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PRECISION ARMS WORKSHOP

AND THE AMERICAN GUNSMITH ARCHIVE

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01

ARCHIVE ISSUE NUMBER

INSIDE THE ARCHIVE

ACCURIZING AR- TYPE RIFLES AND CARBINES, PART 2

I DON'T THINK SO, ARNOLD • DISASSEMBLY AND REASSEMBLY OF THE KBI JERICHO PISTOL • GETTING STARTED IN EN...

ORIGINAL METHODS. MODERN ACCESS.

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DIGITAL ARCHIVE EDITION

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FROM THE ARCHIVE

I Don't Think So, Arnold

BY AMERICAN GUNSMITH EDITORS JANUARY 2010

ORIGINAL PP. 2

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As a movie star, Arnold Schwarzenegger, was famous for the line “I’ll be back.” As a politician, I’m not so sure he will be. With an approval rating that had already plummeted to 27 percent, the Governor is scrambling to minimize the fallout from his decision to sign into effect an “ammunition-registration” law (AB 962).

Oddly enough, this is the same legislation he vetoed in 2004, when he called such regulations “simply unworkable” and of “no public benefit.” I Don’t Think So, Arnold Now he claims his flip-flop on the issue was based on “public safety.” I don’t how or why the public will be safer with yet another law for the law-abiding to abide by, but I do know the new law will help to fuel the black market in ammo among those who don’t abide by the law. (Isn’t it a little hard to imagine a criminal standing in line to be fingerprinted so he can buy ammunition from a licensed retailer?) Not surprisingly, the California Association of Firearms Retailers (CAFR) and the National Shooting Sports Foundation (NSSF) have been highly critical of the governor’s acquiescence to the gun-control lobby.

Using Schwarzenegger’s own statistics, NSSF has estimated that the new law would cost California \$35.7 million annually in lost retail sales, \$2.92 million annually in lost sales taxes, and \$629,000 in increased operating costs for state agencies. These estimates follow on the heels of a recently released study done by the Governor’s own Office of Small Business Advocate that shows over-regulation of small businesses in California costs the state a whopping \$492 billion annually.

That’s an average of \$134,122 per California business, \$13,801 per household, and \$4,685 per resident each year. Small businesses comprise 98 percent of the state’s enterprises and provide 52 percent of the jobs. Each year, thousands of these businesses flee California’s burdensome and hostile regulatory environment for greener pastures elsewhere. And I’m guessing that most of them won’t “be back,” either.

Changing of the Guard Speaking of someone else who won’t “be back,” this is my last issue with American Gunsmith. It’s been my great pleasure to serve as your editor, and it will soon give me great pleasure

to start sleeping later, spending more time in the shop, and generally running wild with all the money the Social Security Administration is going to be sending me every month. It also gives me great pleasure to introduce John Buol, a fine gentleman and the new editor of American Gunsmith.

John’s shooting career began in practical competition, earning Master classifications from USPSA and IDPA. In college, he majored in both gunsmithing and management computer systems. After slotting on the Army Reserve Shooting team, he switched to NATO and NRA/CMP events, earning Distinguished Rifleman and Pistol Shot badges and All Army wins. Until joining American Gunsmith as editor, he was on continuous active duty since 2003 as a small-arms instructor.

I know you’re going to appreciate the fresh and broadened perspective John brings to this publication. Editor Keith Lawrence Technical

PISTOLS

Disassembly and Reassembly Of the KBI Jericho Pistol

This new version of the Jericho 941 imported by KBI comes in three sizes, three calibers, and two frame styles. All are worked in the same manner.

BY CHICK BLOOD JANUARY 2010

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In a news release issued last June, Charles Daly/KBI, Inc. of Harrisburg, Pennsylvania, announced it was bringing in the Jericho 941 made by Israel Weapon Industries, Ltd.

The name Jericho 941 might lead you to assume this is the same pistol as the “Baby Eagle,” but it’s not quite. (There’s no .41 AE version, for example.) The pistol has already generated a lot of press, and sales are reported to be “brisk.” This new version of the Jericho is available with either a steel or polymer frame, and in three sizes—the RPL (full size), the RPSL (mid size) and the RBL (compact). Calibers available are 9mm, .40 S&W, and .45 ACP.

Field Stripping After the magazine has been removed and you’ve made certain the pistol is unloaded, move the safety into the “fire” position and fully cock the hammer manually. Pull the slide to the rear until the index dimple on it is aligned with the dimple on the frame. Grasp the pistol by the trigger guard and press on the muzzle to resume and maintain the alignment. Push the slide-catch lever (#50) out from the right side of the frame and pull the slide forward and off.

Invert the slide and press the recoil spring forward to disengage it from the barrel lug, then raise its rear end and remove it to the rear. Lift the breech end of the bar-

rel upward and withdraw it from the slide. Detailed Disassembly Just to be different, I’ll begin with the magazine (#53). it is too often overlooked and never given a thorough cleaning. That’s unfortunate, for when dirty or damaged, a magazine can create quite a list of problems. Hold the magazine with its base facing upward.

Depress the catch button. Place your thumb over the rear edge of the magazine and maintain pressure while sliding the base off. What your thumb is doing is keeping the spring in place until the base is out of the way and it It’s available in two frame types, three frame sizes, and three calibers. can be withdrawn. Invert the mag, tilt the follower, and push it out through the base opening. Now for the slide. Both the front sight (#2) and rear sight (#8) drift outright to left.

Insert a suitable punch through the firing-pin plate (#16) to depress the firing pin (#22). Move the plate downward enough to capture the pin, which is under pressure from its spring (#21). That having been accomplished, pull the punch, continue the removal of the plate, and prevent the uncontrolled escape of the firing pin and spring from the

DISASSEMBLY AND REASSEMBLY OF THE KBI JERICO PISTOL CONTINUED

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Be certain to match this configuration on re-assembly. slide once nothing is in their way to stop them. After the plate, firing pin, and spring are dismantled, the firingpin blocker spring (#14) and blocker (#15) will fall from the bottom of the slide. The right-hand safety lever (#9) is retained by a small roll pin (#10). This pin is driven downward far enough to clear the left safety lever (#13). As a result, the right lever can be removed.

Don't pull out the left lever until you've either covered the entire left side of the slide with a hand or placed the slide in a plastic bag. I prefer the latter option. Two very small parts are housed inside the left lever—the safety plunger (#11) and plunger spring (#12). Unless prevented by a hand or a bag, both will disappear from the bench area when the lever is pulled from the slide. The Jericho's extractor (#5) is secured by its pin (#3).

Yes, it's a roll pin to be driven downward, but only out far enough to free the extractor. No, the extractor spring (#4) doesn't normally pop off once the extractor is gone. The spring works well, but isn't overly strong and may

have to be picked out of its slide recess with tweezers. Now let's move on to the frame. A Jericho with a steel frame has grip panels. The polymer-frame model like the one being addressed here has none.

Outside of the need to remove the panels from a steel-framed pistol, there's no functional difference between the two models. With either version, viewing the frame from the top and from the back to the front, two main subassemblies are rather obvious: the hammer assembly (#43) and the trigger assembly (#41). Also visible (but less obvious) is the sear housing (#34), and this is where you'll begin dismantling the pistol's back end. Drift out the sear pin (#52) and lift out the sear housing.

Its housing pin (#32) keeps it intact by retaining the spring (#35), the sear (#33), and the housing as a unit. You can break this union down by drifting out the housing pin, but keep in mind that the spring is one of those parts that tends to get lost. Once the sear housing is out, it's now possible to re-

move the complete hammer assembly by drifting the hammer-block pin (#51). It can be drifted in either direction.

Remember this, however; at this point the assembly remains under considerable pressure from the hammer spring (#39), and that must be controlled to keep the assembly from leaping out of the frame. Therefore, push downward on the hammer (#37) when drifting the pin. The removal of the hammer-block pin additionally frees up the triggerbar plunger (#23), plunger spring (#24), safety pin (#25), and plunger pin (#26). This grouping of parts keeps the magazine catch in place.

