



OCT 2007

DIGITAL ARCHIVE
EDITION

PRECISION ARMS WORKSHOP

AND THE AMERICAN GUNSMITH ARCHIVE

A TECHNICAL JOURNAL OF CRAFT, REPAIR & RESTORATION

10

ARCHIVE ISSUE NUMBER

INSIDE THE ARCHIVE

SAFE AND EFFECTIVE REMOVAL OF NICKEL PLATING

GUNSMITHING: A "LIVING" ART • SERVICING THE REMINGTON GENESIS MUZZLELOADER • ESTIMATES VS. THE FINAL R...

ORIGINAL METHODS. MODERN ACCESS.

ARCHIVE EDITION 047

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AMERICAN GUNSMITH

DIGITAL ARCHIVE EDITION • OCTOBER 2007

ISSUE RECORD

ORIGINAL DATE	October 2007
VOLUME	Archive volume not stated
ISSUE NUMBER	10
SOURCE ID	ag-3f4563e75f5b6873e420adbc

DIGITAL EDITION

PUBLICATION	American Gunsmith
EDITION	Digital Archive Edition
ARCHIVE STEWARD	Innovation Network LLC
CONTACT	editor@gunsmithmag.com

Editorial fidelity. Article titles, author attribution, issue relationships, source-page references, and article text remain bound to the archive corpus. Layout, covers, navigation, and conversion notes are newly produced for this edition. Historical statements remain part of the original editorial record.

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FROM THE ARCHIVE

Gunsmithing: A “Living” Art

BY AMERICAN GUNSMITH EDITORS OCTOBER 2007

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Maybe you saw the same thing: An unsigned AP newswire story titled “Gunsmith Numbers Declining in What May Be a Dying Art” ran in Sunday papers across the country a few weeks ago. Dying art!? Get out of town, AP. The article compared the gunsmith to the farrier and the harnessmaker, pointing out that these were important trades in the Old West, but presumably have drifted away like the tumbling tumbleweed.

I don’t know much about farriers and harnessmakers, but I know a few people who would take exception to the notion that gunsmithing is a dying art. The article quoted Dave Jacobs of Dakota Gunsmithing Specialties in Mott, North Dakota, who said: “The real heyday for gunsmiths came right after World War II, when soldiers brought back rifles from the war and had them customized. That lasted until the mid-70s to early 80s.

True enough, but a cursory glance at the work gunsmiths are doing today with receivers like the AR-15 would hardly support this “dying art” idea. And what about the fine art of customizing the M1911? That work alone has made major strides in just the last 10 years—not to mention the quantum leaps in sophistication made since the end of World War II.

The article went on to point out the problems gunsmiths face with federal and state regulations’okay, also true’and quoted another gunsmith who had moved from the San Francisco Bay area to the Rocky Mountains in search of a more supportive community. Frankly, if I lived in the San Francisco Bay area, I’d move too. In fact, I did“ back in 1978. I think that’s called “getting out while the getting’s good.

The article pointed out that fewer gunsmiths are needed today because gunmakers are offering a broader selection of off-the-shelf firearms, and because gun parts are made to closer tolerance today and require less fitting when being replaced. Yeah, sure, true again. And I’ve noticed we don’t have nearly as many gas-station attendants today as we did 20 years ago, either. But I don’t think that means the petroleum industry is in a state of decline.

In any case, I suppose the newspapers have to fill up those fat Sunday editions with something. And, as gunsmiths, maybe we should just be grateful for having been mentioned. But don’t say “gunsmith” and “dying art” in the same sentence. Not around me.

MAINTENANCE & REPAIR

Servicing the Remington Genesis Muzzleloader

Studying the procedures used to service Remington's newest blackpowder rifle will help to familiarize you with the processes used with most other inline smoke poles.

BY CHICK BLOOD OCTOBER 2007

ORIGINAL PP. 3-6

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Make no mistake about it. A clean, well-maintained blackpowder hunting rifle can mean more meat on the table in the same way that a clean, well-maintained target gun can mean more rounds in the X-ring. In many states, particularly those with high-density populations, hunters aren't allowed to take game with anything but a blackpowder rifle. Even the type of blackpowder rifle is tightly controlled in some states.

Pennsylvania, for example, allows smokeless-powder rifles in some areas and restricts all blackpowder hunting to flintlock. Perhaps Pennsylvania's lawmakers believe that the delayed ignition of the flintlock makes it more

sporting than the speedier percussion cap. And maybe it is if you're a whitetail deer. I've never heard any other reason for the restriction, and I'm not positive it hasn't been eased as I write this.

But I believe a smart hunter going into any state for the first time will check out its hunting laws before packing his gear for the trip. So until I'm officially informed otherwise, I'm pretty sure the Genesis is outlawed and unwelcome in the Keystone State. And in one way, that's too bad, because the Genesis is a very wellput-together rifle with some unique design features I've not seen in other muzzleloaders.

I believe it would be extremely accurate, but I'll leave that determination to those in the business of publishing reports on accuracy. I did take a close look at lands and grooves. They were very sharply cut and very true, and would most certainly do a fine job of launching both .50-caliber sabot/lubed conical or patched round-ball projectiles. The swiftest among these would be 179grain ball.

Backed up with 110 grains Workmanship is above average, wood is handsome, and accuracy should be more than satisfactory in the rifle's presently specified .50 caliber.

SERVICING THE REMINGTON GENESIS MUZZLELOADER CONTINUED

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The single socket-head screw on the end of the Allen wrench (supplied) retains the components and secures the retainer to the breech block. The hole visible in the end of the plug accepts a #209 primer. Clean, lightly greased threads are crucial for easy removal and reinstallation of the plug. of FFG, the ball would exit the barrel at about 2,050 fps. The ball pales in muzzle energy, however, when compared to the 365-grain, flat-base lubed conical seated against 120 grains of FFG.

This combination produces 1,885 foot pounds of muzzle energy, which is a good 200 foot pounds more than the round ball. Ammunition and the Genesis To help your customers avoid mistakes in the ammunition department, you should know that there are only three types of powder that should be used in the Genesis'blackpowder, Pyrodex, or Triple Seven; and three types of bullets't he sabot conical, the lubed conical, and the patched round ball.

The sabot conical engages the rifling even in cases where the projectile may be slightly smaller than bore diameter. The sabot is self-lubricating. Never use additional lube when shooting sabot projectiles, and never use a sabot when the projectile is around ball. The sabot isn't designed for around ball, and can separate from the powder charge to create a

dangerous air gap in the barrel. With a lubed conical bullet, the projectile itself engages the rifling to create a gas seal and impart spin.

A patch or sabot should never be used with a lubricated conical, but any bullet not used with a sabot should be lubricated. The greased patch and the round ball always travel together. In this case, the patch provides both the seal and contacts the rifling for rotation. These rules generally apply to all in-line muzzleloaders. Is It Loaded or Not? After the American Revolution and the Civil War, hundreds if not thousands of muskets and rifles recovered from battlefields were found to contain double charges.

Usually, the reason for this was attributed to the sheer panic of combat. After all, the citizen soldiers didn't receive a whole lot of training in those days, and things got pretty hot for outfits like the Colonial Volunteers on Bunker Hill and, much later, for the former fishermen, farmers, and lumberjacks who made up the 20th Maine Infantry on Little Round Top during the battle of Gettysburg. While a hunter might not actually panic, excitement can still lead to carelessness during a hunt.

The best way to determine if a muzzleloader is loaded is to start with a rifle you're sure is empty. Drop the ramrod down the bore until

it bottoms out, and mark the rod even with the end of the muzzle. After that, if the mark is an inch or more above the muzzle, you can be certain there's something lurking deep inside the barrel. Most often, what lurks is a projectile with a charge of blackpowder behind it. (Don't ever pound on such an obstruction. As you know, the powder is sensitive to impact.

