing the rough trigger and requesting replacement of the offending OEM trigger with a complete, new assembly.

The second is to order in a complete, new OEM trigger and install it yourself. In most cases a major domestic manufacturer goes along with either of the first two. Only some importers will do the same. A third option requires scouting Brownells for a selection of modelspecific aftermarket trigger assemblies, choosing and installing it yourself, and charging the client for all costs involved, including installation, prior to returning the firearm to the client's possession.

Add to the catalog scouting and subsequent purchase small plastic bottles wearing caps with needles of very small internal diameter attached. Some of these bottles are smooth sided, others have ridges. Ridges enable collapsing of the bottle when forcing the polishing/oil mix out the small nozzle. None of either design demand gorilla strength to squeeze. I've found both bottle styles to be very handy in my shop and inventory more than one of each. All remain active in my stash of gunsmith tooling.

On others, the screw is in the rear of the housing. Note the additional holes in the housing that can serve as substitutes for introducing polishing slurries to internal components. There's plenty of room to get at what needs to be got at inside so your polishing slurries can make things slicker than they were. More regarding an aftermarket trigger risk. When it has been produced by a reputable facility long known for quality, the risk of poor performance is minimal.

Better, danger of injury to the gun owner or nearby non-owner due to malfunction is nil. Just remember the terrible mistake I once made. Only once and never again. A pre-64 Winchester Model 70 had suffered terrible barrel damage. My customer insisted on a factory-made replacement barrel and a suitable Timney trigger. I wasn't very wise in acquiescing to additional client pressure and installed the trigger prior to returning the barreled action to a nearby Authorized Factory Service center.

When the rifle came back there was no doubt the new barrel was Winchester. Nor was there doubt the action wore a brand new Winchester Model 70 trigger. There was no trace of the Timney. Lesson learned. Never again did I forward a barreled action to anyone for any reason after an aftermarket trigger had been installed. And I never will. Instead, I remove the replacement and reinstall the OEM which I keep inventoried apart from the aftermarket unit prior to shipping.

I now have a pretty large collection of OEM triggers awaiting a reunion with their respective OEM rifles. Smoothing Inaccessible Triggers Take what follows very seriously. This method of smoothing up an imprisoned or unfamiliar trigger system has worked well for me but it must be done exactly as it will be described. No extra anythings. No taking the procedure too far. Polishing can always help gritty or improperly machined parts. Excessive amounts of it can result in nasty consequences.

These include sear bounce causing a dramatic, often nerve-shattering jump to full automatic in semi-auto weapons. The same excess, though not normally related to a bouncing sear, can render the safety system of any gun useless. Take it easy. Frequent testing is advised. Trial lawyers may begin their "accidental discharge" list of defendants with the deeper pocketed manufacturer but usually involve the names of everyone who has touched the firearm. You have been warned.

For the elements required, you'll need low viscosity baby oil, two buffing/polishing bars, a couple of squeezable plastic bottles wearing needles in their caps, another plastic squeeze bottle that looks like a bellows (when filled and compressed quickly from bottom to top it can knock a fly off a wall six feet away), and a container of mineral spirits. I typically use three sizes of pseudo-hypodermic syringes, which are ideal for flushing away polishing residue and refilling small plastic bottles.

Mineral spirits and lightweight baby oil are commonly available at local drug or hardware stores. If it is discovered there is no lightweight baby oil in stock, purchase regular baby oil and thin it with mineral spirits. While you're scanning the hardware inventory, select an epoxy that will finally set close to the same color as used by the factory. Check for a supply of pigments to mix up and match that tell-tale dollop color in your shopping. Should you be denied access to the pigments, snort quietly to

Pictured here area needle-top plastic bottle, a ribbed bellows-style bottle, a cap for the bellows bottle, ared polishing bar (A) and a white polishing bar (B). All are stocked by Brownells. The paint thinner (mineral spirits) can be had at a local hardware or paint supplies store. express your indignation and set out for the nearest art supplies retailer. They will have in stock both tubes of oil paints and water-base paints. Either will perform well.

I suggest topping off any water-base dollop with a quick squirt of clear, non-glossy aerosol spray to defend against moisture damage. Most of the required elements will be locally available or from Brownells. Additional items area shop-made 1/2" diameter, 6" long hard wood dowel with a rounded end. Cold rolled steel of the same dimensions would be better because it is stronger, but either works as your personal, possibly everlasting, polish-and-base blending/refining tool. Now for the step-by-step how to.

The black or brown buffing/polishing bars could be too aggressive for initial polishing. Whether this holds to be worthy of your concern depends upon the depth of the existing damage or roughness. See the fragile side of the decision to restrict parts? There isn't a better way to confirm Bor deny the presence of damage in a used component than by comparing it with a pristine, unused example of the same component.

Since most trigger parts closely relate to the actions in shoulder mounted hunting guns, they presently are restricted. Because I can no longer make the direct comparison between new and old I'm unable to establish or even estimate the depth of damage. Generally, I choose to start with red and finish with white. I've come to firmly believe my risk is reduced by making that practice a habit. The lightweight baby oil comes close to matching the viscosity of powder solvent.

