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INSIDE THE ARCHIVE

WORKING THE PARA-ORDNANCE LDA CARRY COMPANION, PART 1

FIFTY MILLIONTH BACKGROUND CHECK FLAGS FELON • LINING THE .22-CALIBER RIMFIRE BARREL • TROUBLESHOOTIN...

ORIGINAL METHODS. MODERN ACCESS.

ARCHIVE EDITION 013

DIGITAL ARCHIVE EDITION

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FROM THE ARCHIVE

Fifty Millionth Background Check Flags Felon

BY AMERICAN GUNSMITH EDITORS DECEMBER 2004

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Do you have any idea how many instant background checks have been performed since the NICS system was instituted? I didn't either until I read a press release issued by the National Shooting Sports Foundation (NSSF) just before this issue went to press. Over fifty million! And guess who got the honor of being potential-buyer number 50,000,000? That's right—a convicted felon. According to the U. S. Department of Justice, on a Monday earlier this fall, a Dallas, Texas, man tried to buy a gun in a local pawnshop.

The FBI's National Instant Criminal Background Check System worked to a tee. The system denied the purchase because of an outstanding warrant issued against the customer only hours earlier. This individual was wanted for aggravated assault, and had a record of arrests on charges ranging from aggravated kidnapping to assault with a deadly weapon. Established by a federal act in 1993 and launched in 1998, NICS is used by all federal firearms licensees.

If a customer name is matched against any item in a menu of prohibitive criteria, the retailer cannot complete the sale.

Of the 50 million background checks performed, the FBI says 378,986 potential buyers had been denied. "When you look at the success of NICS and other existing laws and regulations, and combine them with the firearms industry's continuing public safety and education campaigns, there are many powerful elements in place to safeguard against misuse of guns," said Doug Painter, president of the National Shooting Sports Foundation.

Painter cited anew NSSF campaign called "Don't Lie for the Other Guy" designed to create awareness that it's a serious crime to buy a gun for someone who can't pass a NICS background check. This message is driven by the slogan, "Purchase a gun for someone who can't and buy yourself 10 years in jail." Sadly, neither the Justice Department nor the NSSF reported what happened to number 50,000,000. But I suspect by now he's got anew number, and he's wearing it on his shirt. Score one more for the good guys.

PISTOLS

Working the Para-Ordinance LDA Carry Companion, Part 1

In this issue, we'll explain how the LDA functions and how to disassemble it. Then next month, we cover detailed reassembly and troubleshooting.

BY CHICK BLOOD DECEMBER 2004

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The initials LDA stand for “Light Double Action.” These pistols combine the high-capacity magazine for which Para-Ordinance is widely known with an extremely manageable double-action-only trigger mechanism and great safety features. The pistol is available in 9mm, .40 S&W, plus everybody’s favorite, the .45 ACP. The basic design follows John Browning’s M1911, but the differences between “Old Slab sides” and the LDA are significant.

My first exposure to this pistol initially led me to believe I’d received some single-action variant newly arrived to the world. I expected a double-action response after racking the slide and pulling the trigger; you know, pull the trigger, hammer moves back, hammer falls, trigger returns, pull trigger again. Well, the pull was short and light. It was shorter and lighter than any out-of-the-box DAO duty pistol I’d ever

tried, and the hammer fell. Period. I couldn’t single-action cock the hammer again.

It was bobbed. Re-racking the slide was the only way to ready the gun for a second shot, because I wasn’t using live rounds. When I did, the slide cocked the hammer like it does with an M1911. Unlike the M1911, the hammer didn’t remain cocked. It followed the slide forward and stayed forward until the next trigger pull. Then it reared back and fell to discharge the round. Every pull, by the way, was just as short and light as the preceding one. How do they do that?

This is how: Function I’ll be mentioning some strange sounding parts during this explanation. What they are and do will enter into the following discussion of disassembly, so bear with me. The gun is loaded, in battery, with the slide lock and grip safeties engaged. When you grasp the pistol

for firing, the grip safety is depressed and unlocks the hammer. The slide lock is then pushed down to unlock the slide.

This moves the straddle and safety lock upward, allowing the platform to do likewise to the drawbar and the platform spring to contact the hammer. The trigger is pulled, compressing its return spring, cocking the hammer, compressing the hammer-return spring, and pulling the drawbar forward. Near the end of trigger travel, the flange on the rear of the drawbar lifts the firing-pin safety-plunger lever to disengage the plunger and compress the plunger spring. The firing pin is now free to move in its channel.