Or if you didn't know, you're likely to find that out quickly and painfully.) In the old days (and sometimes even today, depending on the circumstances), removing a charge meant getting down inside the bore with a worm rig on a sturdy rod, turning the worm into the lead slug, and pulling it out via the muzzle. That takes care of the bullet, but the powder remains in the gun. This has to be killed by drowning'and I don't mean a quick dip. Blackpowder is classified as an explosive.

It must be thoroughly soaked in order to deactivate it. And it must be kept thoroughly soaked before and during any attempt to clear it out of a barrel. Clearing a Double Charge Always work with the safety on, as you should with any rifle. Loosen the forend screw and remove the ramrod. Turn the rifle upside down. With the supplied Allen wrench, which fits all screw sockets involved here, completely back out the forend screw and the two takedown screws to its rear.

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A Rear Stock (AW composite) (finished) B Fore Stock (AW composite) (finished) C Ramrod Retaining Spring Screw D Ramrod Retaining Spring E Barrel Assembly (kit) (length 28") .50 Cal. Perc. (twist 1-28") E Barrel Assembly (finished) (length 28") .50 Cal. Perc.

Blued (twist 1-28") F Plug Screw (4) G Rear Sight H Front Sight I Rear and Front Sight Screw (3) J Breech Plug K Ramrod Thimble (2) L Ramrod Thimble Screw (4) M Sling Swivel Stud - Front Nut N Sling Swivel Stud - Front O Forend Stock Screw P Frame (aluminum) (blued) Separate the forend from the barrel and the barrel from the receiver. After being certain the breech-plug percussion-cap hole is clear and, with the muzzle pointing upwards, submerge the breech end of the barrel in a pail of hot water.

Fill the bore with more hot water. Wait at least 30 minutes, and if you get distracted and lose track of the time, wait another 30 minutes.

It takes a full 30 to saturate and safely kill a Q Breech Block Pin R Clic - Breech Block S Clic - Breech Block Spring T Clic Pin U Trigger Guard Pin V Frame Barrel Screw (2) W Breech Block X Breech Block Screw Y Firing Pin Z Firing Pin Spring AA Firing Pin Retainer BB Pistol Grip Cap CC Pistol Grip Cap Screw DD Sling Swivel Stud - Rear EE Buttpad FF Buttpad Screw (2) GG Tang Screw HH Tang Screw Washer II Hammer powder charge.

You can gain some additional "saturation insurance" if you remove the breech plug prior to placing the breech into the pail of water. I'm going to assume a less than cheerful scenario. The breech plug won't budge. A special wrench is supplied with the Genesis to undo it, but a stuck plug is a good indication the rifle has been neglected.

A longer Remington Genesis In-Line Muzzleloading Rifle (Specifications subject to change without notice) JJ Hammer Handle KK Hammer Mainspring LL Hammer Antagonist Spring MM Hammer Pin NN Trigger OO Trigger Pin PP Trigger Guard QQ Trigger Guard Spring RR Pin SS Trigger Guard Screw TT Safety UU Safety Pin VV Ramrod 28" (aluminum) WW Ramrod Tip .50 Cal (aluminum) XX Ramrod Assembly YY Wrench ZZ Wrench Handle AB Allen Wrench length of rod than the one provided might give you more leverage to get the plug moving, but you'll probably have to douse it with penetrating oil.

If you win the battle, return the barrel breech to a fresh pail of hot water. Use a brush and Remington Express Concentrate (recommended in the owner's manual) to clean its threads and those in the barrel. Wipe both dry with one or two cleaning patches be-

SERVICING THE REMINGTON GENESIS MUZZLELOADER CONTINUED

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A " The pin retaining the plunger and its spring is visible at "B." fore applying grease sparingly to each area individually. Once the plug is removed, you can attack what remains in the barrel from two directions as long as you keep the muzzle pointed in a safe direction. One way to do this is to insert the ramrod with cleaning jag attached into the muzzle. Push the projectile and what remains of the powder out the rear of the barrel.

If that doesn't do the trick, try flushing out any residual powder in the breech with hot water. Then insert the ramrod through the breech and gently push everything out the muzzle. Now it's time for some serious final cleaning. After attaching the jag end to the ramrod, place a clean patch that's been

soaked with high-quality Right and far For reasons explained in the text, no repairs can be made to the mechanism. If repairs are required, the entire assembly must be replaced.

Bty solvent on the jag and insert the rod in the bore. Swab from breech to muzzle with short strokes. Using the same technique, do it again and again with fresh, dry patches until the last one comes out clean. Finally, one more patch, this one dabbed with Rem Oil or equivalent, should be shortstroked through to condition and coat the bore. What do you do if you lose the war with the breech plug?

Gracefully accept defeat and resign yourself to going at the double charge via the muzzle with a worm or bullet puller, then continuing

on with the swabbing, cleaning, and lubricating. What's a Torch Cam? I've never seen a similar feature on any other in-line blackpowder gun. The hammer on this rifle rebounds after striking the cam assembly (which resembles a breech block and houses the firing-pin assembly), never to near it again until it's fully cocked and the trigger is pulled.

The Torch Cam is never removed from the receiver, but good design work has ensured that it's easy to clean the firing pin group it houses. Place a finger over the back plate (firing-pin retainer) of the cam. Undo the screw shown in the photo. Easing off on the retainer will let the firingcontinued on page 22)

SERVICING THE REMINGTON GENESIS MUZZLELOADER CONTINUED

ORIGINAL PAGE 22

pin spring push the pin and retainer to the rear for removal. When you reinstall the assembly in the cam, the firing pin goes in first, then the spring. And make sure you line up the hole in the retainer with the hole in the cam's mounting arm before turning in the screw. Another little detail: Just over the word "Remington" in the front edge of the torch cam's locking cut in the receiver, you'll see the tip of a rounded pin. This is the breech block locking detent.

It's important to include the detent and its recess in your cleaning process, so if it seems sluggish, spray a little solvent inside and repeatedly push the detent into the receiver until it moves back and forth freely. The detent is powered by its own spring, also housed in the receiver walls, which can be removed for replacement in the event it becomes weakened or broken. The spring and detent are both retained by a pin clearly visible on the upper right-hand side of the receiver.

The pin is knurled and has to be drifted inward. I suggest you not drive it clear through—only far enough to free the spring and detent. What's Missing Here? A good exploded diagram, that's what. Maybe you've noticed that the schematics found in owner's manuals (and subsequently published here) have been declining in quality lately. That's because owner's manuals used to be prepared by people with training in the graphic arts.

Nowadays, training is not necessary, and a "graphic designer" is anyone with a computer, a scanner, and few pieces of software. As a result, those beautiful black

and white line drawings produced by the engineers in the design department are being scanned, not as line art, but as halftone (grayscale) photographs by computer weenies who don't know the difference. And so, instead of reproducing the crisp black lines of the original drawing, we get a photograph of the drawing made up of fuzzy black dots.

But forget about trying to educate a computer weenie; they already know everything. Fortunately, in this case, the rifle is simple enough in its design that the photos will guide you through servicing and disassembly, even if the drawing is difficult to decipher. And the trigger assembly—perhaps the simplest one you'll ever encounter—is made even simpler by virtue of the fact that you can't repair it. How simple is it? The photos on page 6 will give a pretty good idea.

And if you look closely at the actual trigger assembly once you've removed it from the receiver, you'll notice there are only a few parts's prings, hammer, and cross pins among them't hat are made of metal. Of course, this doesn't really matter, because if anything ever goes awry with the trigger assembly of a Genesis, there's only one thing you can do, which is to clean it. If that doesn't solve your problem, you'll have to call Remington (or perhaps Brownells) and order a complete replacement.