Whether you have chosen to access the innards of the housing via the trigger adjustment or some other opening, soften up any fouling on the captive components with a couple squeeze bottles full of mineral spirits. Filter any overflow of mineral spirits in to another, unused squirt bottle. Repeat at 15 minute intervals or until there's no evidence of dirt being reinjected. Use a fine file on one end of the red bar. Build up a pile of particles the diameter and thickness of a quarter.

A plastic lid from a container of the same material will hold the filings until you dump them into the container itself. Fill one of the needletop bottles with mineral spirits. From that bottle begin adding a few drops of liquid at a time. Blend and mix. Bear down in the process to reduce the particles to near talcum powder size. More drops. More blending and mixing. Your goal is to end with a third of the needle-top bottle filled with a slurry that will pass through the needle.

A The cycle of dry firing for any rifle action is the same for red or white polishing slurries. For centerfires, insert an empty, unprimed, fired case. For rimfires, at least protect the extractor cut in the barrel with a tiny wad of duct tape. Be sure to flush out the mechanism prior to switching from red to the whitebased mixture. The dry firing "course of fire" when these initial polishing mixtures are being applied is as follows: Cycle the action and pull the trigger 25 times. No more, no less. Flush.

Test for improvement. If none, reapply the red mixture. Cycle and pull 20 times. No more, no less. Flush, then retest. Switch to the white mixture. Cycle and pull 20 times, then flush. If no roughness is present, stop. Flush, blow air dry, and lightly lube. Never forget you aren't actually reducing the trigger pull and only trying to make that pull feel lighter by making it slicker. And that's what you set out to do. No more, no less. AG

PEOPLE & COMPANIES

Smith & Wesson Victory Model

The Smith & Wesson Victory Model is a fine classic with two critical considerations. Here's what to look for.

BY ROBERT K. CAMPBELL MARCH 2016 ORIGINAL PP. 11-14

The Smith & Wesson Victory Model is a great revolver and fine collector's piece but there are two dangerous possibilities with the revolver. The first is an omission in manufacture of revolvers produced without a hammer safety lever that was correct on some revolvers and the other is poorlyconsidered chambering work that is downright dangerous when coupled with modern ammunition. The revolver covered in this checklist and list of warnings is among the most common Smith & Wesson revolvers.

It is the revolver that got Smith & Wesson back on its feet financially after the Great Depression. Some 571,629 of these handguns were sent to the British It's a classic revolver that deserves our best efforts. Commonwealth between 1941 and 1945. Additionally, over 350,000 were supplied to the Unites States armed services.

Most of the Britishexported revolvers were chambered in .38 Smith & Wesson and fired "Revolver Ball, .380 in, Mk I .38-200" with 200 grain bullets or the Mk II variant with 178 grain bullets while most of the American revolvers were chambered in .38 Special. These revolvers are an important piece of American history. As for the common problems, gunsmiths familiar with Smith & Wesson revolvers will be able to address these.

It doesn't matter if the handgun is an older handgun that has been in service for many years or if it is a used specimen just hitting the case at the pawn shop, the procedure for checking is the same. Issues and concerns are narrowed if a customer has fired the handgun and has a specific complaint but I still like to begin with a complete inspection. A pistol that is out of time or has similar problems is seldom a bargain.

A careful examination puts you on the correct path if a purchase is warranted or in needed repair. A magnifying glass, small light, a pencil, and a small tool kit such as the Chapman are the few tools needed. The first examination is elementary and is a check that the revolver is unloaded. A certain percentage of firearms, including those that have been in storage for along time, are brought into the shop loaded and it isn't always old widow women that do this. Often, it is people that should know better.

ACTUATE THE CYLINDER RELEASE AND OPEN THE REVOLVER. WE DO THIS

SMITH & WESSON VICTORY MODEL CONTINUED ORIGINAL PAGE 12

Above center: The cylinder is checked for wobble with the hammer fully cocked back. so often enough that the action is second nature and know exactly what it should feel like. The cylinder should open easily and swing out of the receiver. Do this six times, once on each chamber, to determine if there is cylinder end shake. If the cylinder release seems tight, the ejector rod may need tightening. The cylinder release may be gummed up but the ejector rod is the usual culprit.

If the cylinder does not swing 38 Special from .38/200. This conversion is not a good idea but is commonly found. free of the frame easily the crane may be bent. Examine the hammer. The hammer should be case hardened. If not, the revolver may have been refinished. The hammer may have been polished. Regardless, the hammer should be perfectly centered in the frame. If not, something is wrong. There should be little side-to-side play with the hammer.

The firing pin should be in proper condition without cracks or damage. There should be no evidence of prying on the frame with improper tools such as a screwdriver. For a historical appraisal, the grips and lanyard are inspected and the serial number should have the proper “V”.

Check to see if the grips are tight and if they may be removed. Some screw heads are so buggered up it is a pain to drive them out and inspect the gun. Move to the half moon front sight. Be certain it is not bent. When I first began working with guns I found it common to see such sights with the impression of pliers used to adjust the sights. The rear sight trough should be sharp and clean. The barrel should fit properly to the frame. If the revolver passes this initial examination we will look further.

Inspect the lockup. The locking bolt should properly index and locking bolt cuts in the cylinder should retain their original appearance. The cylinder should spin freely. If there is a wobble or eccentric movement the ejector rod may be bent, a common malady with revolvers that have seen hard use. A ring around the cylinder where the bolt stop has contacted the cylinder isn't necessarily a sign of trouble, just that the revolver has been used.