The drawbar next contacts the rear projection on the sear to disengage the sear from its notch in the cam. The hammer and cam rotate forward, reacting to pressure from the hammer-return and main springs, the hammer strikes the firing pin, and the pin ignites the

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primer. One round has now been discharged. Recoil of the case against the breechface forces the slide and barrel back, causing the hammer and cam again to rotate in unison (this time backward) compressing the main-spring. The barrel and slide unlock exactly as they do in an M1911.

The slide keeps on moving to the rear, the extractor claw pulls the spent case from the chamber, and the left side of the case strikes the ejector which is fixed in the frame and pivots the The pointer (A) indicates the window in the body of the PXT. When available as a replacement part in the near future, the PXT can be installed in an older LDA pistol not so equipped. brass out the ejection port. The slide has a camming ramp under its right side.

This serves to disconnect the drawbar during the slide's rearward movement by pushing it down, allowing it to move underneath, and to be held down by the firing-pin safety-plunger lever. Being the hardest working component of the pistol during this backtracking, the slide also rotates the hammer and its cam to the rear. The sear, pushed by the center leg of the sear spring, engages its notch in the cam. This holds the cam to the rear under tension.

By the time the slide has totally recoiled, the firing pin has been retracted and the recoil spring fully compressed. The slide is brought to a stop when its front end strikes the plate portion of the recoil-spring guide. Though the shooter may not have released the trigger,

the firing-pin safety will reengage because the drawbar is still held down in the disconnected position by the safety-plunger lever.

The recoil spring, tired of being squeezed, reacts strongly to push the slide forward; stripping of the next cartridge from the magazine, chambering, and lock up are pure M1911. The hammer has also moved forward until its twin locking hooks engage the sear and bring it up short of contact with the firing pin. It remains out of contact until the trigger is fully released and pulled again. What happens next is a repeat of earlier paragraphs in this section.

The second round is discharged, and so on for a total of seven rounds with the Carry Companion and twice that number with the larger-capacity LDA pistols. A

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How the Safeties Work When pushed upward, the slide-lock safety directly locks the slide like the M1911, but it also engages a recess in the hammer to keep it from moving to the rear. In addition to that, it moves the straddle up to push the safety-lock lever down. In turn, the lever holds down the drawbar, disconnecting it and the trigger from the hammer assembly and sear. At this point, the trigger can be pulled all day to no avail; it can't cock the hammer or disengage the sear from the cam.

The bottom of the grip safety, when released, is pushed to the rear by the left leg of the sear spring through the grip-safety lever. Simultaneously, the top of the grip safety pivots forward to block the hammer and rearward movement of the slide. Field Stripping The Para-Ordnance LDA Carry Companion is a Series C6.45 pistol. It does not have a barrel bushing or a recoil-spring plug like some of the other LDA pistols. For those, a barrel-bushing wrench (plastic is recommended) would be required.

For anyone who takes down one Para-Ordnance LDA-Series Pistols (Specifications subject to change without notice) 1 Barrel 2 Barrel Bushing 3 Barrel Link 4 Barrel Link Pin 5 Drawbar 6 Ejector 7 Ejector Pin 8 Extractor (PXT not shown) 9 Firing Pin 10 Firing Pin Plunger 11

Firing Pin Spring 12 Firing Pin Stop 13 Front Sight 14 Grip Safety 15 Grip (2) 16 Grip Screw (4) 16A Grip Screw Locking Rings 16B Grip Screw Bushing 17 Hammer 17A Spurless Hammer 18 Hammer Pin 19 Hammer Strut 20 Cocking Cam Pin 21 Magazine Assembly 22 Magazine Catch 23 Magazine Catch Lock 24 Magazine Catch Spring 25 Magazine Floor Plate 27 Magazine Follower 28 Magazine Spring (not shown) 29 Mainspring 30 Mainspring Cap 31 Mainspring Cap Pin 32 Mainspring Housing 33 Main Spring Housing Pin 34 Main Spring Housing Pin Retainer 35 Plunger Lever 36 Plunger Spring 37 Plunger Spring F/P 38 Rear Sight 39 Receiver* 40 Recoil Spring 41 Recoil Spring Guide 41A Recoil Spring Guide Head 42 Recoil Spring Plug 43 Slide Safety Lock 44 Safety Lock Plunger 45 Sear 46 Sear Pin 47 Sear Spring 48 Slide 49 Slide Stop 50 Slide Stop Plunger 51 Trigger 52 Straddle 53 Trigger Pin 54 Trigger Return Spring 55 Cocking Cam 56 Hammer Return Spring 57 Safety Lock Lever 58 Grip Safety Lever 59 Drawbar Platform Spring 60 Hammer Assembly Pin 61 Drawbar Platform 62 Ambidextrous Slide Lock Safety (not present on featured pistol) *Restricted Note: A spurless hammer is standard on the Carry Companion and full-size law-enforcement LDA pistols.