There are no exceptions to this, I'm afraid; you simply can't acquire individual parts for the firing mechanism of this rifle. I

FROM THE ARCHIVE

Safe and Effective Removal Of Nickel Plating

Whether you plan to refinish with bluing or fresh plating, the complete removal of old plating without damage to the base metal is crucial for a first-rate finish.

BY DAVID R. CHICOINE OCTOBER 2007

ORIGINAL PP. 7-10

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In an article that appeared in the November 02 issue, I discussed methods that a small shop might use to remove old nickel plating from firearms.

I reviewed various methods of removing plating using chemical methods as well as by electro-chemical methods or what is termed “reverse electrolysis.” Due to the limited availability of a suitable electro-chemical nickel remover when that piece was written (the product I had been using, called Super-Strip, had been discontinued), I focused mainly on a readily available chemical stripping agent sold by Brownells known as Room Temperature Electroless Nickel Strip or RTNS.

My experience at the time showed that RTNS worked well as a stripper for most newer nickel-plated firearms, especially guns that were plated by the electroless nickel process. Since that article, however, I’ve run into difficulties when attempting to strip nickel from handguns that were plated years ago using electrolytic means. On top of that, many older guns used a layer of copper plating as a base coat under the nickel.

To my dismay and contrary to some of the claims I’ve read, I found that RTNS would not. It comes in a heavy-duty 10-pound pail. remove copper plating, which usually re-

quires an electrolytic strip. In cases like this, the gunsmith is forced to locate a plating shop that offers electrolytic stripping. And in this day and age, these shops are few and far between. The conclusion I came to was that, although RTNS was good for the removal of modern electroless nickel, it won’t fill the needs of many gunsmithing shops.

Unfortunately, even after much searching, I was unable to find a good electro-chemical stripping solution that would suit the needs of the small shop. So I asked (urged) the good folks at Brownells to consider carrying Super-Strip or something like it once again, and I’m happy to report that Brownells Super-Strip is now available again.

Super-Strip is an electro-chemical or reverse-electrolysis stripping agent that will effectively strip both nickel and copper plating as well as chrome, zinc, and some other forms of plating. The components required for its use are relatively inexpensive, setup is easy, its use is uncomplicated, and the operation takes up little space. These are all qualities that make it ideal for use in a small gunsmithing shop. You should be aware that Super-Strip is intended only for stripping steel parts.

If you make the mistake of trying to strip a non-ferrous metal part, the strong electrolytic action could ruin your parts faster than you could stop the process. Let’s back up for a minute to touch on some nickel plating and stripping basics. If you’ve ever tried to blue a handgun that was formerly nickelplated, then you already know that sanding and polishing never quite removes all of the old nickel plating.

To the craftsman who doesn’t already know about this, it’s very discouraging to do a polishing job before bluing, only to find bright white spots of old nickel plating in the new bluing. Problems of a similar nature occur on guns that are replated with nickel, when spots of the old nickel are left on the steel surface. These bright spots are often not visible before plating, but show up as “bumps” (high spots) in the plating. Again, these “surprise” blemishes can be very disheartening.

The problem comes from the fact that it’s almost impossible to see the spots of old nickel on the raw steel until the finish is applied, because the bare steel and the nickel are almost identical in color. And why does nickel plating seem to “stick” to the steel so well, especially in those hard-to-reach places? To answer that question, a little background history is in order. In years past, metallic coatings such as nickel

SAFE AND EFFECTIVE REMOVAL OF NICKEL PLATING CONTINUED

ORIGINAL PAGE 8



Figure 1. Electrolytic Nickel Plating were applied using a process called “electrolytic plating.” You may also have heard it called simply “electroplating.” In the electroplating process, a low-voltage electric current is passed through the gun part while the part is suspended in a liquid solution called an electrolyte (see Figure 1). A metal bar of pure nickel is suspended into the electrolyte and connected by a heavy copper cable to the positive terminal of a storage battery.

This nickel bar becomes something called the “anode.” The steel gun or gun part is suspended by another cable attached to the negative side of the storage battery and is placed into the electrolyte near to but not touching the anode. The part to be plated becomes the “cathode.” The electric current flows from the positive side of the battery, through the anode of pure nickel, through the electrolyte, and then on through the steel gun part (the cathode).

As the current flows, nickel is released from the anode into the electrolyte and is deposited onto the surface of the gun. In similar fashion, the modern electroless nickel-plating process still makes use of a very low-voltage electric current, but rather than coming from a storage battery, this current is generated by an electro-chemical reaction as the steel part is immersed in the electrolyte. In both pro-

cesses however, the end-result is a complete coating of nickel applied over the entire gun or part.

By a complete coating, I mean that every square inch of the steel gun part has a coating of nickel bonded to it. If that part was absolutely clean before the plating, the nickel would be bonded all over, even in hard-to-reach areas. Indeed, even in spots where it might be impossible to reach in order to mechanically remove the nickel. Given that information, you can see that it would be next to impossible to remove all the plating by any mechanical means such as abrasion.

There must be a better way for the gunsmith to remove every last speck of nickel, leaving the bare steel untouched. That’s where nickel “stripping” comes in, and all of these use liquid stripping solutions. One method involves soaking in a strong liquid that chemically softens the plating, causing it to expand until it floats off the steel into the solution.

The RTNS I mentioned earlier is one form of liquid stripper which is mild enough not to harm the parent steel, but it has trouble removing all of the old nickel and it won’t strip copper. Another, far more potent liquid stripper is an ammonia-based solution developed in England. This foul-smelling brew operates near the boiling point and is a vigorous strip-

per of nickel or copper, but it also has a tendency to heavily etch steel surfaces in the bargain.

Yet another type of liquid stripper formerly used by many tradesmen (including me) was the nitric acid-bath. Used at room temperature, this powerful acid will strip every last bit of nickel or copper. The downside is that the acid bath has the potential to be very dangerous, both for the gunsmith and for the gun he’s trying to strip. This is how the electroplating process works. The arrows describe the path taken by the electric current.

The final nickel stripping method, and the one we’ll work with here, involves the dependable and much less hazardous process of reverse-electrolysis. With this, the electrolytic or electroplating process I described above is reversed, effectively becoming an “un-plating” process. With the low-voltage electric current reversed, the nickel is actually “pushed” off the steel with the electric current flow (see Figure 2).

This reverse-electrolysis idea also uses a type of electrolyte, but this time the plated part is the anode (attached to the positive side of the storage battery), and the electric current is passed through the part. The splotchy dark areas are actually rust stains where moisture had gotten under the old plating.



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The current passes through the part and through the electrolyte, and then through a piece of steel that acts as the cathode by being attached to the negative side of the storage battery. Electric current flowing through the gun causes its steel to reject or push off the nickel, which is attracted to the steel cathode and passes in suspension into the electrolyte. This is exactly the reverse of the electroplating process described above. And the product I mentioned before, Brownells Super-Strip, is the electrolyte.

This is what the Brownells catalog says about Super-Strip: "Strips plated finishes fast and easy without fumes or damage. Steel-safe, powder mixes to a potent stripping solution that quickly breaks down and removes electrolytic nickel, copper, chrome, zinc, cadmium, and electroless nickel plating with no fumes, rusting, or damage to the parent metal. Chemical activation stops after all the plating is removed. Use only on steel; other metals may be damaged or destroyed.

Requires a 6-volt, 90-110 amp, deepcycle (GC-1) battery. Here's how Brownells Super-Strip works. When mixed with distilled water, the dry Super-Strip powder becomes a powerful liquid electrolyte. As a power

source, I use a 6-volt storage battery from a golf cart that, if need be, can be hooked to a small battery charger in order to keep the battery constantly replenished during the operation. I've found that this heavy battery will strip several guns and their attendant parts before needing a recharge.