The sideplate should be carefully examined because if those screws are damaged it is an even bet someone with ten thumbs has found their way into the revolver. If the sideplate is actually loose, the screws may need tightening. Also, check if the sideplate may be warped. I have seen more .32 Smith & Wesson Long revolvers with a ring in the barrel from a lodged bullet than all other revolver calibers combined. The .38 Smith & Wesson is the second most common.

I suspect this is because older ammunition was not as reliable as modern loads. Perhaps long storage also plays a factor. A careful check of the barrel begins with a light in the muzzle. The edges of the rifling must be sharp. The grooves should be free of powder and lead deposits. A ring in the barrel may be inconsequential but a bulged barrel is much different. Check the forcing cone. I have seen more forcing cone cracks from the .357 Magnum than all others but it is possible with any revolver.

I have also seen Far Many are well worn. This one is in good condition. Astra revolvers with blown forcing cones. The bevel inside the forcing cone is slightly counter shrunk and significant lead deposits there may be very rough. Be certain there are no apparent cracks or chips in the forcing cone. A thorough examination of the chambers should be conducted. This is vital when examining a revolver marked for .38 S&W cartridges.

The .38 Smith & Wesson is a short cartridge with a greater case diameter than the .38 Special and .38 Smith & Wesson cartridges will not normally chamber in .38 Special cylinders. The step for chambering is short and short cylinder revolvers such as the British Webley and Enfield cannot be rechambered to .38 Special. American Smith & Wesson and Colt revolvers in .38 Smith & Wesson should not be rechambered, however, this was a common practice after World War Two.

Many of those British revolvers were sold as surplus at attractive prices and some were refinished to a bright blue from the original parkerized finish. Others had the barrel shortened to 2 7/8 inches. A tall, ramp front sight was added to the shorter barrel variants. These revolvers were usually converted to .38 Special by reaming the original cylinder steps out.

When firing low pressure .38 Special 148 grain wadcutters these conversions seem to hold up, however, standard 158 grain .38 Special loads at around 800 FPS often bulges the case in these chambers. As a comparison, I recently clocked Black Hills Ammunition 148 grain target wadcutters at just over 700 FPS from my four-inch Military and Police

38 Smith & Wesson cylinder rechambered—or rather, reamed out—to .38 Special. Above center: A properly-chambered .38-200 Enfield revolver. revolver while 125 grain JHP +P loads clocked 925 FPS. From a fiveinch Victory Model .38, Magtech .38 Smith & Wesson loads clock at 578 FPS while some brands may reach 650 FPS. That is plenty of difference and standard .38 Specials will usually bulge cases in the .38 Smith & Wesson converted cylinders.

I will leave it up to your imagination what a .38 Special +Por a hot handload might do! Some of these revolvers were marked as being converted to .38 Special but most were not. I would deem any such revolver unsafe to fire with .38 Special ammunition, however, it seems they remain viable with .38 Smith & Wesson cartridges if they pass inspection. So, we have a revolver marked for one cartridge that it is not safe for and useful only with a mostlyobsolete cartridge.

There is no right way to do this conversion as it isn't a conversion, rather a reaming away of a chambering step. Another step is to check the ejector rod for proper function. Often we will see ejector stars that are beaten up and not easily repaired. Be certain that the ejector star not only ejects spent cases but snaps back firmly into the indent in the cylinder upon release. The ratchet gears may be cleaned up with a file if wear is not severe.

Check the action carefully by running the revolver through the firing cycle but be certain that the action locks up tight when the hammer falls or just before the hammer actually falls. To ensure the revolver is not plagued by end shake or a bent ejector rod, this test should be performed on each individual chamber. While keeping pressure against the cylinder with the fingers, be certain it locks solidly in place just as the hammer is cocked in single action.

With the hammer fully down in the firing position the firing pin should be forward. Try to move the cylinder side-to-side and forward and back. Only the slightest movement should be evident. Another test reveals if a gun butcher has been at work attempting a trigger job. Cock the hammer and attempt to press it forward. It is surprising how often this results in hammer fall. The same folks that liked to ream out the chambers also seemed to grind the hammer during action jobs.

It is also standard operating procedure to check the barrel and cylinder gap in the Smith & Wesson revolver. A gap of 0.004 is very tight, the average is 0.005-0.006, and 0.009 is out of spec. It's important to check for the "S" marking on the right side plate which will also appear before the serial number. Visual inspection of the action is also recommended on this revolver. The hammer block, by legend, was eliminated to expedite war time production.

This reportedly led to a sailor being killed when his revolver was dropped and went off and on at least one other occasion when the only casualty of a British Commando raiding party was a Tommy wounded when his revolver was dropped and fired, striking him in the leg. Revolvers marked "S" have the hammer block installed, an improvement still used in modern production.

This mark is factory stamped when the block was included in original manufacture, however, modified revolvers have this hand stamped and will appear different than the usual Smith & Wesson factory stamp. I have also seen an unmarked example with the proper hammer block. The only way to tell is to check for yourself. The Smith & Wesson Victory Model has served long and well. Quite a few continue to guard homes in the United States and probably worldwide.