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B A The drawbar/trigger stud, arrow B, can separate easily if not held in place by a finger. of these pistols, here's a warning: The recoil springs are strong—with a capital "S." Of course, to start out, the pistol is empty, the magazine is out, and you're wearing eye protection. Place one hand on the grip with the thumb depressing the grip safety and the remaining fingers curled over the slide.

Push forward with the thumb, hang on tightly with your fingers, and move the slide to the rear until the slide-stop lug is aligned with the takedown notch. You have to hang on against the recoil-spring pressure while pushing out the slide-stop pin from the right side of the frame. Due to the pressure, this won't be easy unless your hand is exceptionally mighty, and it can be downright painful if you have any joint problems. Usually, you'll hear a little "click" when the stop is ready to come out.

I hope it doesn't accompany a strained thumb or the sound of a ligament popping loose. When the stop has been removed, you still have to hold on, but you'll be relieving the pressure as you ease the slide forward and off the frame. Now turn the slide over. Carefully (remembering the spring pressure) lift out the Carry Companion's recoil-spring assembly. Push the barrel link forward and pull the barrel out the muzzle end.

Field stripped, the gun can be cleaned, but when putting it back together later, make sure the recoil plug is fully seated in its tunnel.

There are also a few other things to remember: (1) The closed end of the recoil spring fits over the spring guide; (2) that end of the spring has to contact the base of the guide; (3) the plunger lever must be pushed down (see photo) or the slide will not run onto the receiver; and (4) once the recoil-spring guide head—forked end down—is in place between the barrel lugs and the recoil plug, swing the barrel link to the rear. Detail Stripping the Slide Pick up two punches.

Depress the firing-pin plunger (#10) with one punch and push the firing pin (#9) forward with the other. When you lift out the firing-pin stop (#12), remember the pin is under pressure from its spring (#11) and will fly away unless you prevent it. Still holding the plunger depressed, pull out the firing pin and spring as a unit. See how the rear of the spring is smaller than it is at the front? That provides Aa friction fit between the spring and pin.

When the two pieces go back together, make sure the small end of the spring is fed on last. To take out the safety plunger and its spring (#37), nudge the extractor (#8) slightly to

the rear. One sixteenth inch should be enough so you can lift the plunger and spring free. After they're out of the way, pull the extractor out to the rear.

About the extractor: This pistol, and all others produced by Para-Ordnance as of mid-February 2004, is equipped with a "power extractor assembly" instead of a single-piece extractor, considered to be the weak link in the design of the M1911. The power extractor assembly, or PXT as the assembly is called by Para-Ordnance, has a patent pending and will probably be patented by the time you read this. It consists of four parts: the body, a coil spring, a plunger, and the claw.

The key or tab, at the opposite end of the claw, hooks into a window in the front part of the body. You'll have to be a bit cautious or you will launch the plunger when you swing the claw's tab out the window. When reinstalling the PXT in the slide, the coil spring is inserted into the body. It's followed by the plunger, then the two components are pushed inward with the claw until the tab/key can be swung back through the window.

The claw itself is deliberately massive to provide 50-percent more contact with the rim of a .45 ACP, and is always under proper tension.

The well-advertised benefits of the PXT include controlled feeding of the cartridge from magazine to chamber, and positive extraction for “infallible” ejection. Yes, it is possible to fit a PXT into an LDA pistol not so equipped. The assembly will cost gunsmiths about \$70 to \$80. To install it, the extractor tunnel in the older LDA will have to be opened up to accept the body of the PXT.

This can be done by drilling out the tunnel to a little less than the body diameter, then finish reaming it to the final dimension. A hand-held, fixed reamer is recommended over an adjustable reamer. The only other possible adjustment involves the claw. It has already been beveled by the factory at its bottom corner and the bottom edge of the extractor groove to enhance reliable feeding. This measure will not guarantee there will not be a feeding problem due to ammunition.