Keep a finger or apiece of tape over the hole in the right side of the catch. Leave it uncovered and you'll see the catch spring (#46) and plunger (#47) nevermore. Once the hammer group itself is removed, you can take it down further by pushing out the hammer pin (#44), plus the pins retaining the cocking sear (#36) and hammer strut/spring rod (#38). These final two pins are The latter is the first to be removed in detailed disassembly of the frame.

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change without notice) 25 Safety Pin KBI Jericho 941 Semi-Automatic Pistol (Specifications subject to 26 Plunger Pin 40 Slide Catch Spring 27 Trigger Bar Pin 41 Trigger Block 1 Slide 13 Left Safety Lever 28 Trigger 42 Slide Catch Spring Pin 2 Front Sight 14 Firing Pin Blocker Spring 29 Trigger Pin 43 Hammer Block 3 Extractor Pin 15 Firing Pin Blocker 30 Trigger Spring 44 Hammer Pin 4 Extractor Spring 16 Firing Pin Plate 31 Trigger Bar 45 Magazine Catch 5 Extractor 17 Barrel 32 Sear Pin 46 Magazine Catch Spring 6 Firing Pin Safety 18 Recoil Spring, Inner 33 Sear 47 Magazine Catch Plunger 7 Firing Pin Safety Spring 19 Recoil Spring, Outer 34 Sear Housing 48 Frame 8 Rear Sight 20 Recoil Spring Rod 35 Sear Spring 49 Trigger Block Pin 9 Right Safety Lever 21 Firing Pin Spring 36 Cocking Sear 50 Slide Catch 10 Safety Lever Pin, Right 22 Firing Pin 37 Hammer 51 Hammer Block Pin 11 Safety Plunger 23 Trigger Bar Plunger 38 Hammer Spring Rod 52 Sear Housing Pin 12 Plunger Spring 24 Plunger Spring 39 Hammer Spring 53 Magazine numbered the same as the trigger-bar plunger.

Do likewise with the trigger der of the disassembly. I do suggest pin. spring (#30) when you drift the trigger that special attention be paid to those That brings us to

the trigger assempin (#29) in either direction. As you've areas referred to above where spring bly. After drifting the trigger-block probably realized by now, the triggerpressures are involved. How the spring pin (#49), take the same kind of care bar pin (#27) retains the bar (#31).

It's pressure is controlled with the Jeriyou did with the hammer assembly. not difficult to push out, freeing the cho and other guns varies from one The slide-catch pin (#42) must be bar for removal. gunsmith to the next, and there's no driven inward from the right if you're universal technique due to the many going to remove the slide-catch spring Conclusion different designs we work with. The (#40).

Treat this spring with the same There are no specific re-assembly hints end objective is, of course, to get the concern you were advised to take or tricks for the Jericho. The process is darned spring to relax. Use whatever with the magazine catch spring and simply undertaken in the reverse ortechnique works best for you.

FINISHING

Getting Started in Engraving

Engraving is an art form that can add value to your custom guns and spruce up the appearance of less valuable firearms. Here's what you need to know to get started.

BY RAY ORDORICA JANUARY 2010

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Engraving looks like magic to most folks. It is, quite literally, carving in steel. And steel doesn't seem like the easiest of materials in which to carve. Yet engraving flourishes, as it has for hundreds of years. I wanted to try engraving since I was about eight years old, but didn't give it a serious try until I was about 50. When I finally began, to my utter amazement, I found I had an affinity for it which I really couldn't explain. So, can anyone become an engraver?

I suspect that anyone who tinkers with guns can learn to engrave at least well enough to be able to cut the caliber into the barrel of a custom rifle. And that looks infinitely better than stamping it in with a set of punches. I also believe a lot of folks who try engraving will find they're pretty good at it, and will actively pursue it. All you need is the desire, a little knowledge, and a bit of instruction.

I'm not go- The tape around the chisel is to keep it from cutting into the author's hand. ing to try to instruct to any serious degree

here, but I will explain what engraving is all about, so you get an idea how it's done.

My First Engraving My very first "engraving" was done when I was perhaps 10 years old, using a Dremel tool to scratch up the surface of brass firecracker cannons I had made. (I was an early "gunsmith," as well as an engraver.) Years later, I attempted to cut my initials into the rock-hard frame of a Ruger .44 revolver. The result was legible, but because I didn't know how to go about it, the result was also crude.

In desperation, I bought James Meek's excellent book titled *The Art of Engraving*, and then things picked up. I studied Meek's book when I lived in the wilds of Alaska with a lot of time on my hands. The first thing Meek suggested was to start your engraving lessons by drawing scrolls on paper with a pencil, and I admit that's a great idea. He recommended the beginning engraver devote a full year to pencil and paper before attempting any engraving. Balderdash!

After a few weeks, I got sick and tired of drawing endless scrolls and started cutting metal. I found it went quite well. However, the use of pencil and paper is a great way to learn, to keep in practice, and to plan a design. I wanted desperately to engrave something. At hand was my fine Churchill double 470, a costly rifle which had a gold oval in its buttstock that carried someone else's initials. It was time to change the initials to my own.

I carefully filed off the existing initials, smoothed and polished the gold, laid out my monogram, and then went to work with the crudest tools imaginable. I used a piece of one-quarter-inch-square high-speed steel, about six inches long. I narrowed one end of it and put an engraving point on it according to Meek's instructions. Even though that tool was more of a bludgeon than an engraving chisel, by driving it with a small ball-peen hammer, I succeeded in achieving exactly what I had in-

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It's a copy of one used by Lynton Mc Kenzie, one of the finest engravers of all time. You can buy an engraving hammer, but the author considers them all to be excessively large and heavy. It's the gold escutcheon on his Churchill 470. This was done with a crude graver, a ball-peen hammer, and a lot of determination. tended to accomplish. This was my first successful engraving, and it still looks good today.

So if I can use a thoroughly unsuitable chisel and a thoroughly unsuitable hammer to cut into the gold of a \$40,000 rifle, I suggest it may be time for you to get some gravers and start cutting. It ain't that hard! Engraving Instruction I've used only two sources for all my engraving instruction. The first one—and the only one I used for many years—is Meek's book.

The Art of Engraving takes you through just about everything you need to know, and includes descriptions of the tools you might want, with good photos and drawings.

The second source, which I acquired some years after beginning with Meek's book, area pair of DVDs titled Engraving with Lynton Mc Kenzie. (Mc Kenzie's DVDs are available from Brownells, as is Meek's book.) Mc Kenzie's instruction is broken down into "beginning," "intermediate," and "advanced." Mc Kenzie reduces the

number of tools that Meek suggests you need, and I'm in agreement with him. I use only half a dozen tools for all my engraving.

The Tools In my experience, the easiest-to-use and most versatile chisel or graver is about 3/32-inch square and about 3 or 4 inches long, made of high-speed steel (HSS). Brownells used to sell these, but doesn't at present, so I recommend looking online. One source is Contenti Jewelry Making Supplies in Rhode Island You can also try the E. C. Muller Company in New York A third source that lists only carbon steel (not HSS) tools, but will get you started, is Track of the Wolf in Minnesota www.trackofthewolf.com).

Another excellent source is e Bay. What you want is a #2 to #4 square graver. A suitable square graver will cost five to ten dollars and will last you nearly forever. In classic engraving terminology, a "graver" is driven by hand pressure only. But if you use the same tool with a hammer, it's referred to as a "chisel." I use the terms interchangeably. Most engraving of firearms, in my experience, is done with a "chisel" and a chasing hammer.

The best handle to use with a hammer-driven chisel is around hardwood rod, which you can easily make. The handpushed "graver" handles have a larger-diameter head with a flattened side, so you can get the tool lower to the work and apply the needed hand pressure more easily.