As for Brownells claim that Super-Strip will break down and remove electrolytic and electroless nickel, copper, chrome, zinc, or cadmium from steel without fumes, rusting, or damage to the parent metal, I've found that to be entirely true. The Super-Strip powder is sold in a 10-pound plastic pail, which is enough to make two gallons of solution and have enough powder left over for one rejuvenation. For a strip tank, I use a small, soft-plastic wastebasket, the kind you can buy in almost any department store.

The wastebasket measures 9 by 6 by 13 inches high, and the electrostripping operation is the exact opposite of the plating process. Here the plating is actually pushed off the gun part by the action of electrical current passing through the part. It will fit all but the longest barreled handguns. The photos show the stripping operation in use, tucked away in a corner of the shop.

Notice how the battery cables are attached so the gun (anode) and the piece of an old shotgun barrel (the cathode) are actually hanging into the strip solution, using pieces of flat steel strap between the cable and the pieces suspended in the liquid for strip. Before you begin, always clean the parts'and I mean clean! Thoroughly degrease and clean all parts using the exact same procedure you would use if the parts were about to be blued.

If the parts are left dirty, the stripper will eventually work through grease and oil, but it will take much longer and your strip job could turn out splotchy. Not only that, but dirty parts will prematurely contaminate your stripping solution. In practice, once you have the Super-Strip mixed in your plastic tank, hang the cathode in one corner of the tank and connect it to the negative battery cable, which at this point, should not be connected to the battery. The battery itself should be fully charged.

Never let the copper battery cable touch the liquid; always attach the cable so it bolts to steel and the steel (the cathode or a strap) is what contacts the solution. Notice that the positive cable is held to the wall with a small clamp. I did this to provide a Figure 2. Electrolytic Nickel Stripping mount for the cable, so heavier parts can be suspended from it.

Now attach one of your steel straps to the part to be stripped, then attach the other end of the steel strap to the positive cable, which is already attached to the positive terminal on the battery. Now suspend the part into the solution so it is completely submerged and at least one inch under the surface. Now that you have both the anode and the cathode suspended in the solution, take a moment to be sure that neither of these items are even close to touching the other.

If you allow that to happen, you'll create an electrical short. And with all that backup amperage, the resulting arc will probably damage the part severely. Smaller items can be held by wrapping a piece of iron wire around them (tightly) and suspending the part from the wire into the solution, then attaching the wire to the positive cable. Larger parts with more surface area (like frame, barrel, slides, and cylinders) may take awhile to strip and will require greater amperage.

FROM THE ORIGINAL PAGE

These should be bolted or securely fastened so that a solid electrical connection is maintained. In the photo, you can see one method I've used to suspend a handgun frame, using small bolts and nuts to clamp the steel strap to the frame in the area under the grips. The area where the bolt and strap is will not be stripped, so once the frame is

THIS DIGITAL ARCHIVE PRESERVES THE RECOVERABLE SOURCE TEXT.

SAFE AND EFFECTIVE REMOVAL OF NICKEL PLATING CONTINUED

ORIGINAL PAGE 10

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The positive battery cable (upper left side) is attached to the wall so parts can be hung from it. The long bolt can rest on the rim of the tank, acting as a hanger for the cathode. completely stripped, you'll want to move the steel hanger to another area on the frame so the original area under the strap can be stripped. Also shown in the photos is one method for holding a revolver cylinder for stripping.

Like with the frame above, the area under the bolt heads will not strip, but after the strip is performed, the cylinder can be suspended for a few moments using iron wire attached to the positive cable until the last traces of plating are stripped. Once your part or parts are suspended in the solution, you're ready to start the stripping operation. This is done by attaching the last cable' the negative cable't o the negative battery terminal.

You might want to use some sort of quick and easy attachment, such as a wing nut, on the negative terminal of the battery so it can act as your "on/off" switch. Almost immediately, you'll notice small bubbles starting to rise above the part being stripped. This is your first indication the part is being stripped. For large parts or multiple

items that will be in the tank for awhile, you'll want to watch the temperature of the solution carefully.

I've found that Super- Strip operates best under 100 degrees, and once it gets up to about 120 degrees it starts to become very corrosive. I recommend using one of those inexpensive pocket-automotive thermometers to keep an eye on this. If the temperature rises to say 100 degrees, it is best to stop the connection, pull the parts and wait until the soup is back to room temperature again before proceeding.

The amount of time you leave the part(s) in the solution will vary depending on the surface area of the parts, the degree of charge and amperage capacity of the battery, ambient room temperature, and probably a hundred other variables. Most parts will strip completely within about 15 minutes, and you can stop the action by disconnecting the negative cable and pulling the part out to check. I do this about every 10 minutes to see how things are progressing.

While you have the part out to check its progress, use along wooden stick to give the liquid a stir to help keep the solution mixed. Above all, don't forget about it and walk away from your strip operation! Yes, you can certainly do other work while you're waiting, but it's easy to forget you

have stuff in the tank, so I suggest keeping an inexpensive kitchen timer near the strip operation.

Once you have the parts stripped or when you think they're done, pull the part off the steel hanger, give it a fast rinse with clean water, and quickly swab some Brownells Oxpho Blue on any area that you suspect is not completely stripped. If it is truly stripped, the area will blacken at once. But if there is any trace of nickel left, the area will stay bright and you'll know it needs more time. After the stripping is done, take the parts to your rinse tank and rinse them well.

Follow this with a hot soapy-water wash and a second rinse, and then oil the parts well to prevent rusting until you are ready to begin your prep work for later bluing or replating. To prevent evaporation of your Super-Strip solution, place a lid on your tank. I use a simple piece of 1/ 2-inch plywood cut to suit the top of the plastic tank, although plastic wrap will do the job. I've covered all the basic steps here, but be sure to read the instructions that come with the Super-Strip.

I think you'll find that this is a great product that works exactly as described, but its safe use does require the operator to pay attention. I

MAINTENANCE & REPAIR

Estimates vs. The Final Repair

It is not unusual for a customer to ask you for an estimate for repairing a gun. Naturally you're glad to give him one, but be aware of the pitfalls.

BY ARTHUR J. HUNT OCTOBER 2007

ORIGINAL PP. 11-13

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Now that you've had your second or third cup of coffee, and the spike-horn killers have given you a moment or two for relaxation and reflection, your thoughts might turn to that customer who left your shop in an outrage because his gun cost him \$20 more than you estimated. He still isn't convinced that you aren't ripping him off; after all, you're the one who estimated that it would cost approximately so much and, lo and behold, it cost more. No explanation will satisfy this bird, so don't try.

To help avoid this situation, when you give an estimate you should mark on your Brownells repair card "Estimate Only" in bold letters. Or, if you're sophisticated enough to have one of those little order machines, make sure the copy you give the customer says the same thing. A lot of people don't understand the English language, let alone repair talk. They think an estimate is a price cast in stone.

If you attempt to explain to him that an estimate is just that, you'll only convince him that you give low estimates just so you can bump the final price up later. So, again, don't try to reason with someone who is unreasonable. Keep one thing in mind: You're only a gunsmith with dirty hands and an honest heart. And neither of these will do anything to protect you from idiots who can't be pleased. You show me the gunsmith who can please everyone and I want him to take his shirt off and show me his wings.

Of course, a gunsmith has to please his customers, but at the same time he has to protect himself. Here's how I suggest you do

that. In a typical case, a gun comes in, usually attached to a customer. You're busy but you listen to his complaint and write it up. He asks for an estimate and you give him one based on what he tells you is wrong with the gun. No problem so far. The problem arises after you start on the gun and find other things that are wrong with it, and it's obviously a larger job than you figured.

You may have already put an hour into the gun and used up the labor charge you built into your estimate. Stop. Don't do anything else. Figure out what it will actually take to fix the gun and come up with a price you're happy with. Make notes on the repair card and leave the gun disassembled. Now you want to contact your customer. Get him back in your shop and explain what you've found and what it will take to repair the problem properly.