To explain further, the rim thickness of ammo can and does vary. Therefore, the space between the back end of the claw hook and the end of the extractor groove may have to be widened. Exactly how much wider depends, of course, on the rim thickness of the case, but should only amount to very little stone work. Disassembly of the Receiver This is where you'll see the really big differences between the LDA and its M1911 ancestor, and the majority of them lie in the rear of the receiver.

FROM THE ARCHIVE

Lining the .22-Caliber Rimfire Barrel

There are probably thousands of .22-caliber rimfire rifles relegated to closets or attics because the bores were neglected. Relining that bore will bring it back to life and put extra money in your pocket.

BY DENNIS A. WOOD DECEMBER 2004

ORIGINAL PP. 8-11

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During the early 1900s, much of the .22-caliber rimfire ammunition available was quite corrosive. As a result, if the bore wasn't thoroughly cleaned after a shooting session, the rifling soon suffered the consequences. Another potential problem results from someone trying to "shoot" a stuck bullet out of the barrel, causing a bulge just behind the parked bullet.

Relining a .22-caliber rifle or pistol barrel becomes a practical part of the repair plan when the price of a replacement barrel is prohibitive or anew one simply can't be found. And keep in mind that a replacement barrel—if available—will most often need to be fit-

ted to the action you are dealing with. Other things to consider are the brand of rifle you're working on, and whether the cost is justified, especially if you plan on sending the barreled action off to someone else to have this work done.

The simplest solution, I feel, is to use the original barrel whenever possible, and relining is a project that can be done with relatively inexpensive equipment. Removing the Barrel Before you begin disassembly, make sure you are dealing with an empty chamber and magazine. Then strip down the firearm until you have just the barrel and action left.

With all the methods used to mount rimfire barrels to actions, a detailed description of removing the barrel from the action could take several pages, so I'll keep this part very short. For this project, we'll assume that the barrel is threaded into the receiver. The first thing you need to do is create reference marks to indicate the current barrel-to-action alignment. This could be a couple of small lines in the metal in an obscure area that will not be noticed after the gun is reassembled.

A COUPLE OF PIECES OF MASKING TAPE WITH PENCIL LINES THAT

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meet one another works also, but keep in mind that if one piece of tape walks off the job you'll have a problem. I like to use two small lines scratched on the front face of the receiver and the bottom of the barrel where they meet in an area that isn't seen after reassembly. To remove a threaded-on barrel, a strong, sturdy vise will be your best friend. For the .22-caliber rifles Ideal with that have barrels that are threaded on, I make barrel holding blocks and action wrenches from aluminum.

These blocks are simple affairs that I rough milled to shape and then form fit to the action and barrel contour using Acra Gel mixed with aluminum powder. The blocks are clamped in place around the action or barrel until the mixture has hardened. If you don't have access to a milling machine, a rotary tool with a coarse burr-bit will also get the job done. The barrel blocks are then milled on each opposing face that fits around the barrel contour to remove about .030 to .040 inch of aluminum material.

The action wrench is also rough milled and then form fit with the same Acra Gel mix until it hardens on the front end of the receiver. When making the barrel blocks and receiver wrench, the important thing is to fit these as close to each other on the action and barrel as possible. Keep the barrel blocks at the very rear end of the barrel and the action wrench to the very front of the receiver to prevent twisting of the action during barrel removal.

Once you have the barrel removed from the receiver, study how the chamber mouth is configured. If you need to, photograph it as a reminder as to how it is shaped, blended, and ramped, since this shape will need to be replicated once the liner has been installed. Drilling the Barrel Once you have the barrel removed from the receiver, you'll need to make an important measurement. This measurement is best done with a dummy .22 caliber round. Insert the dummy round into the chamber.

Use either a depth micrometer or the depth-reading stem from a caliper to measure from the back face of the dummy round to the shoulder on the barrel just ahead of the threads. Write down this measurement for reference later, as you'll need to refer back to it when cutting the chamber. I don't use my lathe to drill barrels for liners; I find that an electric hand drill works better for me.