Brownells still lists flat-head handles. As noted, you'll need a small hammer. You can make or buy one. If you make one, be sure it has a large head, is not too heavy, and has a slightly flexible wooden handle.

The only other necessary item is a vise. I've used a simple bench vise with a rotary base for all my engraving. You can spend lots of money for a dedicated rotating vise, but it's not necessary. One guy made one out of a bowling ball, attaching a vise to the ball and resting the bowling ball in a collar of wood so it could be easily rotated and would not roll away. Many engravers simply mount a vise on a pedestal at suitable height, and do their engraving standing up, rotating themselves instead of the vise.

I recommend using your bench vise to get started. If you like engraving, the sky's the limit on accessories. These can include a dedicated microscope (like Mc Kenzie uses), or even the costly Gravermeister, which provides endless pneumatic tapping, so you won't even need a hammer. Sharpening The point on a chisel or graver is achieved by first beveling the tip of the square graver about 45 degrees rearward along the corner-to-corner axis, leaving a single sharp protruding point.

You then knock the bottom edge off this point just a little by lightly stoning the sides, leaving a cutting edge that's sort of flat-bottomed but still sharp-pointed. The

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The upper arrow points to the front surface, which has a mirror polish from a fine sharpening stone. The lower arrow points to the slight relief, or flat, stoned into both sides of the tip to keep the chisel from digging in too deeply. 458 Magnum, which carries his first extensive engraving. The breech has a Cape buffalo, scrollwork, the caliber, and the author's monogram. The rest of the rifle has small birds and animals. small flattened bottom of the tool prevents it's digging too deeply into the steel.

If you make the bottom flat too long, you'll have trouble getting the chisel to cut tight curves. Depth is controlled by angling the tool, just like cutting into wood with a chisel. You get it around corners by slightly rotating the chisel about its long axis, away from the direction of the desired cut. In use, the chisel pares off a tiny but continuous strip of steel along your drawn lines, as you tap the chisel repeatedly with your hammer. Of course, you've got to be able to see what you're doing.

Good light, and a 5x Opti Visor are indispensable items for me. Oh, and you'll need some good flat stones to keep the graver sharp. Ideally, as Mc Kenzie's DVD finally told me, you keep the tool so sharp that it cuts cleanly, removing a thin sliver of metal without throwing up much of a burr on the surrounding background. His DVD shows an

easy way to keep the graver sharp. When you're done with all your cutting, you leave the engraved surface completely alone.

You don't need to stone it down to remove the burrs you've thrown up—because you didn't throw up any in the first place. Oops! I didn't do that. I have stoned down all the work I've ever done (until recently). This was partly because I threw up lots of burrs, using tools that got dull quickly, and also because I didn't have the cutting edge quite right. Stoning leaves a clean surface and generally made my engraving look better, so I did it.

But Mc Kenzie says it's wrong, and I consider Mc Kenzie's work to be the best, and so now I'm using better gravers and keeping them razor sharp, so I don't have to stone the finished surface. Live and learn. Be sure to figure out what it is you want to engrave, and think about how to achieve it. If you want, say, a circle, you can cut one. That leaves a circular groove in the metal.

But if you want the circle to stand out, you cut away the background outside the circle, leaving the circle as the highest part of the metal. Most beginning engraving will be done the first way. Moving Onward Following my success with the 470, I looked for a bigger "canvas." I had on hand a custom .458 Mag on a 1903 Springfield action that had been barreled by one of Alaska's better gunsmiths. I had reshaped the stock and checkered it, but the metal was crying for decoration.

By this time, I had acquired some good gravers from Brownells, and some chunks of flat, soft steel for practice, although I still needed a proper hammer. I had seen a photograph of Lynton Mc Kenzie's engraving hammer and that's what I wanted. I used a friend's metal lathe to make a copy of Mc Kenzie's hammer, and then engraved the hammer head as a practice piece. It came out well, and has done all my engraving work for me ever since. I practiced a lot on those soft steel plates from Brownells.

Soon it was relatively easy to follow the scroll lines I had drawn on the plates, and it wasn't too hard to control the cutting depth and direction. Thus encouraged, I began to draw and carefully cut on my .458. Engraving that rifle took along time, because I was being extremely careful. I'd cut a little, take a break, and come back to it. For many weeks, I did little else but cut on that rifle. The odd thing about it was that, along the way, I felt like I had done it all before.

It was as if someone was looking over my shoulder and telling me what to do. I found my tools doing things I didn't understand, but the results on the steel were exactly what I had wanted to achieve. Much of what I was doing was not in Meek's book, and I have no idea where it all came from. Getting Started Before you spend a penny on engraving tools, I recommend looking closely at all the engraved guns, or pictures of them, you can find. Take a magni-

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flying glass along with you to gun shows or gun shops and look at all the engraved guns you find. Ask yourself if engraving is something you can understand and think you can accomplish. If you look with interest, you'll soon find that some engraving is a whole lot better than others. You'll learn to distinguish between machinemade and hand-cut engraving. Some of the most tasteful engraving doesn't cover the gun completely.

The spaces left untouched can help to create a pattern, and set off the bursts of engraved steel better than if every square inch were cut. Purdey's rose-and-scroll decoration is a good example. If you still think you want to try engraving, get an instruction book. I think beginners will learn easily from Meek's book. You can readily refer to what he tells you on the printed page.

If you're serious, I recommend studying all the engraved guns you can find, or good pictures of them. (The internet is a good source.) Examine 45 LC revolver was purchased in the white and engraved in the style of L. D. Nimschke, one of the author's favorite artisans. The gun was then sent off for case hardening and bluing. Note the punched background between the scrolls, and the engraved screw heads. them with a strong magnifying glass, and try to see how the cuts were made.

You'll be surprised how crude some fine engraving looks when you magnify it. Yet the effect is artistic when viewed normally. You'll also find the cuts are all quite shallow. Early British double rifles and shotguns are some of the finest treasure troves for the en-

graving student. Mc Kenzie got his background from the old English guns. By the way, those old guns were engraved in the white and then case hardened. You probably don't want to start by trying to engrave your customer's guns.

I recommend the flat steel plates, still offered by Brownells as the best place to start. If you can draw scrolls on paper, transfer some onto the surface of the steel plate and try cutting them. Don't be discouraged if it doesn't seem to go as well as you'd like. Stick with it, come back to it as often as you can, and soon you'll see some significant progress. Generally speaking, you'll have to refinish any gun you engrave.

I generally prepare the metal with 400-grit wet-or-dry sandpaper, keeping everything dead flat, with no rounded-over corners. I also use stones to get the flat surfaces of handguns true before beginning to cut. There are a few tricks of the trade, obviously, but you'll pick them up fast if you're interested. Naturally, you won't want to buff the dickens out of your freshly engraved gun and drop it into a bluing tank.

Rust bluing is appropriate, and if you like engraved guns, you'll probably want to learn rust bluing along with other appropriate fine finishes. Putting the caliber onto the breech area of a rebarreled rifle that needs bluing anyway, is a tasteful item, and almost any gunsmith can learn to do this, given the desire. It may be the best place to start, but be advised that lettering and/or numbering is not as easy as scrollwork, or so I have found.

But the basics are the same: Lay it out with pencil, and follow the lines with the chisel. Some engravers prefer a flat-bottom chisel to cut the widest part of each letter, but that's a matter of personal preference. Choose a Theme A central theme makes the engraving more fun. It can commemorate a special time, place, or event. And it can help you to come up with new, related ideas rather than just sticking another scroll here and there. I wanted a theme for my engraving on that .458.

In my relative solitude in bush Alaska, I had more wild-animal and bird friends than human ones. I decided to "freeze them in time" on the rifle, where they would never die and would always remind me of that magical time. So I used my many wild friends as models for the rifle's engraving. On the floorplate is a portrait of my fox friend, who used to come and eat out of my hand, and sit with me on quiet nights. I did his portrait entirely by hand, no hammer, in what is called the "bulino" technique.