Take time to carefully check out this revolver before proceeding to expensive repair work. Some of these revolvers may best be reserved as well hangers. AG

RIFLES

Savage Model 12 Accu Trigger Upgrade

Making safe improvements on an already good product takes shooting to another level.

BY NORMAN E. JOHNSON MARCH 2016 ORIGINAL PP. 15-16

With a range just outside my shop door, my test rifles must be at peak accuracy. In this article I'll cover away in which I was able to improve the adjustability of a Savage Model 12 single-shot target rifle equipped with an Accu Trigger, a trigger that already nears perfection. About 10 years ago I attended a Savage Arms Writer's Seminar where we were given the opportunity to test and evaluate a few of their rifles.

While there I shot a Model 12 single-shot rifle in .223 Remington equipped From top, main trigger and Accu Trigger within the primary trigger retained within the trigger housing by the same pin. Sear shown engaged, just forward of the Accu Release tang at front. The Accu Release spring is positioned between the main trigger body and the Accu Release tang. The main trigger spring is positioned between the rearward end of the trigger housing and the receiver tang.

As the Accu Release trigger and main trigger are pulled to fire the rifle, the Accu Release trigger must first be pulled flush with the main trigger before the rifle can be fired. This allows the sear free travel which would be otherwise blocked by the Accu Release. Below center: The main trigger and Accu Release are shown removed from the trigger housing. Original springs are shown in position.

Separated from the trigger at right is the turned down replacement screw and spring which replaced the original trigger spring. The extended screw at bottom is the adjustable trigger over-travel screw. With trigger pin removed, the Accu Trigger falls farther down into the trigger Below slot. The lathe-turned screw served as a spring guide as the trigger was adjusted for pull weight. This new spring has slightly less compression than the original spring. with their proprietary Accu Trigger.

I ended up owning that rifle and have since converted it to switchbarrel, using it in some pretty serious testing. The Accu Trigger is reported to be adjustable from 6 to 1.5 pounds with a special adjustment tool provided. There is an Accu Release lever positioned inside the split main trigger projecting forward along the front surface of the trigger. In use, the trigger finger must squarely and fully depress the Accu Release, which allows the sear to move rearward to fire the rifle.

If the finger pulls only on the side or very tip of the trigger, the sear is released, in which case the Accu Release blocks the sear and prevents the rifle from firing. If anything would cause the sear to jar off, the Accu Release arm would also block the sear, thus preventing discharge. This feature functions independently of the regular safety, which is located above the rear tang. This makes the Accu Trigger about as fool proof as any trigger I have seen.

While I found the Accu Trigger function quite satisfactory, I wanted a somewhat lighter, more precision,

SAVAGE MODEL 12 ACCU TRIGGER UPGRADE CONTINUED ORIGINAL PAGE 16

The spring coils are shaped to fit a 10-24 pitch of the threaded hole in the trigger body. Center and left, the replacement trigger spring guide bolt with lock nut and new trigger spring fitted to 10-24 screw. These three parts comprise the trigger conversion designed by author. Above center: These two springs control the function of the Savage Accu- Trigger. From left, the Accu Release spring, new replacement spring and precision adjustment screw and lock nut.

The new spring permits a more precision trigger adjustment which is then locked into position to remain unchanged. Replacement spring and guide screw with lock nut allow a lighter, fully controlled trigger pull locked into position. and easily adjusted trigger pull for my more serious accuracy work. The Accu Trigger was quite close, but I was unable to adjust this particular trigger below a 2.1 pound average as tested with my Lyman trigger scale.

The normal technique for firing a rifle in benchrest shooting requires a lighter trigger pull. Ideally, while benchrest shooting, a The unaltered Accu Trigger is shown here with the Lyman trigger pull gauge at 2.1 pounds. As a result of leverage, sear/trigger pull weight will vary to some degree depending on where the finger contacts the trigger. This is true of most firearm triggers. Below center: The new Accu Trigger spring assembly in position, adjusted and locked in at 18 ounce pull weight.

Adjustment is accomplished safely and easily with absolute precision. The safety feature of the Accu Release and safety mechanism remains totally unaltered. 462" were shot with a Savage Model 12 rifle in .308 Winchester. All groups were shot with the Accu Trigger replacement spring set at 18 ounces and totally free recoil was used while testing.

This welltuned Savage Model 12 single-shot rifle is capable of accuracy comparable to any of the author's best rifles. rifle is supported by a front and rear sandbag rest and carefully aimed at the target with no human element guiding or holding it once in position. Without touching the rifle, the shooter continues aiming as only the trigger is pulled, without disturbing the scope reticle on target.

Of course, the rifle must be heavy enough for this to be accomplished with a trigger pull light enough not to disturb things. Rifles with heavier triggers must be held more firmly as they are aimed and fired, making pinpoint accuracy more difficult to achieve. I decided to look seriously into a safe and more effective way to reduce trigger pull weight with Savage's Accu Trigger (Continued on page 19)

and accomplished this with anew trigger mainspring, spring guide, and lock nut. On disassembly and close inspection of the trigger, I discovered the Accu Trigger mainspring was threaded into the upper rear aspect of the trigger assembly. The smaller of the two-diameter spring has equal diameter and windings on the smaller end to fit a 10-24 threaded extension at the rearmost part of the trigger body, thus providing its adjustability feature.