I wouldn't, however, try drilling with a wimpy 1/4-inch-capacity electric drill, and I've not had much luck with the cordless style either. And forget about the keyless-chuck variety also. The step-drill used to open up the bore needs to be held firmly in the drill chuck, and that means using a chuck key to tighten up the drill's shank. I've even gone through the extra effort of milling flats on the drill shank, 120 degrees apart, so the chuck jaws achieve a firm purchase on the drill shank.

If you don't hold this drill tightly in the chuck, you can expect the jaws to spin around on the drill shank. No cutting will

take place when this happens, and you could possibly ruin the drill. The drills used to open up the bore to accept the barrel liner are 8 mm (around .315 inch) in diameter on the main cutting diameter, with a non-cutting pilot (.216 inch diameter) that guides by following the old rifling in the bore. These drills are available in two different lengths—9-1/2 inches and 15 inches long.

I use both of these lengths when drilling for the liner. The short drill is easier to start the job with, while the longer drill finishes up when I run out of reach with the short drill on rifle barrels. Secure the barrel firmly in your padded-jaw vise at around a 30-degree angle up from the floor. Because you'll be using a whole lot of cutting oil, you want the oil to drain toward the cutting and into an empty coffee can or some such container.

It works best for me to use a handheld pump-oiler to squirt Do-Drill cutting oil into the bore liberally before cutting begins. Insert the pilot end of the drill into the bore and start the cutting process. A variable-speed drill works best for this cutting, and you will soon get the feel for how much speed you need to apply to get the drill cutting. Once the drill has gone an inch or so into the bore, stop the drill and back it out.

Clean the chips from the drill and bore, and refresh the bore with more cutting oil. Going an inch or so at a time,

LINING THE .22-CALIBER RIMFIRE BARREL CONTINUED

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For rifles, it's best to use both. cut until you reach the limit of the length of the short drill, wipe out the chips, and then replenish the bore with more oil as you go. Reverse the barrel in your vise and begin the process from that end until you reach the cutting limit of the drill. Then use the longer drill to cut from both ends until the holes meet in the middle. Cleaning and Bonding We now should have an 8mm hole completely through the barrel.

The next step is cleaning the inside of the bore of any remaining chips and cutting oil that could prevent a solid bond for the epoxy that will hold the liner in place. A .30-caliber bore brush that has been wrapped with #0 steel wool and then dipped in acetone does a very good job of purging remnants of oil from the bore. I dip the brush in acetone and swab it out several times, and then run patches through the bore until they come out white.

I also wipe the outside diameter of the barrel liner down a couple of times with an acetone-soaked paper towel to remove any rust pre-

ventative that may be present. I use Acra-Weld for the bonding agent when installing these liners, and it hasn't failed me yet. Mix up the Acra-Weld per the instructions on the box. I add a bit of black coloring agent to the epoxy to help mask the line between the barrel and liner at the muzzle after bluing.

An old playing card works well for a mixing pad and I use a popsicle stick as a spatula to mix and apply the epoxy. Smear a thin coat of the mixed epoxy along the barrel liner, striving

LINING THE .22-CALIBER RIMFIRE BARREL CONTINUED

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to get complete coverage along the length of the liner. Once you have the epoxy bonding agent on the liner, you can begin sliding the liner into the barrel. The end of the liner that has the groove in it is the end that should go toward the chamber end of the barrel. Rotate the liner as it is inserted to help the epoxy find its way into any tool marks created by the step-drill used to open the bore.

Use a paper towel to wipe up the buildup of extra Acra-Weld as it collects on the muzzle end of the barrel to avoid extra cleanup after it hardens. I create a small bead of the blackened Acra-Weld between the liner and the muzzle end of the barrel by pulling the liner out 1/16 inch or so, and then pushing it back into the barrel. This little bead will guarantee that you won't have any gaps between the barrel and liner during the crowning process.

Crowning and Chambering For me, it's standard practice to allow the Acra-Weld at least two days set-up time when relining a barrel. This way, I have a high confidence level that the epoxy is hard enough to work with. The next phase in the relining process involves crowning the muzzle. Carefully cut off the liner extending out the muzzle with a hacksaw, leaving 1/8 inch or so protruding from this end of the barrel.

Using a four-jaw chuck and a dial indicator, I set up the barrel in my lathe until I get the end of the liner protruding out the muzzle running within .001 inch or less. Lead shims are placed between the jaws

and the barrel to prevent any scoring of the barrel finish. As you cut the crown for whichever style you prefer, you will end up with a black line between the liner and the barrel. This line is from the dyed Acra-Weld and will blend with the bluing.