The rifle also has images of gray jays, pine grosbeaks, chickadees, a squirrel, a mouse, and a woodpecker, all of whom came to my call and either ate out of my hand or sat on it. Of course I got a lot of grief for putting chickadees on an elephant rifle, but that's what I wanted. I carried that rifle everywhere in Alaska, and my friends were always with me. And that's the name of the game when you engrave your own guns.

Do what you want, to the best of your ability, and if you like what you produce, that's all that matters. ■

MAINTENANCE & REPAIR

Accurizing AR-Type Rifles and Carbines, Part 2

With some basic steps and aftermarket parts, you can easily convert an out-of-the-box AR rifle or carbine into a respectable group-shooter.

BY STEVE ADELMANN JANUARY 2010

ORIGINAL PP. 10-15

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In Parts 1 and 2 in the last couple of issues, I've covered the installation of an aftermarket trigger, freefloating the barrel, and installing anew barrel on AR-style rifles and carbines. Other minor steps that are available to the gunsmith involve cleaning up and truing some of the more critical surfaces on these guns. This final installment will deal specifically with lapping the upper receiver, recutting or cleaning up the crown, and lapping the crown of the barrel.

Truing the Upper Receiver After free-floating the barrel, the next procedure I use to achieve good accuracy is to lap the frontal face of the upper receiver's threaded area where the barrel extension mates to it. It's

necessary to remove the barrel to perform this service, so when I'm accurizing an existing rifle, I perform this step in the middle of the barrel freefloating procedure once the barrel has been removed.

Brownells sells a hand-drill-mounted stainless steel lapping tool (part# 080-000-182) that makes this procedure a cinch. Even in rifles that group reasonably well, I've found that lapping/ truing the upper receiver always yields a noticeable accuracy gain.

An external, wrap-around-style upper-receiver block is needed to lap the face, and since the lapping tool will extend into the receiver during lapping, the ejection

port cover will need to be removed prior to lapping. The lapping tool is chucked into a hand drill and coated along its length with lubricating oil. The tool can then be inserted into the upper receiver from the front, up to the relief section.

The lapping surface of the tool will be directly opposite the receiver face. Wipe the receiver face and the lapping surface clean of any oil and coat the lapping surface with a fine grit lapping compound such as 600. Take care not to allow any lapping compound to get inside the receiver. The relief groove on the tool will serve as

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This is seen here as a bright silver ring where it used to be black, a trap for stray grit, thus preventing the removal of the anodizing on the receiver's inner surface. Insert the tool fully until the lapping surface contacts the receiver face. Run the hand drill no faster than medium speed, while applying forward pressure on the rear of the drill. Lap the receiver for about 30 seconds, then stop the drill and slowly remove it.

Slowly spinning the drill in the opposite direction may help, but take care not to score or scratch the inside of the receiver. Once the tool is out, clean the receiver face and inside of any residue and inspect. Most instructions will tell you to remove 60 to 75 percent of the anodization from the front of the receiver, but I remove 90 percent or more when I do it. This procedure is designed to give the barrel extension a trued surface to index on, with equal contact around the circumference.

It normally takes me several repetitions of the lapping procedure before I get the desired result. In tough cases where a section of anodization won't yield, I'll drop to 320 grit, and that usually does the job. It's very important to lubricate the lapping tool each time before inserting it into the receiver.

If it gets dry while spinning, the stainless-steel tool will score the inside of the receiver. (If you see smoke, it's already too late.) While light scoring doesn't ruin the upper receiver, it creates a cosmetic flaw and the

surface protection provided by anodization will be compromised. Remember that in normal operation, an AR's steel bolt carrier reciprocates inside the aluminum upper receiver, so surface integrity is important for wear resistance.

Once you're done, clean the complete inside of the upper receiver, the newly lapped face, and the threads. The stainless-steel lapping tool simply needs to be cleaned and a light coat of oil applied for storage. Fixing Crowns The uniformity of the muzzle's cut at the point where the projectile leaves the bore is critical for shot-to-shot consistency. A flawed crown impedes the projectile's ability to leave the bore with the same flight attitude every time, leading to reduced accuracy.

In a perfect world, we'd just leave this transition from rifling to muzzle face at a perfect 90 degrees. However, we've learned the hard way that such a crown is susceptible to damage from even light contact with anything harder than Balsa wood, so, at a minimum, a slight recess is in order for protection. Additionally, I find that most of the non-match barrels I come across will gain a slight accuracy increase once the crown is cleaned up.

About half the time, the factory crown is visibly uneven, jagged, burred, or even slightly damaged. Don't confuse the following procedure with the cosmetic process of making a damaged muzzle face look pretty again. That normally requires filing and use

of various sandpaper grits to remove damage and file marks across the entire muzzle face. This is a simple accuracy clean-up procedure aimed squarely at the rifling and the muzzle-face juncture.

When reworking a muzzle, I prefer to cut an 11-degree crown whenever possible. For some deeply recessed crowns, however, it may be necessary to use a steeper angle in order to get into the recess. Using a 1/2-inch-diameter crown cutter from Brownells (part# 080- 5986-500) will yield an 11-degree crown. If either a muzzle brake or flash suppressor is present, removing them with a combination tool first will give you clear access to the muzzle.

In such a setup, the muzzle brake or flash suppressor protects the crown so the angle becomes less of an issue. The crown simply needs to be freed of any inconsistencies that could hinder accuracy. Chances are there will be heavy carbon around the face of the muzzle when a brake is removed. This should be completely removed and the bore should also be cleaned before proceeding. Place the barrel in a padded vise, muzzle up, and insert a clean patch approximately two inches into the bore to catch chips and debris.

These cutters are designed to be piloted, so once the appropriate brass pilot is installed, lubricate it and the cutting blades with a good-quality metalcutting oil. The cutter is controlled with a

ACCURIZING AR-TYPE RIFLES AND CARBINES, PART 2 CONTINUED

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The excess metal at the point where the rifling ends at the muzzle causes drag and irregular pressure on the projectile, thus compromising accuracy. thread-on T-handle. Once the pilot is inserted into the bore, you must turn the cutter clockwise only to prevent damaging the cutting flutes and crown. Brownells provides good instructions with the cutter, but I deviate from them slightly.

I use one hand to push firmly down on the center of the Thandle while turning the cutter (clockwise) with the other hand, approximately five full revolutions. I make a sixth revolution with less pressure, to keep the chip left at the stop point to a minimum. After the appropriate revolutions, remove the cutter from the bore and use a brush or rag to clean any chips from the cutting flutes. Likewise, clean around the barrel's crown and inspect.

I use a lighted magnifying lens whenever inspecting the crown, which aids in seeing imperfections. At this point, it will usually still be too rough to stop. Re-oil and repeat the process two or three more times (five revolutions each) with decreasing pressure on the T-handle each time. It's important to decrease pressure with the final few revolutions in order to leave a clean stop point on the muzzle.

If you see a distinct line (under magnification) running from the bore to the outer edge of the barrel, you're stopping too abruptly and need to back off the pressure to the point of Tool marks will still be evident on all surfaces when viewed under magnification. While not a critical step, proper lapping of the crown removes all remnants of an uneven transition point. being slightly more than the tool's own weight for the final turns.

Once complete, you should see a clean, bright, uniform transition at the desired angle from rifling to muzzle face. Finally, remove the patch in the barrel and clean the bore well to remove any residual chips and excess oil. For crowns that are recessed too far for a cutter to reach or when burrs are so heavy that the cutter skips instead of cutting cleanly, it's best to use a lathe and the appropriate crowning tools to fix the problem.