I immediately saw where a special adjustable replacement spring assembly could be installed here and used the existing 10-24 threaded hole with a modified slotted screw and lock nut to retain and guide anew, smaller, fully adjustable trigger spring. A search through my assortment of springs found the ideal one with a diameter and compression to fit a turned down and threaded 10-24 screw. The altered screw fits the threaded through-hole in the posterior trigger body extension, thus replacing the original spring.

It can be precisely adjusted from the bottom to the nearest two ounces and secured by a lock nut while still retaining the full safety features of the Accu Release mechanism as designed. Installation And Adjustment With my objective to accomplish a lighter trigger pull weight than the 2.1 pound average I was getting down to around 1.5 pounds or less, I had to be sure the overall pull weight would be greater than the Accu Release pull weight of near 10 ounces.

If overall trigger pull is below that of the Accu Release, this would block the sear as the Accu Release is pulled, thus failing to fire the rifle. I selected anew trigger spring with minimally less compression force than its original counterpart and installed it. It worked perfectly, allowing trigger pull weight to be precisely adjusted from just over its maximum of 3.5 pounds to a very crisp pull weight just under 1.2 pounds. There was no need to go lower.

The Accu Release continued to function perfectly as did the tang safety. Neither of these were altered or disturbed in any way. Testing revealed the trigger conversion worked out quite well, as expected. Safety was in no way compromised and benchrest shooting from a free-recoil position with no rifle contact (except for the trigger) was easily accomplished. This adds further proof of how well these Savage Model 12 and 112 single shot rifles will shoot.

Where modifications are made on any firearm, every aspect of function and safety must be completely understood. The work should be performed only by a highly qualified gunsmith experienced with triggers. Savage Arms strongly recommends that no firearm be modified, adjusted, or components replaced unless the work is performed by a qualified gunsmith. AG

RIFLES

Forend Barrel Bedding System Installation

The proper use of an adjustable stock forend bedding system can be an effective way to dampen barrel vibration and improve rifle accuracy. A capable craftsman can make and install all the required parts.

BY NORMAN E. JOHNSON MARCH 2016 ORIGINAL PP. 17-19

A number of different methods of improving rifle accuracy by reducing barrel harmonics are used. Full forend barrel bedding is sometimes effective but will vary from one gun to the next and is subject to changes within the stock, showing up as bullet pointof-impact problems. Other barrel tuning methods are used, including a device attached to the front of the barrel like the Winchester/ Browning BOSS (Ballistic Optimizing Shooting System).

Here, an adjustable collar screwed onto the muzzle is used to tune-in accuracy. I have used several of these barrelmounted tuning systems with varying degrees of success. Another barrel tuning method not attached directly to the barrel Below center: These were the forend bedding units described, varying only by the addition of escutcheon collars. Carefully mark and recheck stock holes before drilling. involves a pair of triangularly-positioned stock screws installed in the stock forend from below.

My first experience with this method of barrel tuning included three of my Model 40X Remington target rifles. In working up some very accurate target loads, I was indeed able to control and sometimes improve accuracy. This is accomplished by altering tension of the two adjustable screws against the barrel. Accuracy wasn't always improved, but it definitely improved in many cases depending on the barrel and load used.

The devices were effective enough for me to later install them on a Sako Model L57 target rifle, a Model 504 Remington rimfire target rifle, and a Model 70 Winchester target rifle. I could readily demonstrate accuracy improvement with the use of this bedding device on the 504 Remington with most of the ammunition I used. The remainder of this treatise will cover installation of such a bedding device on a Winchester Model 70 target rifle with a walnut stock.

The method of application on other rifles would be very similar. We'll be making and installing the M70 screw-style barrel bedding system. This barrel tuning device is permanently attached to the stock forend and will require precise stock hole drilling for installation of threaded tuning sleeves. A close look through Brownells catalog showed no such devices available and their technical support personnel did not know of any.

These barrel bedding sleeves are made from 3/8 inch brass rod stock or aluminum for fully threaded size 10-32 slotted or socket head screws. Appropriate lengths of brass rod stock were used for these tuning devices. Depending on the length needed for the stock (target or standard weight), a

FOREND BARREL BEDDING SYSTEM INSTALLATION CONTINUED ORIGINAL PAGE 18

Above center: Completed installation of sleeves for an adjustable forend barrel bedding system. Screws will fit into countersunk holes. through the sleeve body. The other half of the sleeve is drilled out as a recess for the adjusting screw head as it is used during adjustment. Roughening of the sides of the adjusting sleeves for better bonding in the stock is recommended. With a little extra time involved divided between aesthetics and strength, I installed bilateral escutcheons to help support the sleeves.

These were not really needed but may enhance your skills and add a bit of challenge to the task as well as class. The escutcheons are permanently bonded to the adjustment sleeves and later set in as each unit is installed. These escutcheonlike collars can, however, be lathe turned as an integral part of the collar. They are later shaped to fit stock configuration.

It is important to carefully mark the stock where the triangularly-positioned screw sleeves will be positioned for proper pressure application to the barrel radius. As a means of holding the stock in the milling machine vise, I left the barreled action assembled. The barrel was then held in the padded vise for exact stock positioning. From there, I used a drill piloted countersink to make holes to proper depth.