Acra-Weld will hold up to any type of bluing you may perform on the metal, but it will not hold up to the soldering of sight ramps. If you need to attach sights by soldering, do this before the barrel liner is installed. For a single relining job, you could get by with just purchasing the finish reamer. The last, and most critical, step involved with relining a .22-caliber rimfire barrel is cutting the chamber. I use Manson chambering reamers, for no other reason than price.

For a relining job, you could probably get by with just using the finishing chamber reamer. I use the rougher first, and then the finisher, which means two reamers at double the cost. But I feel I get a better finish in the chamber as a result. The rougher is used to cut about 90 percent of the chamber, and then the finisher is employed to finish the chamber to final depth. A tap wrench works just fine to hold the reamer while cutting.

Use plenty of cutting oil, and remove the reamer after cutting 1/8 inch into the liner to brush chips out of the reamer flutes and chamber. Replenish the cutting oil and cut another 1/8 inch deep. Once the shoulder that will support the rim of the cartridge case begins to form, you'll need to begin

checking for the dimension between the dummy-cartridge face and the barrel shoulder that was recorded earlier. Stop cutting once this depth is reached.

A sharp edge will form around the area where the cartridge case nests. This sharp edge will need to be blended with the contours that surround the chamber mouth so that soft-nose bullets will transition into the chamber without hanging up. A 4-inch, half-round, No. 3 Swiss-pattern needle file works well to blend these areas and leave a smooth finish. Check for any remaining burrs or sharp edges at the chamber mouth and lightly file these away.

A cotton swab will quickly find these sharp edges by leaving fibers behind as it's rubbed over the area. **Conclusions** All of the tooling, including the barrel liner, used to successfully install a barrel liner is available through our friends at Brownells. This is not a real difficult job to pull off in an uninterrupted afternoon. The job shown here was for a 24-inch rifle barrel, so the one-in-sixteen twist liner was used.

Now that we have .17-caliber, necked-down versions of the .22 Magnum available, along with the impending introduction of a .17-caliber on the .22-rimfire case, we also have .17-caliber barrel liners available. Chambering reamers are available as well. I can imagine that many of those old rimfire rifles chambered for obsolete .22-caliber rimfire ammo will soon be getting anew bore. ■

PISTOLS

Troubleshooting the Star Model F .22 LR Pistol

The feeding problems common with the original Star Model F can usually be solved by switching to the newer-style magazines.

BY KEN WINDELER DECEMBER 2004

ORIGINAL PP. 12-15

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Star Bonifacio Echeverria S. A., of Eibar, Spain, is a well-known trademark in the firearms industry. Founded in 1908 by Jean Echeverria, the Star plant closed in 1997. Star originally produced copies of the Steyr Mannlicher, then made 1911-type pistols along with some of their own designs. While the Spanish firearms industry has a reputation for inferior quality, Echeverria's company made a quality product. The Star Model F .22 LR semi-automatic pistol was introduced in 1942.

In profile, the Model F resembles the Walther P-38, but is a single-action semi-automatic that loads, fires, and .22 LR semi-automatic pistol came in at least three versions. This one is the Sport Model. The push button activates the slide stop on the Model FR and

Model FM. has a safety lock, hammer, and magazine release very much like the Colt 1911. The basic Model F has around 4-inch barrel with fixed sights.

The Model F Sport has a 6-inch barrel, while the Model F Target has a 7-1/4 -inch barrel; both of these versions have adjustable sights front and rear. An Olympic Model was produced with a 6-inch barrel, adjustable sights, muzzle brake, and barrel weights. The Model F pistols were discontinued in 1967. The Star Model FR was introduced in 1967. These pistols have a squared barrel and slide stop. Sport and Target versions were also available.

Produced from 1967 to 1972, the FR was replaced by the Model FM, which has adjustable sights, and a heavier frame with a

web in front of the trigger guard. After my father passed on, I inherited a Star Model F Sport .22 LR that I always remember being in the family. He probably purchased it before I was born in 1954. Recalling conversations with my dad, it seems that this pistol always had a problem feeding the ammunition from the magazines, and I remember him telling me that he had reworked one of the magazines.