Crown Lapping After repairing or cleaning up a crown, I seldom go straight to the lapping stage. However, if I can't get the crown as smooth as I want or if I see tool marks from the rifling process or other rough spots, I'll lap it before test firing. If the muzzle passes visual inspection after crowning, I'll fire the rifle first and assess the accuracy. If

ACCURIZING AR-TYPE RIFLES AND CARBINES, PART 2 CONTINUED

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the barrel still isn't measuring up, lapping or polishing the crown normally gives it a slight nudge in the right direction—normally on the order of a 0.1 minute of angle (MOA) decrease in group size. The materials needed to lap the crown are lapping compound (220, 320, and 600 grits), a hand drill, and a brass muzzle lap. I use Brownells Power Brass Muzzle Laps (part# 080-784-350 for .27 - .35 and part# 080-764-243 for .17 - 6.5 mm) because I have yet to wear one out.

While a large, round-headed brass screw will work as a lap, the brass screw will wear out after minimal use. As with most everything from Brownells, the bore laps come with very good instructions (that I only deviate from slightly). After cleaning the bore, remove the muzzle brake or flash suppressor as necessary and place the barrel muzzle-up in a padded vise. Once again, push a clean patch approximately two inches down into the bore. Chuck the brass lap into a hand drill.

This is one case where a hand drill is better than a drill press or lathe; I'll explain why in a moment. Spread a liberal amount of lapping compound around the tip of the lap. I start with an aggressive grit for most crowns—usually 220—though no harm comes from starting with a finer grit. I've found over time that the process is faster

and I get the same result if I start with coarse grits and then step down to finer grits.

The soft brass of the lap won't harm the steel barrel, and even with moderate pressure it takes a longtime to complete the lap so I feel safe starting with 220 grit. Hold the drill vertical above the AR's muzzle, and place the lapping tool's coated tip lightly against the crown. Set the drill speed as slow as possible, or use minimal trigger pressure and begin spinning it against the crown. Light pressure from the drill's own weight is all that's required to do the job.

As the chuck spins, rotate or wobble the drill around in a wide circle so that the entire rounded head of the lap comes in contact with the crown—not just the very tip. Failure to do this will result in a poor lapping job and a hard-to-remove groove around the brass lap's circumference. The wobbling movement is why a hand drill is needed for this lapping method. I continue in this manner for 30 seconds, and then stop and clean all surfaces and recoat the lapping tool with the same grit.

Then I reverse the drill's direction and repeat the process. After working it in both directions, inspect the crown under magnification for imperfections. Once I see the crown beginning to get uniformly smooth, I step down to 320 grit and repeat the process. It may take two or three cycles at

each grit before the desired result is achieved. When finished, the crown should be polished smoothly and uniformly, with no alteration of the cut angle and no signs of burrs or "flow" leftover from the rifling process.

Clean the crown and bore of all lapping compound and the resulting brass sludge that will extend into the bore, and remember to remove the patch and clean the entire bore before firing. **Conclusions/Recommendations** The AR is a very versatile shooting platform, and well-suited for multiple uses. While I've covered several steps to accurize the AR platform in the sequence I usually use, in truth they can be performed in any order, depending on your ability to diagnose contributions to inaccuracy.

In many cases, it makes sense to perform these steps one at a time, followed by testing for results before proceeding to the next step. If I've learned anything since starting down the custom-AR road, it's that selecting the proper components, paying close attention to detail in fitting and assembling, and applying careful accurizing procedures all serve to yield a very good-shooting semiautomatic rifle.

With a good-quality barrel and ammunition, you can achieve an accuracy of 1/2 MOA or better—without the need for bedding blocks, glass bedding compounds, or replacement stocks.

FROM THE ARCHIVE

Making an M1911 Trigger Shoe that Fits

More often than not, a factory 1911 trigger shoe, even an oversized one, will fit too loosely into the frame and have a lot of top-to-bottom or side-to-side play. Here's how to make one that fits properly.

BY ROY SEIFERT JANUARY 2010

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A while ago, I built an M1911 .45 ACP from parts. I've used this gun successfully in a number of three-gun matches, and it's now my concealed-carry gun. Yes, I would trust my life with this gun. Unfortunately, I've never been very pleased with how the trigger fit in the frame. It seemed like the trigger slot in the frame was cut too large, which allowed the trigger to wobble both vertically and horizontally.

The vertical movement would affect the trigger let-off like this: If I moved the trigger shoe up, the pull was nice and crisp; if I moved the trigger shoe down, the let-off had some creep. There's almost nothing more detrimental to accuracy than an inconsistent trigger. I was discussing this problem with a friend of mine who suggested I make my own trigger shoe. Now why didn't I think of that! Removing the stirrup I took the factory trigger I installed in the gun and removed the stirrup from the trigger shoe.

The steel stirrup is staked in the aluminum shoe by two stamped indentations as you can see in the photo below. I took my rotary tool with a cutoff wheel and carefully removed aluminum from around the stirrup on the end away from the overtravel screw until I could remove it from the trigger shoe. Fabricating a New Trigger Shoe I purchased a 12-inch piece of 3/8- by 1-1/2-inch aluminum bar stock from Online Metals The 1-1/2inch width allowed me to cut two trigger shoes side by side.

I measured the trigger-shoe slot in the frame and using my CAD program I designed anew trigger shoe that was 0.937 high x 0.660 wide x 0.268 thick. I made the height and thickness a couple of thousandths larger than they needed to be so I could do the final fitting by hand. I laid out two shoes side by side with my CAD program so I could cut them both out at the same time. With this program, I can adjust

the length and shape of the shoe to fit any shooter. I set up my hobby CNC mill with a 3/ 16-inch flat-end mill.

I first milled the surface of a 1-1/2-inch square section down to 0.268 inch. Then, using the same bit, I cut out the two trigger shoes. Note that even though I used a CNC mill to cut out the shoes, you could do the same with a hacksaw and files; it would just take a lot longer. Fitting the New Shoe First, I beveled the top and bottom edges to 45 degrees. This allowed the shoe to fit in the cut in the frame, even if the corners of the slot were not exactly square.

Then I laid a sheet of 320-grit wet-or-dry paper on a flat surface and began polishing the sides of the shoe until it would fit in the slot. To test the fit, I inserted the shoe lengthwise to see if it would fit in both the top and bottom of the slot as shown in the photos on the next page. I continued to polish until it would fit. The final thickness was 0.266 inch. Next, I used the same 320-grit pa-

MAKING AN M1911 TRIGGER SHOE THAT FITS CONTINUED

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Above left and I polished the sides and top and bottom until the shoe moved freely in the slot with no vertical or horizontal movement. Holes can be drilled in the side of the shoe to further lighten it if so desired. per to polish the top and bottom of the trigger shoe until it would move freely in the cutout in the frame. The final height was 0.935 inch. Radiusing the Front of the Shoe At this point, the trigger shoe fit in the frame perfectly. It moved freely with no top-to-bottom or side-to-side wobble.

However, the front was flat with a sharp edge, which I wanted to remove. I put a fine sanding drum in my rotary tool and removed the sharp front edges of the shoe on each side. This put a gentle radius on the front of the trigger. I finished polishing this surface with some 320-grit paper wrapped around a 3/8-inch wooden dowel chucked in my drill. I ran the drill at a medium speed and polished the front of the trigger shoe until all the scratches from the sanding drum were removed.

Drilling the Set-Screw Hole and Cutting the Stirrup Slot Next, I drilled the hole for the overtravel set screw, and cut the slot for the stirrup. First, I wrapped the trigger shoe with some masking tape to protect the surface, then squared and leveled it in a machinist's vise on my CNC mill. I used a #36 drill bit and drilled a hole 0.208 inch up from the bottom of the trigger shoe. I tapped this hole with a #6-32 tap. This will be for the overtravel screw.