If he dwells on the estimated price and tells you that you should have been able to tell right off the bat what it would take to fix the gun, you can quietly tell him you are not Superman and you don't have X-ray vision. Patiently explain that the problem with the gun was not evident from an external inspection and that you were simply basing your estimate on what he told you was wrong.

Explain that your estimate for that particular repair is still good, but you can't guarantee a proper repair unless the real problem is fixed. If this turkey is a really nasty S. O. B., give him his gun (disassembled) and tell him that you've used up the estimated labor charge. Ask him what he wants you to do. Put the decision on him. He's going to be

looking at a disassembled gun—one that still does not work—along with a lot of screws and springs and parts he can't identify.

If he refuses to pay more than the original estimate, tell him you will gladly put his gun back together but he will have to sign a release stating there is still work to be done. This hold-harmless statement is required for your protection and indicates that you offer no guarantee that the gun is safe to use. This can keep you out of small-claims court, where it's all too easy to sue someone. If the customer is reasonable and you've convinced him of your honesty, he'll let you go ahead and do it right.

If not, tell him when to come back to pick up his gun and how much he owes you. Now you may say: "This doesn't happen to me." My answer to that would be: "It will, sooner or later." And being a good former Boy Scout, you should be prepared. The bottom line is to be careful of estimates, and always be sure you make it clear that an estimate is just that, an estimate, and it's based on what the customer tells you is wrong—not necessarily on what you find when you disassemble the gun.

And then stop once you've identified the problem; call the customer and explain. Get his approval for continuing or stop work altogether. Don't work for nothing if continuing on the job is going to cost you money out of pocket. So, once again, understand that, as unfortunate as these situations are, you will run into them. Having an established policy regarding estimates and explaining it clearly will help to avoid misunderstandings and dissatisfied customers.

PISTOLS

Upgrading with Drop-In Pistol Parts

Drop-in aftermarket parts can't be expected to produce match-grade results but, when chosen carefully, they can produce improved performance at a reasonable cost.

BY ROBERT K. CAMPBELL OCTOBER 2007

ORIGINAL PP. 14-17

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“**V**e I built more than a dozen 1911s for my personal use and modified many others to various extents, often without access to heavy machinery. To do this, I’ve relied heavily on parts variously known as “easyfit” or “drop-in” parts. In my experience, some parts have been just that’ drop in or easy to fit’while others have strained my muscles and tested my religion. I’ll try to share some of that experience with you in this article so you’ll know better what to expect when you order an aftermarket part.

The most common major pistol component that we replace is the barrel. I’ve purchased a variety of aftermarket barrels for the Colt 1911, Browning Hi Power, Beretta 92, and the Glock, among others. Most’but not all’were simple drop-ins. (Of course, we’re not talking about matchgrade barrels here or barrels purposely designed to be oversize, requiring a careful fit. These area subject all their own.) Recently, I have had very good luck with two barrels in particular.

The .460 Rowland conversion from Clark Custom was a simple drop-in for my Hi-Standard .45. In the other case, I needed an inexpensive barrel for a 1911, and the

Roto barrel I bought from Sarco was as good as any factory barrel and no gunsmithing was required. On the other hand, I ordered anew Bar-Sto .38 Super barrel that required some fitting. This is to be expected in a pistol manufactured from 1911 to the present, and most of the time at least some fitting is required with older slides.

It only stands to reason that it will be easier to obtain a dropin barrel for a modern pistol like the Beretta or Sig, as the manufacture is far more consistent. This was proven when I obtained a .357 SIG-caliber barrel for my .40-caliber Glock. This Bar-Sto unit simply dropped in and gave better-than-expected results in this pistol. I’ve yet to meet a drop-in barrel that’s too loose or that wallows in the slide, so barrel makers must err on the side of caution.

When drop-in barrels don’t fit the slide in question, it’s usually the barrel hood that’s too large. The hood must be carefully filed and polished to remove that small amount of metal that’s keeping the barrel from fitting properly. The locking lugs maybe oversize as well. A simple rule of

UPGRADING WITH DROP-IN PISTOL PARTS CONTINUED

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thumb is to check the fit with a slide stop. With the slide removed, seat the barrel properly in the frame, complete with a link. Insert a slide stop into the slide-stop opening and through the link. If the barrel moves upwards, then some fitting will be required. When purchasing a drop-in barrel, you're ahead of the game if the barrel comes with a barrel bushing that is fitted to that particular barrel.

The outer diameter is often okay, but the drop-in barrel may not fit in the inside diameter of your old barrel bushing. When putting together a pistol, it's a good idea to check with the manufacturer of the frame (if possible) and ask about recommended parts. Recently, I acquired a Rock River Arms frame for a special project. I often try different parts just to see what they look like or how they perform.

In this case, it would have been unwise to use any beavertail grip safety other than the Smith & Alexander, as this is the grip safety the Rock River frame is cut for. In the past, I've replaced the grip safety on quite a few 1911s with King's parts and never had a problem, although I've tried other brands that failed to fit properly at the mainspring. In this case, a minimal effort and expense results in a worthwhile upgrade. housing. Some have been too wide, requiring careful removal of metal and polishing.

Be careful with the beavertail, and be aware that fitting anew trigger often requires anew beavertail as well, because the beavertail locks the trigger. Slide-lock safeties are sometimes drop-in items, but they often require polishing in order to move smoothly. It is a shame to have a finely polished pistol that has a clean trigger break and then ruin it with a rough safety. Variations in pistols are inevitable.

For example, the Cylinder & Slide Shop safety I prefer for the Browning Hi Power is a straight drop-in for the Browning and the majority of FMtype pistols. But the part is overlarge for the Hungarian FEG, at least most runs of them. As a result, the shooter who has added these safety levers to the Browning may scratch his head when moving to the FEG. The critical dimensions are not far off and a minimal amount of careful filing will allow assembly to proceed.

Although drop-in slide stops usually seem to fit properly, there are times when an oversize part is needed. I've used one of Chip Mc Cormack's oversize slide stops to snug up a conversion upper on an M1911. The 1911 relies on the extractor for proper function in the feed cycle, and these can sometimes be a problem, although I've never had any serious trouble with the Wilson Combat extractors I've used for many years. However, I had a problem with one in a 1911 that surprised me.

The extractor was contacting the tunnel, affecting function. A bit of polish on the bump behind the extractor's claw cured this problem. When it comes to adding a trigger, hammer, and sear, my advice is to purchase a complete kit, or at least purchase all of the parts from the same maker. I have enjoyed excellent results with parts from Wilson Combat, Ed Brown, Nowlin, Kings, and Mc Cormack among others. Most of us order from Brownells, but your life will be much easier if the parts are all in sync with each other.

Sometimes a drop-in unit is okay as far as the fit goes, but it changes the geometry of your lockwork. In other words, that nice new trigger or hammer has put the sear and grip safety out of whack. When it comes to hammers, it's not uncommon for an aftermarket hammer to rub on the slide of a stock 1911. I would place the hammer in the naked slide before installing the hammer to be certain no work is needed for the hammer to clear the slide and strike the firing pin.

Some 1911s seem to have tight slide dimensions around the firing-pin stop, so a little trial and error is called for. Some armorers and gunsmiths feel comfortable adjusting tension on the

UPGRADING WITH DROP-IN PISTOL PARTS CONTINUED

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Original caption: Left top: Be certain whether or not the pistol's slide features a firingpin block before ordering parts. Left bottom: Locking lugs are commonly left oversize to allow for proper fitting.

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searspring. At one time, a special sear spring was manufactured that had a twisted spring hand on the left side. When I installed one in one of my pistols, it would sometimes connect the disconnecter and prevent the firearm from firing. This spring did give a nice action, but it didn't work properly. I took it out and threw it away. If you understand the action of the sear spring, then you know that this is the last part you want to try to save a dollar on.