After many years of shooting this pistol, the firing pin broke. We had a new one made and I installed it for him. About this same time, the pistol started to malfunction on a regular basis. I suppose that after all those years of shooting and trying to get it to work correctly, the recoil spring was worn out. I gave him the name and address of Interarms and

TROUBLESHOOTING THE STAR MODEL F .22 LR PISTOL CONTINUED

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011365 Slide Blue 4-1/4" 011365-C Slide, Chrome 4-1/4" 011365-6 Slide, Blue 6" and 7" 011365-6C Slide, Chrome 6" and 7" 011261 Barrel, w/Front Sight, Blue 4-1/4" 011261-C Barrel, w/Front Sight, Chrome 4-1/4" 021261 Barrel, w/Front Sight, Blue 6" 021261-C Barrel, w/Front Sight, Chrome 6" 031261 Barrel, w/Front Sight, Blue 7" 031261-C Barrel, w/Front Sight, Chrome 7" 011483 Recoil Spring 011370 Firing Pin 011371 Firing Pin Retaining Pin 011372 Firing Pin Spring 011366 Extractor 011368 Extractor Plunger 011369 Extractor Spring 011049 Slide Retainer (blue only) 011051 Slide Retainer Spring 010519 Trigger 010520 Trigger Pin 010522 Trigger Plunger 010521 Trigger Plunger Spring 010414 Sear 010415 Sear Spring 010523 Sear Bar 010415 Sear Pin 010203 Ejector 010204 Ejector Pin 010306 Hammer w/Strut and Pin 010309 Hammer Spring 010310 Hammer Spring Plunger 010311 Hammer Pin 010836 Safety Thumb, Blue 010836-C Safety Thumb, Chrome 010839 Safety Spring 010838 Safety Plunger 010628 Magazine Catch, Blue 010628-C Magazine Catch, Chrome Star Model F .22 LR Pistol

010629 Magazine Catch Lock 010630 Magazine Catch Lock Spring 011153/7 Magazine Complete, Blue 011153/7C Magazine Complete, Chrome 011374 Rear Sight, Blue 4-1/4" 021374 Rear Sight Blue 6" and 7" 011374-C Rear Sight Chrome 4-1/4" 021374-C Rear Sight, Chrome 6" and 7" 021587 Front Sight, Blue 6" and 7" 021587-C Front Sight, Chrome 6" and 7" 021588 Screw, Front Sight Blue 6" and 7" 021588-C Screw, Front Sight, Chrome 6" and 7" 021375 Screw, Rear Sight, Blue 6" and 7" 021375-C Screw, Rear Sight, Chrome 6" and 7" 011895/6 Grip, Pair 011895/6-P Grip, Mother of Pearl, Pair 011895/6-W Grip, Wood, Pair 011897 Screw, Grip, Blue 011897-C Screw, Grip, Chrome 10306.1 Hammer Strut 10306.2 Hammer Strut Pin 10524 Sear Bar Pin JF1 Slide Stop the Star factory in Spain, but I don't believe he ever contacted them.

Years later, while working on an AMT Back-Up, I noticed that the recoil spring was almost identical to that of the Star Model F. The spring seemed to be about the right length, the same diameter, and the wire

was only just slightly heavier. I decided to give it a try in the old Star, and ordered one from Gun Parts Corporation.

Takedown And Field Stripping To disassemble the Star Model F for cleaning (or to replace the recoil spring), remove the magazine, retract the slide, and visually inspect the chamber to ensure the pistol is not loaded and has an empty chamber. On the left side of the receiver in front of the safety lock is a square button. Depress this button, move the slide slightly to the rear, lift the slide off of the frame and above the barrel to allow the slide to be removed forward off of the pistol.

Be careful not to drag the slide across the top of the barrel. The recoil spring is located in a tunnel that is bored in the front of the frame below the barrel. Assembly, of course, is in the reverse order. The Range Test After installing the recoil spring for the AMT Back-Up, it was time to head to the range. The Star's slide did seem a little stiff, and upon the initial testing, failed to eject. I very carefully removed about

TROUBLESHOOTING THE STAR MODEL F .22 LR PISTOL CONTINUED

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Original caption: Below top: With the early-type magazine disassembled, you can see that the spring tension is all in the front of the follower.

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Original caption: Below bottom: This is the later-type Star Model FR magazine, shown disassembled. This mag works well in the author's older Star Model F. The upper spring is the original and is stretched out, while the lower spring is for the AMT .380 Back- Up. worked flawlessly. The magazines for the Model F Sport had steel cartridge followers, and try as I might I could not get them to work. Gun Parts Corp. to the rescue again.