The slot for the stirrup should be 0.055 wide and 0.132 deep. I used a 0.055-inch micro-end mill and cut the slot in 0.005-inch passes so I would not break the bit. Setting the Stirrup in the Shoe When commercial manufacturers assemble the stirrup to the shoe, they use a jig. I used the pistol frame as a jig. First, I used acetone to clean the slot in the trigger shoe and that part of the stirrup that fits into the slot.

I put a drop of epoxy in the slot, and carefully inserted the shoe through the trigger guard into the frame. I inserted the stirrup through the rear of the frame until it sat in the slot in the new shoe. I was very careful not to spill

any epoxy or I might not be able to remove the trigger. I was also careful to make sure the stirrup and the trigger shoe were installed correctly. After the epoxy cured, I removed the trigger from the rear of the frame and set the shoe in my vise.

I used a prick punch to make indentations in the aluminum on either side of the stirrup bar to stake the stirrup in place. The stirrup was now solidly in place and did not move. I removed the trigger, put a drop of blue Loc Tite in the overtravel screw threads and inserted a 6-32 x 1/2-inch set screw. I reassembled the frame and adjusted the set screw until the hammer would fall without having the half-cock notch touch the sear.

I once again disassembled the gun, lubricated the new trigger, and reassembled the entire gun. Conclusions/Recommendations Since the trigger shoe was hand-fitted to the frame, it now has no free play whatsoever. This results in a consistent trigger pull, which helps to maintain good accuracy. Using this method, I can now fabricate a trigger shoe to fit any frame and any shooter. ■

METALWORKING

Working the Colt Scout Single-Action Revolver

On the surface, the Scout and the Frontier Scout appear to be smaller rimfire versions of the Single Action Army. Internally, however, they are somewhat simplified.

BY DAVID R. CHICOINE JANUARY 2010

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The .22-rimfire-caliber Colt Scout and Frontier Scout revolvers were modified and scaled-down versions of the familiar Single Action Army. Introduced in 1957, this sixshot single-action model used an aluminum frame and grip-strap combined with a steel barrel, cylinder, and ejector tube. Although primarily chambered for .22 Short, Long, and Long Rifle, a .22 Magnum version was produced after 1959, with an interchangeable dual-cylinder version in .22 LR/.22 Magnum coming out a few years later.

One modern innovation incorporated into the Scout was its framemounted, rebounding firing pin, although Colt retained the conventional three-click hammer operation of the larger parent SAA model. The company offered Scouts in barrel lengths of 4-1/4, 4-3/4, and 9-1/2 inches, with the latter barrel length known as the Buntline Scout. Many Scouts were also manufactured as special commemorative revolvers, and these were sometimes sold as a set along with a full-sized Single Action Army.

With the introduction of the Scout, Colt simplified the single-action revolver both internally and externally. The cast-aluminum receiver and onepiece grip-strap contained a semi-captive leaf mainspring. In a fashion that was similar to the early Remington single-action revolvers, the Scout also used only two screws through the side of the frame instead of the three screws in the full-sized Single Action Army.

Like the Remingtons, one screw acted as a pivot for both the bolt and the trigger, while the second and larger screw acted as a hammer pivot. Regrettably, these simplified production methods and the modern, framemounted firing pin were never carried over into the Single Action Army revolver. Colt discontinued the Scout some time around 1970 or 1971, and the popular line was soon replaced with the steel-framed Peacemaker Scout and the New Frontier Scout series of revolvers.

The Scout proved to be an extremely reliable revolver, requiring little in the way of repair work. That's 22 rimfire was introduced in 1957 as a scaled-down version of the famous Single Action Army.

The Scout was actually a simplified and updated single action that used fewer parts than the old Peacemaker, along with a more modern framemounted floating firing pin. borne out by the fact that in more than 30 years I've only seen perhaps five or six of these little revolvers come into my shop, and most of these were for minor repairs, cleaning, or adjustments. I'm somewhat partial to these small revolvers, since there has been a Scout in my family since 1968.

In all that time, the little wheelgun has digested hundreds of thousands of rounds of .22 ammo. I have to admit that the little Scout has been neglected for long periods, had infrequent cleanings, and yet has always functioned flawlessly. Passing through two generations is quite a record, and soon

WORKING THE COLT SCOUT SINGLE-ACTION REVOLVER CONTINUED

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the Scout will be handed down to my grandchildren. Disassembly Instructions The schematic illustration used here comes from The Gun Digest Book of Exploded Firearms Drawings, 2nd Edition, from Krause Publications, with some modifications made by the author. Refer to the drawing for takedown and, as always, start the disassembly by making certain the firearm is unloaded. 1. Begin the procedure by holding the revolver by its grip with your left hand, keep your finger away from the trigger (#37).

Use your thumb to roll the loading gate (#22) open to the right. At this point, cautiously pull the hammer (#25) back slowly towards the rear, just until you have heard two audible clicks. This should have placed the hammer in the halfcock or loading position. In this position, the cylinder (#12) will spin freely when rotated in a clockwise direction.

Slowly rotate the cylinder by hand and examine the cylinder's chambers from the rear at the opened loading gate (#22), and make absolutely certain the cylinder chambers have no cartridges in them. If you see cartridges in the chambers, assume that you have a loaded gun. Leaving the hammer in the halfcock or loading position and

with the loading gate open, tilt the revolver so the barrel muzzle is facing away from you and up in a safe direction.

Use your right hand to rotate the cylinder one chamber at a time, pausing as you hear each audible click to allow each successive cartridge to fall out of its chamber and onto your bench. If a cartridge does not fall out of the chamber of its own weight, manually operate the ejector by pushing the ejector-rod head (#14) to the rear with your right hand so the ejector pushes the cartridge out of the chamber. Repeat the above until there are no more cartridges in the chambers.

For added safety, I like to remove any and all live cartridges from my workbench area and store them in a secure location before moving on to the next step. 2. To remove the cylinder, the hammer should remain in the loading or half-cocked position with the loading gate open. Colt single-action cylinders rotate on apart called the base pin (#6), which is removed through the front of the frame.

The base pin is held in by a single locking screw Unless the mainspring is to be replaced, the wedge can remain in place until reassembly. Unscrew and remove these and

the trigger-guard assembly is lifted away from the frame. Be sure to look for the loading-gate spring (#24) in the bottom of the frame, which becomes free as soon as the trigger guard is moved away from the frame. located in the front of the frame, just forward of the cylinder and above the trigger guard.

Unscrew and remove this screw (#7) and the base pin can be pulled straight out through the front of the frame. Now the cylinder is loose and can be carefully rolled out to the right side (the loading gate side) of the frame. Notice that the screws in these Scouts have nylon washers (#38 and 39) under their heads to help keep them from loosening. Should the washers be deteriorated (and they often are) you can use some blue Loc- Tite on the screw threads during final assembly.

This is actually a more effective method of securing the screws than the factory washers. 3. Next remove the grips and the back-strap by unscrewing and removing the grip screw (#35) from the center of the left grip (#32), and then lift both grips off the grip frame. Pull the hammer all the way back to the cocked position and insert a small block of wood about 3/8-inch square or a small

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tween the top area of Colt Scout/Frontier Scout the mainspring and Single-Action Revolver the inside of the back- (Specifications subject to strap. Once this is change without notice) done, you can release hardwood dowel bethe hammer and allow it to fall forward. The wood block or dowel will hold the mainspring compressed, relieving tension from the hammer. Leave the wood block in place for easier reassembly. Now unscrew and remove the two rear backstrap screws (#3). These screws face straight forward.

Also remove the front trigger-guard screw (#4) and the two bottom backstrap screws (#2). The backstrap assembly (#1) is now free and can be removed toward the bottom. Take note here of the loading-gate spring (#24) in the bottom of the frame, which has now become free.

Remove the spring and the gate-spring detent (#23) out from the bottom of the frame. 23 Gate Detent This will allow the 24 Gate Spring opened loading gate 25

Hammer to slide out towards 26 Hammer Screw the front of the frame. 27 Hand and Post Assembly 28 Hand Spring 4.