The problem is, there is often some adjustment needed for perfect function, and this is a place where some finesse is needed. The left rear (long leaf) of the sear spring contacts the sear. While a lighter tension here can produce a lighter action, too little tension can allow problems such as the hammer following the slide down in recoil. The middle leaf resets the trigger. I once put together a 1911 that fired one time, and the trigger was very nice, but it didn't reset until I racked the slide three times.

The far right or short leaf maintains tension on the grip safety, and is an important part in the scheme of things. The inside of the 1911 is far from delicate, but certain rules must be adhered to. One of my rules says that, when a truly light trigger action is desired, fit an aluminum trigger. The decrease in weight makes it much less likely

the trigger will bounce the sear in recoil and fire the pistol when we don't want it to.

Almost all triggers, drop-in or not, must be fitted, or they won't glide smoothly in the frame. GI triggers are the only ones that don't require fitting and these are seldom used these days. While there are lots of real drop-in parts for the 1911-type pistols, there seems to be many aftermarket parts for other pistols that are advertised as "drop in" that don't quite measure up.

A friend recently purchased a full-length guide rod for his Glock that was advertised as a high-quality unit designed to tame recoil and keep the recoil spring straight. This unit quickly was beaten on the end, and I have seen full-length guide rods for the 1911 that suffer from the same problem. The Clark system seems to me to be the best all around, with its robust two-piece construction, and the full-length guide rod used by Hindman's as part of the .45 Super conversion is also very robust.

There are a number of drop-in sight options available. Caspian makes a nice adjustable sight that fits in their custom slides with a minimum of fitting. I like it very much. And there are a number of sights that simply fit in the beavertail of the standard GI model .45. I've used a set from

Maryland Gun Works (MGW) that require the front sight be staked on, which is a straightforward operation. Installation of the rear sight is also a simple matter, and these sights work well.

The front and rear sights are sold in matched pairs. Some sights are sold as rear sights only. They look similar to the Novak, with a large body over a small piece that slides into the dovetail. A screw through the body locks these sights down. This is okay as far as it goes, but when used with the standard front sight, the pistol inevitably shoots 4 inches or so above the point of aim at 15 yards. Drop-in they are, but they're less than satisfactory. Even something as simple as grips can require fitting.

They almost always fit the grip frame, but sometimes the screw holes don't line up exactly. The holes must therefore be carefully reamed out. I've also seen supplied grip screws that were too long and protruded into the magazine well, binding the magazine. Overall, my experience with drop-

Even if the part is sold as a "drop-in," be prepared to do some fitting here, and advise the customer to expect an additional charge for labor.

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Considerable fitting is usually needed, except on models of the GI-type. In parts indicates that they are more likely to drop in a GI-type pistol than in a high-grade production piece. As an example, I recently acquired a Caspian slide. This is a nice slide, with a sight cutout and front cocking serrations, and set up for an external extractor. I expected to do some fitting. I first tried it on my Hi-Standard G-Man, and it wouldn't budge on the rails. I also tried it on a Wilson Combat pistol as a lark.

Again, no dice. But when making upgrades and ordering parts, be they drop-in or otherwise, we need to keep the customer's needs and expectations in mind. For example, installing a drop-in Bar-Sto barrel on a Glock will always result in better accuracy. But a drop-in aftermarket barrel in a mil-spec 1911 will not normally show much improvement unless the old barrel was worn and thus giving poor service.

Sometimes, drop-ins are used to change caliber, as in converting a .40 S&W pistol to .357 SIG or a .45 ACP to .400 Cor Bon or .460 Rowland. But make sure the customer understands that only a custom fitted barrel can give match-grade performance. By the same token, a modest improvement is realized with a drop-in beavertail safety, but a true custom beavertail will require fitting and cutting the slide.

The bottom line here is that while drop-in parts might not give matchgrade results, they can produce significant improvements in performance at a modest price. I then I tried the slide on a Parkerized mil-spec Springfield, a stainless-steel Springfield pistol, and a Rock Island Armory pistol. In each case, the Caspian slide was a perfect fit in all respects.

PEOPLE & COMPANIES

Working the Colt Huntsman Pistol

This .22-caliber example of Colt's pistol offerings is well made and will be around for a long time'as long as it is well maintained.

BY DENNIS A. WOOD OCTOBER 2007

ORIGINAL PP. 18-22

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Colt has always offered premium semi-automatic handguns, many of which were designed by John M. Browning. One good example is the .22-caliber Woodsman pistol and its several variants, manufactured from 1915 until the mid-70s. Popular with campers, plinkers, smallgame hunters, and serious target shooters, Colt produced almost 650,000 of the Woodsman .22s in models known as the Target, Sport, Match Target, Challenger, Huntsman and Targetsman.

Here, I'll cover the complete disassembly of the Colt Huntsman and offer some tips on keeping this fine little pistol running at the peak of its performance level. With some very slight differences, takedown for all the above models is the same, and many of my tips will apply to other models as well. Removing and Disassembling the Slide As always, we need to make sure we're dealing with a completely empty firearm by first removing the magazine and then retracting the slide to verify that the chamber is empty.

Make sure the hammer is fully back in the cocked position. Then remove both grip panels. Push the safety lock (#36) down

and retract the slide as far back as it will go, and then push down on the assembly-lock plunger (#6) located just in front of the rear sight. This action will force the front tip of a flat spring called the assembly lock (#7), captured on the inside top surface of the slide, onto the rear face of the recoil-spring guide (#2).

This will also maintain the compressed recoil spring (#1), holding both parts in place inside the recoil-spring tunnel in the slide. To keep the slide in the rearward position, a dowel or block of wood cut to fit between the front face of the slide and rear face of the chamber will hold the slide in place. Now drift out the mainspring-housing retainer pin (#26) from left to right, and then drift out the mainspring-housing lock pin (#23). The mainspring housing will now pivot out of the frame.

Watch for the searspring (#20) to drop out of the frame. The slide (#8) can now be removed from the receiver (#15). The magazine-catch assembly (#25) can be left in place unless this part needs replacement or a rebluing job is part of the plan. The button of the magazine catch is attached with a

tiny rivet. In the case of the pistol I was working with for this article, both the button and the rivet were missing.

As luck would have it, I had a new magazine-catch assembly in inventory and didn't need to make one. 22caliber Colt pistol. To disassemble the slide, mount the assembly in your vise between protected jaws, with the bottom of the slide facing up. Retract the recoilspring guide slightly, push down on the assembly lock, and ease the recoil-spring guide and spring forward. Try to keep the recoil spring from launching the plunger out of the slide, as it's under quite a bit of pressure at this point.

Once the stored energy in the recoil spring is released, the spring and spring guide can be removed from the slide. Look over the head of the recoilspring guide to see if there are any burrs on the outside diameter that protrude out the rear of the recoil spring. Removing any burrs and polishing this diameter will keep gunk from collecting in the tunnel in the slide where these parts reside. This will also smooth up the rearward travel

WORKING THE COLT HUNTSMAN PISTOL CONTINUED

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of the slide during cycling of the action. This particular pistol showed little sign of use and reportedly had been stored in a drawer for many years. The oil, however, that had been used to prevent rusting during storage had coagulated into a sticky goo, and there were many sharp edges on the working surfaces inside the slide that would draw blood if not attended to. This is one of the main differences between the Woodsman Match Target and the more economically priced .22-caliber versions.

The Match Target model was “de-horned” during factory assembly to produce an action that worked as smoothly as possible. The Huntsman model I worked with was also much smoother after all the sharp edges were removed with a fine Arkansas stone, and now no one needs to worry about being wounded in the cleaning and reassembly process. The firing-pin stop (#5) has a threaded hole in the bottom of the part that will accept a #2-64 screw.