An inside view of the stock shows proper positioning of bedding devices which are permanently bonded into position. I used J-B Weld for bonding. The adjusting screws are then carefully cut to length and squared off at the barrel From left, the Model 70 Winchester as described in the article, Model L57 Sako rifle, Model 504 Remington .22 target rifle, and Model 40X Remington target rifle. These bedding devices were installed by author except the Model 40X Remington rifle. contact surfaces.

Some stock refinishing may be required depending on one's installation skills. Using The Barrel Tuning System With a proper wrench, carefully adjust either screw until barrel contact is felt. A thin feeler gauge or piece of paper between the adjusting screw and barrel may be helpful. Then adjust the other screw in the same manner. From these initial screw positions, adjust each bedding screw the exact same amount. The rifle is now ready to test for accuracy.

Screw pressure will elevate group position on target as well as change in accuracy in many cases. The key is to monitor accuracy differences as they may occur. If no changes

in accuracy are noted, the barrel may be properly bedded without help from bedding screws. Seldom will these triangularly-positioned bedding screws degrade accuracy. As tests are completed, record best accuracy relative to screw positioning. This will permit returning the screws to zero or remain as adjusted. As a rifle is used in hunting, always check zero first. Bedding screws will change scope sight-in.

Installation and proper use of forend bedding screws can make a surprising The lower row of four groups were all shot without forend screw pressure. The four upper corresponding groups were shot with varying bedding pressure, causing each group to rise. From upper left, one full screw turn (0.031"), one half screw turn (0.016"), and two on right with one-quarter turn screw pressure (0.008"). Accuracy of the last two groups showed improvement with optimal forend screw bedding adjustment.

Finally, a quarter minute-of-angle group ensued, demonstrating the effects of a properly used forend bedding system. Some experimentation is necessary to determine if this bedding device will help on your rifle. difference in reducing barrel harmonics, thereby improving accuracy. This is most beneficial in target shooting where pin-point accuracy is required. As in any gunsmithing endeavor, true precision and craftsmanship are the key elements during installation. AG

FROM THE ARCHIVE

SHOT Show 2016

Overview of gunsmithing highlights from this year's show.

BY AMERICAN GUNSMITH STAFF MARCH 2016 ORIGINAL PP. 20-22

Here's around up of what we found at the SHOT Show 2016. To no great surprise, the AR-15 platform continues in popularity and will likely draw customers for many, but there are a few noteworthy items besides "black guns" for gunsmiths. AGI Courses The American Gunsmithing Institute offers a number of distance learning courses for gunsmiths. One of their new ones is the Glocksmith course ($1297.00) with over 17 hours of instruction on building and modifying custom Glocks.

Gunsmiths Bob Dunlap, Ken Brooks, Gene Shuey, and T. R. Graham cover every design feature as well as parts, manufacture, construction, and accessories—good and bad. Following normal armorer procedures, the instructors methodically go through various methods of modification and enhancements for improved performance. The course concludes with a comprehensive 172 question exam.

Training modules include disassembly and reassembly, overview of every part in a detail stripped pistol, specing out safe and appropriate modifications, rebuilding custom Glocks from the frame up, and completely refurbishing from the frame up. AGI's Law Enforcement Armorer's Course ($797.00) addresses training for law enforcement agencies as well as gunsmiths taking on work from police agencies. This certified course covers all current law enforcement firearms in common use.

Training modules include disassembly and reassembly, maintenance details, adjustments to avoid, identifying typical damage and defects, factory specifications, and appropriate modifications for law enforcement. This course is actually 15 armorer courses in one and culminates in a comprehensive examination with over 500 questions covering all the material AGISpecialtyCourses.com).

Brownells Brownells Original AR-15 Lower and Upper Receivers ($150 each) is the company's first branded AR-15 lower and upper receivers made to the company's specifications are modeled after the original AR-15. These receivers have the original profile and are ideal for building early model replicas such as the M16A1, GAU- 5, and XM177E2, or the MK18 and MK12.

The stripped lower receiver has a full magazine fence with no A2 modifications at the front or rear and is stamped "Brownells." The upper has an original carry handle profile, accepts A1 sight components, has a forward assist but no shell deflector. In addition to their branded lower and upper, Brownells also carries a line of lightweight M16 barrels in rifle and carbine lengths to match Brownells.com).

Du-Lite Corporation Du-Lite has been a leading supplier of black oxide finishing equipment, chemicals, and accessory products to American and foreign manufacturers since 1939. Their Gunsmith Finishing System ($2,495.00) is for black oxide finishing as a complete unit featuring four or five stainless steel tanks that last twice as long as plain steel units.

Featuring a heated soak cleaner tank, heated black oxide tank, and two water rinse tanks, the unit uses LP or natural gas burners and comes with a bluing thermometer, safety equipment, and enough chemical to refinish 50 rifles DuLite.com). Fix It Sticks Fix It Sticks were invented by Brian Davis, an avid cyclist who became frustrated with the common compact multi-tools he typically carried.

Experimenting with various tools found that compact tools didn't give enough leverage and tools with leverage were not compact enough. Also, there was no way to accurately adjust to a specific torque. Fix It Sticks provide compact leverage with a modular, dual T-handle tool and permanent or replaceable bits that break down for easy packing. Torque limiters can be added that are the same size as replaceable bits and preset for a determined amount of inch-pounds.