Disassembly of the 29 Mainspring* action begins with 1 Backstrap 12 Cylinder 30 Recoil Cup* 2 Backstrap Screws, Bottom (2) 13 Cylinder Bushing* 31 Recoil Cup Pin* unscrewing and re- 3 Backstrap Screws, Top (2) 14 Ejector Rod 32 Stock, Left Hand moving the bolt- 4 Backstrap Screw, Front 15 Ejector Rod Tube 33 Stock, Right Handspring screw (#9) 5 Barrel 16 Ejector Spring 34 Stock Pin* from the bottom of 6 Base Pin 17 Ejector Tube Screw 35 Stock Screw the frame.

This screw 7 Base Pin Screw 18 Ejector Tube Plug 36 Stock Screw Nut* faces straight up and 8 Bolt 19 Firing Pin* 37 Trigger is located just for- 9 Bolt Spring Screw 20 Firing Pin Spring* 38 Washers, No.5 (8) 10 Bolt and Trigger Screw 21 Frame 39 Washers, No. 10 (2) ward of the trigger. 11 Bolt and Trigger Spring 22 Gate *not removed for normal maintenance Once the screw is out, the sear and bolt

WORKING THE COLT SCOUT SINGLE-ACTION REVOLVER CONTINUED

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The loading gate is now free and can be removed out of the frame and into the cylinder opening. Reach up into the frame from the bottom with a screwdriver, unscrew and remove the bolt-spring screw, and the bolt and trigger spring will fall out. Unlike the Colt SAA and its clones, this simple revolver uses only one screw as a pivot for the trigger and the bolt. spring (#11) will be free to fall out the bottom of the frame. Notice how one leg on this spring powers the bolt, while the longer leg powers the trigger.

Use caution during reassembly to be sure both legs of the spring have engaged their respective parts before retightening that screw. Now unscrew and remove the Scout's trigger screw (#10). This is the forward-most of the two screws in the left side of the frame. The

trigger (#37) and the bolt (#8) are now free to drop out through the bottom of the frame. The hammer screw (#26) is the larger and rear-most of the two screws in the left side of the frame. It can now be unscrewed and removed.

The hammer (#25) is now free to be rotated slightly toward the rear, then pulled down and out of the frame. Notice while removing the hammer that the hand assembly (#27 and 28) is connected to the hammer, so it comes out of the gun along with the hammer. Once you have the hammer out, the hand assembly can be removed by lifting it up out of its pivot hole on the left side of the hammer.

During reassembly, the hammer/hand assembly is installed as a unit, compressing the handspring slightly to allow it to enter its cut

in the frame. 5. To complete the disassembly, unscrew the ejector-tube screw (#17) and remove it from the front side of the ejector tube (#15). This leaves the ejector-tube assembly free to be pulled to the side by its front until it is slightly away from the barrel. The assembly is then withdrawn forward and off the barrel.

The ejector-rod assembly (#14) along with the ejector spring (#16) can be removed by pulling them both back and out of the ejector tube. The ejector-tube plug (#18) can now be taken out the front of the ejector tube. Further disassembly of the Colt Scout and Frontier Scout is not required for routine maintenance and cleaning, and reassembly is simply a matter of reversing the disassembly sequence given above. ■

PEOPLE & COMPANIES

Reader Forum

BY AMERICAN GUNSMITH EDITORS JANUARY 2010

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Working the Winchester M100 I have a question about the Winchester Model 100. I'm having difficulty removing the barreled action from the stock. Also, do you have any advice on tuning the trigger assembly? Lucien Langlois New Vineyard, Maine For removal of the action, take the magazine out, and loosen the forearm and guard screws. Pull the cocking lever fully to the rear, and hold it there. Grasp the forearm, push the barrel up to pivot the receiver against the recoil block, and lift the action out of the stock.

There are no "kits" these days for the Model 100's trigger. We recommend you purchase a copy of Firearms Assembly from the NRA. An M100 schematic is in the book. The detail on the guard-housing assembly shows several polishing possibilities, and you'll also want to contact Wolff Co. about lighter springs to replace the originals. S&W Top-Break Query A friend has asked me to look over an inherited revolver, which I have tentatively identified as an S&W topbreak Double Action Second Model in .38 S&W.

I say "double-action" because it functions as a double action; however, it also has a spur trigger and the intro paragraph to the S&W top-break section in the Blue Book of Gun Values says these guns "include single ac-

tions (spur trigger or triggerguard), double actions, and safety hammerless designs." Additionally, the hammer will not lock to the rear preparatory to firing singleaction, as the spur on the trigger appears to bottom out on the trigger guard, thus preventing the hammer from being pulled any further to the rear.

Is this revolver malfunctioning, or is it double-action only? Secondly, do you know or know where I can find the specifications for barrel/cylinder gap and headspace for this pistol? Being a break top, I doubt the specs are the same as for a modern swing-out-cylinder Smith & Wesson. Finally, do you have any tips on disassembling this gun? It has a single small sideplate on the left side, but no amount of tapping or prying seems to loosen it. Thank you.

Ed Holler The initial offering in S&W .38 double-action revolvers was the First Model introduced in 1880. (Previous S&W revolvers in that caliber were all single-action.) The Second Model DA was made from 1880 to 1884. It did have a single sideplate. Serial numbers of the Second Model are estimated to start close to #4,000. Our two primary reference books on S&W handguns show no Second Model with a spur trigger/trigger guard combination.

READER FORUM CONTINUED

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We are convinced you have a Sheath Trigger, which has an integral “spur” at its upper rear, as opposed to a true, spur trigger. Your handgun is supposed to function in SA and DA. If it fails to cock for SA, the rear sear or hammer (or both) is broken or damaged. Maximum barrel/cylinder gap is the same for the Second Model as for a modern S&W revolver—.008 inch. Headspace is also the same with a maximum of .006 inch. Beyond those maximums with your revolver is an indication of a stretched frame.

And a stretched frame in your case could mean the gun’s been fed improperly. (These old S&W revolvers were blackpowder handguns.) Furthermore, the .38 S&W had a shorter, fatter case and the bullet is a larger diameter than today’s .38 Special. (We think blackpowder ammo in the .38 S&W caliber is available from Goex or Tennex.) You frighten us when you talk about “prying” to remove a S&W sideplate. This can bend a sideplate into uselessness.

Rapping on the grip frame opposite the sideplate has never failed us, even when the plate was somewhat corroded to the frame. Dakota Revolver Info I would like to know about the Dakota .357 single-action revolver (Western style). The marking on the gun reads: “Intercontinental Arms Inc., Dakota .357 Mag., Hammer

Switzerland, Salford Imports, Culver City, California.” Is this gun still in production or has it been discontinued? Can parts be obtained, and who can I contact about this gun? Thank you.

Jerry Spadorcio Intercontinental was a previous importer back in the 1970s. Their singleaction revolvers were manufactured, surprisingly, by Hammerli, a trademark purchased by Walther in 2006. Current distributors of Hammerli handguns are listed in The Blue Book of Gun Values. They include Larry’s Guns of Portland, Maine; Brensovich Firearms of Fort Hancock, Texas; and Champions Choice of La Vergne, Tennessee. You can get their phone numbers on the internet or from longdistance information.

Winchester 370 Woes Every time I fire a heavy load (#4 turkey) my Winchester 370 12-gauge actually opens up and ejects the shell, and once it caused the forearm to fall off. Is the locking-bolt assembly the problem? Thank you. J. R. Weaver Fair Grove, Missouri Your shotgun was manufactured for Winchester in Ontario, Canada, as a single-shot break-open in several calibers. It was a replacement for the Winchester Model 37 and was itself replaced in 1973 by the Model 37A, also a break-open single-shot.