This size screw can be found in the Handy-Jo fillister-head screw assortment sold by Brownells, and makes an excellent handle to deal with the firing-pin stop, extractor (#10), and firing pin (#4). Install the #2-64 screw into the hole in the firing-pin stop and pull it up slightly until you feel it stop. The back end of the extractor has a slot cut in it for a small screwdriver blade.

Insert the blade into this slot, and rotate the extractor 180 degrees until its front hook is pointing to the right side of the slide (if it's in the upright position). The extractor can now be removed toward the front face of the slide. Look over all the corners along the extractor for

burrs and sharp edges. I like to run a cotton swab over these areas. If cotton fibers are left behind, these edges can be slightly rounded with the fine Arkansas stone—but don't mess with the extractor hook that grabs the shell rim.

Using the aforementioned #2-64 screw, pull the firing-pin stop up and out of the slide as you hold the firing pin in place with your thumb. Ease the firing pin and spring out of the tunnel they reside in. Look over the chisel point on the tip of the firing pin to make sure it's not deformed and the edges are sharp and crisp. Clean out the tunnel in the slide for the firing pin, and brush off the firing-pin spring (#3) with an old toothbrush dipped in solvent.

A few drops of Break-Free CLP in the firing-pin tunnel will provide enough lube to keep these parts working in a friction-free state. For reassembly, insert the firing-pin spring, then the firing pin and the firing pin stop, making sure that the relieved side of the firing-pin stop is positioned toward the right side of the receiver. It may take a bit of wiggling to get the cutout in the back end of the firing pin lined up to accept the firing pin stop.

Install the extractor, oriented the same way that it was when removed, and then use the small screwdriver to rotate the extractor into place so that the extractor hook is facing toward the center of the breechface. Frame Disassembly To gain access to the trigger (#27) and a few of the other fire-control components, we need to remove the side- Smoothing the tool marks will result in smoother slide movement.

WORKING THE COLT HUNTSMAN PISTOL CONTINUED

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plate (#30) by first removing the sideplate screw (#31) using a #240-3 Magna-tip bit. Once the sideplate has been removed, the safety lock (#36) can be pulled out of its place in the frame. This action will also allow removal of the hammer (#33) and hammer strut (#34) that pivots on a pin in the safety lock. Give the hammer/sear notches a thorough cleaning, and inspect the notches for any chips or cracks. That, followed by a few drops of Break-Free CLP, is usually all that's necessary for these components.

With the sideplate removed, we now have access to the trigger and trigger bar (#28), which can be pushed out of the frame by poking the left index finger through the right side of the trigger guard. Watch for the trigger spring (#18) to fly quickly to the left once the tension on the legs of the spring is relieved. Clean all these components with whichever solvent you prefer and set them aside. The last two components that remain in the frame are the ejector (#12) and sear (#29).

Unless the ejector is visibly damaged, it can remain in the frame. The sear is held in place with a pin (#32) that can be driven out with a 3/32-inch-diameter punch from right to left. After cleaning the sear with solvent and a stiff brush, inspect it for any chips along the edge that engages the hammer notch. Assuming there are no visible signs of damage that would require replacement, a wipedown with an oiled cloth will provide enough lubricant for this part.

Inspect the edges of the track that the trigger bar rides in for any sharp edges or burrs. Also check along the top of the frame where the slide rides. The edges of the trigger bar will also need to be looked over for burrs that would impede its duty. If burrs are found, the fine Arkansas stone should be used to slightly smooth these edges using only enough pressure to remove any sharp edges.

To reinstall the trigger, trigger spring, and trigger bar, we need to first insert the trigger bar in its place in the trigger. Slide the trigger spring into the trigger with the rear

leg of the spring resting against the flat on the front leg of the trigger bar. Align the hole in the trigger spring over the trigger pin (#17) in the frame, and slide the trigger and trigger bar down over the trigger pin allowing the front leg of the trigger spring to poke straightforward.

Push down until the front leg of the spring comes to rest on the left side of the frame. Now carefully push the front leg of the trigger spring upward with the tip of a small flatblade screwdriver until it enters the gap between the front of the trigger and the rear edge of its place in the frame. Push the trigger down into place, while keeping the front leg of the trigger spring rotated backward. A few drops of Break-Free CLP will be all that's needed here.

Insert the hammer into the frame and align it with the hole in the frame for the safety-lock pin, and then slip the safety lock into place. Lift the safety lock up slightly while sliding the sideplate up and into place. The upper, top leg of the sideplate must fit

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underneath the front of the safety lock. Finally, install the screw that holds the sideplate in place. Reinstalling the Mainspring Housing Before reinstalling the mainspring housing into the frame, test the action of the mainspring (#21) and mainspring cap (#19) to ensure that the cap will retract and return without any hesitation. The mainspring should be strong enough to return the mainspring cap with some authority.

Clamp the mainspring housing in your padded-jaw vise and push down on the mainspring cap with a punch several times to get a feel for how it's working. If there is a gritty feel to the action, you'll need to clean out the tunnel where these parts reside. While holding the mainspring cap down with the punch, push out the mainspring cap pin (#22) with a 1/16-inch punch. Ease up on the punch holding the mainspring cap down, and remove the cap and spring from their place.

Clean the tunnel and mainspring parts with solvent and dry them thoroughly. Look over the cap for any burrs around the top end that rides along the inside walls of the mainspring tunnel in the frame.

If you find any rough edges, remove them with Colt Huntsman .22-Caliber Semi-Automatic Pistol 1 Recoil Spring 2 Recoil Spring Guide 3 Firing Pin Spring 4

Firing Pin 5 Firing Pin Stop 6 Assembly Lock Plunger 7 Assembly Lock 8 Slide 9 Rear Sight 10 Extractor 11 Stock, Right-Hand 12 Ejector 13 Ejector Pin 14 Stock Screw Nut 15 Receiver 16 Barrel - 4 inch 16 Barrel - 6 inch the fine Arkansas stone. Again, a few drops of Break-Free on these parts is all that's needed.

Insert the mainspring and cap, push these parts down into place with a punch, and reinstall 17 Trigger Pin 18 Trigger Spring 19 Mainspring Cap 20 Sear Spring 21 Mainspring 22 Mainspring Cap Pin 23 Mainspring Housing Lock Pin 24 Mainspring Housing 25 Magazine Catch Assembly 26 Mainspring Housing Retainer Pin 27 Trigger 28 Trigger Bar 29 Sear 30 Sideplate 31 Sideplate Screw 32 Sear Pin 33 Hammer 34 Hammer Strut 35 Hammer Strut Pin 36 Safety Lock 37 Stock, Left-Hand 38 Stock Screw 39 Magazine Follower 40 Magazine Spring 41 Magazine Follower Stud 42 Magazine Spring Guide 43 Magazine Tube 44 Magazine Base the pin to hold them in place.

Installing the mainspring housing back into the frame can be a little tricky, as we need to align the hammer strut over the cup in the main-

spring cap while making sure that the sear spring doesn't fall out of place. To help with this process, clamp a Mayhew SP5 tapered alignment pin in your vise with the tapered end pointing upward. Install the slide onto the frame with the recoil spring held forward by the assembly lock, and make sure the hammer is in the forward (fired) position so the hammer strut doesn't need to overcome much tension from the mainspring.

See that the hammer strut enters the mainspring cup, and then install the mainspring housing, carefully positioning it to the mainspring housing lock pinhole. You are most likely to see partial alignment of these two holes as you center the holes over the tapered end of the alignment pin. Move the frame until the tapered pin achieves alignment of these two holes, and then insert the mainspring-housing lock pin part way to hold these two parts in place.

Tap the pin home with a plastic-faced mallet until it's flush or slightly below the frame. Pivot the bottom of the mainspring housing down toward the bottom back of the frame, while making sure that the sear spring remains in place. Install the mainspring-housing retainer pin. After pulling back the slide to release the assembly lock, the pistol should function as it's supposed to. Reinstall the grip panels.