This gives the functionality of a shop tool compact enough for field use. Kits price from $23.95-$125.00 FixItSticks.com). Guntec USA The AR-15 Armorer's Combination Wrench ($44.95) is a patented design made of heat treated steel. This all-inone tool is capable of completely taking down and disassembling AR-15 rifles. The wrench features sections for removing A2 buttstock screws, stock locking nuts, receiver extensions, barrel nuts, free float tubes, and has a slot to accept a torque wrench GuntecUSA.com).

Lewis Machine & Tool Company The CQB MRP Piston Conversion Kit ($745.92) is for gun owners wishing an external piston AR-15. There are enough people wanting this to make it a marketable option despite having extra parts and weight (the reason Eugene Stoner patented his

SHOT SHOW 2016 CONTINUED ORIGINAL PAGE 21

internal piston design.) LMT offers a Piston Weapon System option for the Monolithic Rail Platform rifles. This conversion kit contains a piston bolt carrier group, H2 buffer, and 16" chrome lined 1:7 twist 5.56 barrel. This conversion makes an exchangeable upper from Stoner's original internal piston design (sometimes labeled "direct impingement") to an external piston design LewisMachine.net).

LMT also offers Standard and MRP Complete Weapon Armorer's Training ($1,200), a complete course covering LMT 5.56 and .308 firearms in standard configuration as well as monolithic rails. For military, a M203 Armorer's course is in the works. Courses are held at Lewis Below center: The Guntec USA AR-15 Armorer's Combination Wrench is versatile for black gun builders. Machine & Tool Company headquarters or can be arranged on-site at your location.

Further details and arrangements can be made by contacting Lyman The Borecam Digital Borescope with Monitor ($299.95) provides the means to carefully inspect the bores of firearms for wear, throat erosion, tool marks, rifling or chamber damage, and fouling. The camera is contained in a thin rod that fits inside .20 caliber and larger bores. As the 22" rod is moved down the bore, the display shows a clear image inside the barrel.

Users can also take photos of the bore, storing the image on a standard SD card that can later be viewed on a computer LymanProducts.com). Magpul Industries The Hunter 700L Stock ($279.95) is designed for Remington 700 Long Action rifles. Made from reinforced polymer and an anodized aluminum bedding block, the stock features a fully adjustable length of pull, comb height, and modular enhancements.

The Hunter 700L upgrades a Remington 700 Long Action rifle into a modern, modular configuration compatible with M-LOK accessories and accepts all factory Remington barrels, including aftermarket profiles up to a Medium Palma (0.920" diameter, 5.50" forward of the breech.) The adjustable length of pull goes from 13-15 inches using the included half-inch spacers and the High Cheek Riser Kit makes comb height adjustments in quarter inch increments Magpul.com).

Mc Millan USA The Tactical Hunter ($306.00- $562.00) is a hybrid of hunting and tactical stock designs based on the famous Marine Corps M40A1 sniper rifle. This stock has a slightly wider, deeper, and more rounded forearm with a more pronounced slant on the bottom for height adjustments when used with bags or shooting sticks. A straight ambidextrous style that may be inletted and used both right and left-handed, it comes with or without an integral adjustable cheekpiece and can fit most

SHOT SHOW 2016 CONTINUED ORIGINAL PAGE 22

Remington, Savage, Stiller, and Surgeon barreled actions McMillanUSA.com). Battenfeld Technologies Wheeler Engineering's Digital F. A. T. Wrench ($99.99) is a product improvement on the company's torque-adjustable screwdriver tool. Torque is set on a digital readout (instead of a sliding scale estimate) from 15-100 inchpounds to within 2% accuracy.

A large LCD display shows the current torque setting, which can be changed instantly with soft touch buttons, and has both audible and visual indicators when the desired torque setting has been achieved. A full set of bits is included. The Delta Series Ultra Armorer's Kit ($329.99) is a comprehensive tool A. T. Wrench is a product improvement over the analog version.

Below center: The Delta Series Ultra Armorer's Kit is a comprehensive tool kit for repairs or full builds of AR-15 rifles. kit for repairs or full builds of AR- 15 rifles, allowing gunsmiths to perform over 50 operations and functions.

The kit includes an armorer's vise, combo tool, torque wrench, armorer's bench block, pivot and roll pin install tool kit, upper vise block clamp with gas tube alignment tool, maintenance mat, front sight tool, delta ring tool, strap wrench, bore guide, adjustable receiver link, bore brush, bolt carrier brush, chamber brush, magazine/upper receiver brush, nylon brush handle, doubleended general cleaning brush, and cleaning pick set all packed in a custom fitted carrying case btibrands.com).

Windham Weaponry Windham's Multi-Caliber System ($899.00-$999.00) is an assembly Far Top Bottom kit that upgrades any mil-spec AR- 15 into a multi-caliber system. Once installed, easy caliber changes are made by switching out the barrel and bolt, bolt carrier, and magazine as necessary. Switch over is done by unlatching the barrel retaining block and retaining arms, releasing the barrel.