As such, it has no locking bolt similar to that of a pump action. What it has is a barrel lug that engages what is called a “locking bolt” in your gun. Lack of integrity in this engagement is the root of your problem. The barrel lug/bolt must be refitted, possibly including a build-up with the original lug angle modified. We have no specifications on the refitting. It depends on the condition of the shotgun, and the Model 370 hasn’t been in production for at least 25 years. The forearm coming off at dis-

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charge is probably due to wear. At one time, the mechanism holding it to the gun relied on plastic, and plastics back then weren't like the plastics of today. Nu Line Guns can do the refitting, and they have metal forearm-locking components to replace the plastic ones. Ask for Jerry Stevens at extension #5. Compensators for the M1911 I'm looking for some information about 1911 compensators and their installation. Could you direct me to a resource? Thanks.

Ben Boyette There's quite a variety to choose from, so you can do it the easy way or the hard way or a lot of ways in between. The easiest solution is a drop-in combination barrel with comp attached. The next easiest would be another drop-in where the barrel is ported and requires no additional comp. Another approach involves a barrel with the outside of its muzzle end threaded to .685-40 tpi (or to whatever inside threads used in the screw-on comp you choose). There are also several bushing/comp combinations.

These, as well as all other options mentioned may require some amount of fitting to the pistol. A primary source for further information on the amount of fitting required would be the manufacturer of the components purchased, be it Wilson Combat, Clark Custom, Cylinder & Slide, or EFK. And there's no better book for reading up on how M1911 parts should be fitted than Jerry Kuhnhausen's *Shop Manual* on the pistol. The book and all the "comping" options mentioned here are available from Brownells.

But do remember this: Comps and ported barrels don't significantly reduce actual recoil. (One 230-grain hardball round is going to generate as much "kick" as any other .230-grain hardball round.) But by diverting propellant gas, comps do a great job of taming muzzle jump. Misfeeding Stevens 67E I have a Stevens Model 67E

chambered in .410. When I received this gun, it was missing the ejector and all parts of the magazine except the tube and the magazine-tube adapter in the receiver.

I have replaced all the missing parts and the gun seems to dry cycle correctly. My problem arises when I load the magazine tube and try to cycle rounds through it. When I retract the slide, the first round will feed onto the carrier. Once the slide starts back forward, the carrier will lift the round and it chambers.

However, when the second round feeds up to the cartridge stop—a protrusion on the bottom of the bolt slide—there is so much room around the cartridge leaving the magazine it's allowed to fall down and slide under the cartridge stop. It then travels all the way back to the trigger group and the round behind it enters the receiver and bypasses the cartridge stop, too. Obviously this jams the gun.

I've tried to work the slide without the trigger group to see what might be happening, and when the rounds start out of the magazine, all will shoot out like a spring-loaded snake from a peanut can. My question is: What's supposed to keep the round from dropping below the cartridge stop? I've worked the action for hours trying to figure out if the cartridge cutoff should be adjusted higher to support the feeding round.

But in so doing, it gets the timing off, and the cartridge cutoff jams against the round trying to feed from the magazine when the slide is retracted, again preventing the gun from cycling. Thanks in advance for any assistance you can offer. Wes Vining If you ever call Savage regarding parts or service for this or any of their other old timers, they'd refer you to the Small Arms Shop in Inverness, Florida The fellow who runs the place is Steve Simon.

He can tell you what's acting up with the shotgun, and he'll be able to sell you the parts you need to fix it. He takes phone calls from 5:30 to 9:00 p.m. on weekdays only. Universal Arms Over/Under? I have a Universal Arms over/under shotgun (12 gauge) with two triggers. I can close the shotgun and both barrels go off sometimes, and then sometimes the back trigger will fire and sometimes it won't. I can't find a schematic on this. Any ideas? It is a Model 2036, and has "666" on the trigger guard. Thank you. J. R.

Weaver Universal was acquired by Iver Johnson in 1983 and liquidated by I. J. in 1987. Neither *The Blue Book of Gun Values* nor *The Standard Catalog of Firearms* mentions a Universal Model 2036 or any shotgun with double-set triggers. Universal was best known for a low-cost knock-off of the M1 Carbine, and Iver Johnson shut its doors for good in 1993. It does sound like your shotgun is suffering from multiple problems.

Among the possibilities are worn sears, worn out inertia block, possibly worn out triggers and hammers, and you might have a headspace problem to boot. You might find an Iver Johnson Collectors Association on the internet or listed in the back pages of *Gun Digest*. If we had your particular set of dilemmas, we'd start with that association. S&W/DCU I have a five-shot S&W Airweight .38 Special. When I fire it, all five rounds will fire, but on one round the cylinder will not rotate to the next round.

It's not the same round all the time. I'm shooting factory loads. When I put snap caps in, it rotates fine. When I shoot blanks, the cylinder rotates fine. When I shoot factory loads or reloads, on one round, the cylinder will not rotate. When I pull the trigger the round fires, and then when I let upon the trigger and pull it again, the

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(continued from previous page) hammer falls on the spent round. I think the recoil is making something stick inside, but I have no way to find out what. I hope you understand what I'm trying to say. Thanks. Mr.

Kelley Unless the problem is being caused by excessive cylinder endshake, high primers on some of your reloads, overly thick case rims on some factory ammo, or your cylinder stop gets stuck (all of which can jam rotation), you appear to be experiencing DCU, which stands for "doesn't come up." Sometimes this only occurs on one chamber, while other times it happens with more than one. This is usually an indication of a hand/cylinder ratchet-engagement problem.

Fitting anew hand can resolve this as long as all chambers are in alignment with the barrel. (Check for true line-up with a range rod.) Severe misengagement between the hand and ratchet(s) can also require recutting the ratchet—which is akin to brain surgery for those who've not done it many times. When serious damage is present on the ratchets, the gun has to be returned to S&W, since they won't sell you anew cylinder.

Remington Model 341P Feeding Problem I have a Remington Model 341P with a cartridge feeding problem. When the rifle is

empty, the cartridge carrier moves up and down with minimal resistance to the bolt closing. When cartridges are feeding, the carrier wants to stay in the up position and it takes either a slight pressure from the thumb pushing the carrier down or significant pressure from the bolt to force the carrier down to allow the bolt to close.

When I compare this rifle (it has been well cared for but has fired a lot of rounds as a target rifle) to another one of the same model that has had a lot less use, I notice that one of the two small horizontal metal pieces inside the bottom of the carrier (the one with the largest cross-section) does not lay horizontal, but has its rear end up slightly—about 3/16 inch from horizontal. Any leads to articles about this rifle or suggestions you may have will be very welcome.

Dennis Sandoz The Remington 341P went out of production in 1940. There's no schematic on it, but some very old and fragile pages from our field-service manual or post a letter to American Gunsmith Reader Forum, #322, San Antonio, TX 78240. attribute feeding problems to a binding translator, an out-of-adjustment carrier, a binding magazine follower, or a cartridge guide in need of smoothing up.

Only one outfit we know of has been around long enough to have useful knowledge of and, hopefully, parts for the 341P.

That's Nu Line Guns a former Remington authorized service center in Rhineland, Missouri. Misfiring Dragunov I do a little amateur gunsmithing for friends and coworkers. Recently, a friend brought me a Dragunov rifle that was hit or miss as far as firing the round in the chamber. After basic field stripping, I determined that the Dragunov's hammer wasn't locking down far enough to ensure a good hit on the primer.

I haven't torn the rifle down further to determine the exact problem, but I think the problem must be with either the hammer or the trigger. I've been unable to find a parts source. Could you direct me to one? I have an AGI video on the AKS/Mak90 and the "innards" on both look similar. Would a trigger or hammer from an AK work with the Dragunov? Thanks for a great magazine. Ves Marion Sulphur Springs, Texas You might also consider a weak firing-pin spring, broken firing pin, weak hammer spring and/or mainspring.

We don't think an AK or Mak trigger would swap, but for a definitive answer on that subject and parts availability, call Century International Firearms and ask to speak with one of their technicians.

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