Conclusions There's very little information on the disassembly and reassembly of these Colt pistols in the books I have, and I have quite a few. In a case like that, I make a habit of jotting down notes and making sketches, so that when I encounter another firearm of the same type, I don't need to learn the takedown procedure all over again. But now when one of these pistols (or any of its variants) crosses your bench or mine, we'll have a simple procedure to follow that will make the job go much faster. I

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FINISHING

Reader Forum

BY AMERICAN GUNSMITH EDITORS OCTOBER 2007

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Remington Model 742 Extractor Problems I have a quick question for you: What is the minimum overall length of the action spring for a Remington 742?

I have a 742 that keeps ripping out replacement extractors. (The replacements have been correctly riveted in, the chamber and throat are in good shape, and the chamber was lightly polished initially to ensure no problem existed there.) I suspect that maybe the action spring is beyond its service life and that the bolt is accelerating to the rear faster than it should, causing the extractors to separate. Any thoughts?

If you know the factory part number for the spring, you can look it up in Brownells' Encyclopedia of Modern Firearms. The number of which we speak is not the same as those appearing in the widely published schematics of the rifle. Lacking that number, we suggest you order anew action spring. It's not that we doubt you, but let's review the installation of a riveted-in replacement extractor for the M742.

It has to be adjusted for tension before assembly to the bolt by squeezing the ends of the extractor together slightly. The tail of the extractor is then straightened,

installed in the bolt face, snapped under the bolt rim, and riveted. If a fired case is gripped too securely to be easily snapped out from an inverted rifle with the bolt open, lessen the tension by tapping the extractor smartly back under the bolt rim with a soft metal rod.

If the case is gripped too loosely and falls out of the inverted rifle, either pull the extractor from under the rim and squeeze it or completely disassemble, squeeze, and reinstall it. Both methods will increase tension. Once the tension is set, admittedly a ticklish operation's mooth the incline of the extractor to perfectly match the bolt rim. Another thought: You didn't mention the caliber, but have you made a chamber cast (with Cerro Safe)?

An overly tight chamber can be responsible for tearing out extractors, especially those of this type. Sears Mag Tube Removal I'm working on a Sears Model 200 slide-action shotgun in 20 gauge, circa 1975. How do I remove the magazine tube? The upper magazine throat (made of plastic) is broken. No parts are available from Sears, Winchester, or the company that Winchester sold their old 1100 parts to.

What we can pass along is what the Winchester factory gunsmiths told us when there was a Winchester factory in New Haven. Buy a spare magazine cap and replace the original. Use a rubber or rawhide mallet to drive the tube into the stripped receiver. When the end of the tube is about halfway inside the receiver, the throat(s) will fall out or can be removed from the bottom of the receiver. Prior to doing anything, you have to prepare a slide hammer with a hole in the middle that fits over the tube.

Take off the spare cap, slip the slide hammer over the tube, and reinstall the cap. (A slide hammer can be made from a block of aluminum or hard- Familiarity Breeds Mistakes In the August 07 issue, my article on adjusting the new Remington X- Mark trigger for the Model 700 went screwy. There are now, as there have been for many years, three adjustment screws on the trigger assembly. Two are at the front and one is at the rear.

Though I've adjusted numerous Model 700 triggers in the past, I somehow got it in my head that the screws in the X-Mark Pro mechanism didn't do what they've always done, and I screwed up. I identified the upper front screw on the assembly as the trigger pull screw or "A." It is not. It is and has always been the trigger stop (or travel) screw. The lower front screw, identified in the article as "B," adjusts weight of pull. The rear screw, identified as "C," adjusts sear engagement.

Everything in the article regarding the adjustment of trigger travel with screw "B" should have been applied to screw "A." And everything regarding pull and screw "A" should have been applied to screw "B." The use of adjusting screw "C," by far the most delicate in the entire procedure, is correct as written. I apologize to all for the error. wood about 5 inches long with some weight added.) Support the receiver by placing a wooden block inside, then secure the receiver between padded vise jaws.

Position the new throat(s) at the top and bottom of the tube. Firmly and repeatedly bump the slide hammer up against the spare cap to move the tube farther forward in the receiver and trap the throat(s). Continue bumping until the throat(s) and end of the tube are flush with the inside receiver wall. Finally, remove the spare cap, remove the slide hammer, and replace the cap with the factory original.

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Possible parts sources for this shotgun include Nu Line Guns and Pennsylvania Gun Parts Shop-Talk Feedback As a gunsmith, I concur with much of what Arthur Hunt had to say in his article, "Making the Gunsmith Shop a Success," in the February 07 issue. But I must offer a different view on the public-relations value of playing golf. As a tournament golfer and member of a golf club, I've found that a very high percentage of golfers are, indeed, shooters and hunters.

Many of these golfers are very good customers of mine, and sometimes generate more "Chick Blood

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(continued from previous page) gunsmithing work through word-of-mouth alone than I can handle. There have not been many times in more than four decades that I've found it necessary to kowtow to the whims of difficult customers. But, yes, there are some customers whom I'd rather not see in my shop again; it's kind of hard to extend open arms to them all. Yet, I receive tips, gifts, and thank-you cards from many of them.

They know I am a hunter and a golfer, and frequently ask if I would like to hunt on their property or invite me to play around of golf. Balky High-Standard Sentinel I recently purchased a High Standard Sentinel Model 101 .22 LR revolver at a local gun show. The firearm functions fine, except occasionally the cylinder hangs up on the cylinder indexing pawl when closing the cylinder after a reload. Has American Gunsmith done an article on these revolvers?

Or do you or any fellow member know of away to alleviate this problem? Before we get all excited about fixing a high ratchet or fitting up anew hand (pawl), let's explore some simpler possibilities. Disassembly/reassembly instructions for the Sentinel appear in Gun Digest's book dedicated to revolvers, 2nd edition. Tear the gun down completely. Examine every part

for signs of excessive wear or damage. Clean it of every speck of dirt and powder residue you find, then lightly oil and reassemble it.

If it still acts up, perhaps there's still a simple answer. A burr on the pawl's frame window may be blocking or dragging on the pawl while it's in transit to a ratchet. The pawl spring could be weakened to the point where it fails to push the pawl into good contact with a ratchet. Now that you know how to takedown and rebuild the gun, replacing any suspect parts and/or smoothing up the rough spots should be a cinch. We hope that's all it takes.

Tool Tip Recently, I was trying to replace the recoil pad on a Browning BLR with a Limbsaver pad. The instructions said to push through the slit in the rubber with a Phillips-head screwdriver lubricated with water or Armorall. But I could not seem to engage the screwhead. Then I got the idea of using my wife's otoscope, which is one of those things a doctor uses to look in your ear. With it, I could see the slotted screw head clearly, as well as its size and orientation.

Otosopes start at about \$10 and are sold in most drug stores. There is a magnifying lens with a mirror suspended behind it,

which reflects the light from a bulb in the same tube you're looking through. Due to the optics, you don't see the mirror.

This is indeed a handy tool for looking into any dark hole in a firearm. Bill Heathorn Chandler, Arizona Desert Eagle Manual/Witness Followers I have a friend who has a Desert Eagle. He says there was no owner's manual included in the case. He says he's tried to contact Magnum Research to get one, but I suspect he never bothered to contact them.

Do you any information in past or upcoming publications on the Desert Eagle, or do you know how I can contact Magnum Research about getting an owner's manual or other information? Or do you know someone who might have an extra manual? While I am asking, I'm wondering if you have any contacts or information on where to get replacement followers for Witness .45 ACP mags? I would like to get at least six, and possibly 10 or 12. Thank you for your time.

Go to Magnum Research's website (magnumresearch.com) on the internet. Click on "FAQ" (frequently asked questions). A screen will appear showing several models and the word "more." Click on "more," select your pistol, and download the owner's manual. For the Witness magazine followers, call European American Armory at

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