Windham barrels are chrome lined and machined from 4150 chrome moly vanadium steel, finished in black manganese phosphate, and rifled appropriately for the intended caliber. Upper receivers are CNC machined from forged 7075 T6 aircraft aluminum and finished in a hardcoat black anodize. Bolts are machined from carpenter 158 steel. The MCS kits includes a complete upper receiver with a barrel in the switch over caliber, and integral railed forend with barrel release levers and barrel retaining block.

Switch over options currently available are .223/5.56 with .300 Blackout ($899), .223/5.56 with 7.62x39 ($999), and .300 Blackout with 7.62x39 windhamweaponry.-com). AG

MAINTENANCE & REPAIR

Reader Forum

BY AMERICAN GUNSMITH EDITORS MARCH 2016 ORIGINAL PP. 23-24

Winchester Model 73 I have a Winchester Model 73 with a production date around 1908. I've replaced the toggle link pins (bent), trigger spring (flattened), and managed to massage some dents out of the magazine tube. I'm now trying to figure out why there is so much fore and aft play in the trigger. Seems there is a lot of play where the trigger meets the sear. Whether or not the gun is cocked or not, this play is always there.

There is proper sear engagement with the hammer and the hammer drops as it should when the trigger is pulled. Chuck Williamson There is no separate sear component in a M1873. Instead, the upper end of the trigger engages a notch in the hammer. Both can become worn. When the wear is extreme, the play you mention is evident. Anew trigger and/or hammer, properly installed, can eliminate this wobble and usually does. You can also check the trigger pin and its hole in the trigger for excessive wear.

In examining the pin, see if it has become bent by rolling it back and forth on a true surface. A 12" x 12" x 1/4" square of plate glass serves extremely well as the surface.

If bent, the ends of the pin will move up and down during the roll test Adhesives Question There are a large number of adhesives available, such as white multipurpose (Elmer's), epoxies of various consistencies and cure times (Acraglas, Acraglas Gel, Devcon, Marine-Tex, etc.), Urethane glues (Gorilla Glue), cyanoacrylate adhesives (Crazy Glue), hot glues, and

thread locking compounds (Loctite and clones.) How about an article on adhesives covering pros, cons, and what uses each are best for? Generally speaking, use of a wood glue should never be considered for a metal-to-metal union. One set of surfaces is textured while the other is non-absorbent and more likely to be smooth.

Except for mentions within articles for a specific product that has been used, the closest we have come to multiple pages dedicated to a description of adhesives and their applications appeared in our December 1995 issue. It covered all the then-marketed Loctite thread sealants but there are far more Loctite products today. This is also true of the adhesives you mention. Add to them the influx of construction adhesives, some of which presently boast contact adhesive properties.

All adhesives must be evaluated on their task-specific qualities. For example, fairly secure bonding of two smooth surfaces can be accomplished rather nicely with a readily available instant glue. We have yet to come upon a cyanoacrylate adhesive with equal adhesive properties for both smooth and textured surfaces. On another subject, namely wooden stock splits and deep gouges, a product with minimal shrinkage after curing is to be seriously considered.

Among these is Acraglas, which provides still-stronger bonding and filling capabilities when fortified with metal powder or shavings. One of our tech staff, who happens to do more rifle work than others, laces his Acraglas with key shavings when bedding a rifle barrel. The shavings are the residue produced by retail outlets making keys and are available on request for free, unless the store is managed by Ebenezer Scrooge. The same reenforced material goes into the split in a stock first and is allowed to cure.

Afterwards, he adds more layers of Acraglas, dyed to match the stock color and hide the fortified product beneath it. John Understand, with any epoxy product its resistance to heat must be considered. Heat can defeat the bonding ability of any epoxy but some epoxies withstand it better than others. An appropriate epoxy used to attach ribs to shotgun barrels won't be beaten by the heat generated in a hunt. The same is true of a rib shooting loose during a Trap, Skeet, or Sporting Clays competition.

Loctite Black Max works for replacing front or mid-barrel bead sights. Savage Model 24 I have a Savage Model 24 .22/410 and need to know if it can be drilled and taped for scope mounts or is the barrel too thin? If its too thin, is there a clamp-on scope mount that might work? Darrell We have never seen or heard of a Model 24 with its shotgun barrel mounted over its rifle barrel and never heard of a Savage rifle barrel too thin for scope base mounting. The caliber .22 barrel on your Model 24 should be no exception.

To be absolutely positive, make a breech face to chamber-end cast with Cerrosafe. Position your scope base with its front hole(s) just forward of the breech face of the barrel. Mark the location of the hole(s) on the barrel. Remove the cast. Measure how far the base holes are located forward of the breech face. Call Savage customer service and ask to speak with a tech familiar with the Model 24. With the measurements you have taken, the tech ought to be able to tell you how much "meat" you have to work with.

Suppose it's 0.250" deep, which it won't be. In that case, your max drilling depth could safely be set at 0.125 inches and a bottoming tap employed to thread the hole(s). You don't really need all those threads to hold a .22 barrel in place but remember there's a shotgun barrel right under it capable of generating considerably more recoil energy. Install the mount screws with blue Loctite 242. Using any other color might bond the mount to the rifle so securely it would require plenty of heat to defeat the bond.

When finished, toss the chamber cast back into the vessel where-in it was melted to await remelting and taking of the next chamber cast. AG

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