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a half of one of the spring coils. At this time, I realized that the ammo I was using was .22-caliber LR hollowpoint. These cartridges are only 36 grains, not 40 like standard .22 LR. Test number two was fired using 40-grain standard and high-velocity .22 Long Rifle ammunition and produced a big improvement. I shortened the new spring some more, being careful only to remove a half a spring coil at a time, and the pistol shot like anew gun, but would not feed without jamming.

The Model F and FR Magazines There must have been a problem with these early Star Model F .22s. I also owned a couple of other Star .22 pistols, one an early Model F but newer than Dad's, as well as a Model FM which is a later version that's heavier and equipped with a slide stop. The Star Model F magazines had cartridge followers made out of cast aluminum, and this pistol

Of course they jammed. The parts diagram that came with this pistol shows a different type of follower.

GPC advertises Star Model F magazines in their catalog—used, but in good shape. After purchasing another magazine from GPC, it was back to the range. Although advertised as a Model F magazine, I think they are actually Model FR magazines. The older style magazines have a coil spring for the cartridge follower that fits in the front of the magazine body. The later style magazines use the more common type of follower spring, and use a plastic magazine follower.

These newer Star .22 magazines have a sliding push button on the right slide that helps when loading the magazine, and also engages the slide stop on the newer style pistols. That old Star works absolutely wonderfully with the new magazine. Magazine disassembly is easy because they have a removable base plate, and the procedure is similar for both

mags. In the base plate is a hole that has a protrusion in it from the inside. Push up on this with a small punch and slide the base forward off of the magazine body.

Remember there is a spring inside; catch this with the palm of your hand. The follower on the Model F magazine will come out with the spring. On the Model FR magazine, slide the follower to the bottom of the magazine body and lift out the magazine push button. The follower will fall out the bottom. Conclusions If you happen to be faced with an early Star Model F .22 pistol that just will not work, try a newer type magazine.

If you need a recoil spring, I am sure that somebody has some on hand somewhere, but, if not, the .380 AMT spring seems to work quite well. My "Old Man" is gone, but I'm sure he would be pleased to know that his number two son finally fixed his beloved Star. ■

PISTOLS

Understanding the Savage Accu Trigger

At first glance it might seem similar, but any resemblance between the Accu Trigger and the Glock's Safe Action trigger is purely superficial.

BY CHICK BLOOD DECEMBER 2004

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In the past, I've written articles on the Savage Model 110 in June 2001 and adding a manual safety to the Glock in June 2004. In the latter article, I delved deeply into the Glock, citing instances of accidental discharge and the furor that surrounded them. I concluded the pistol will not discharge unless the trigger is fully pulled and went on to explain why. Take a really good look at a Glock trigger mechanism.

You can't miss noticing what appears to be a second trigger projecting from the main body of the trigger. It's not a second trigger; it's the forward part of the trigger safety. The rearmost part wears a squared face that is blocked by the frame until the forward part is pushed flush with the trigger body by the shooter's trigger finger. This pivots the blocked end upward, clearing the frame and permitting the trigger to be pulled farther. During this action, the trigger/trigger bar/sear-plate Figure 1.

Figure 2. assembly compresses the firing-pin spring, the trigger bar contacts the connector's angled lip, and the pistol is cocked. By the time the trigger has been fully

pulled to the rear, the bar has traveled far enough down the connector to drop the sear plate below the firing-pin tang, releasing the pin to detonate the primer.

Except for the apparent presence of a "second trigger" in the trigger body of the Savage rifle, the physical similarities between the Savage Accu Trigger and the Glock Safe Action trigger come to a screeching halt. There is no connector, trigger-bar/ sear-plate assembly in the Savage. The gizmo that looks like an extra trigger is the Accu Release, or searstop lever. The trigger it's teamed with has a slot milled near its end. The slot is neither very deep nor very wide. The tail of the sear engages that slot.

When you start to pull the trigger, the lever pivots into the trigger body. At all other times—including a severe dropping or jarring of the rifle—the lever blocks the sear. See Figure 1. That drawing and the others appearing here were taken from a set of blueprints provided specifically for this article by Ron Coburn, owner and CEO of Savage, and will serve to further explain the function of the Accu Trigger.

However, by comparing the photo of the current system and the less recent blueprint drawing, you'll see that changes have been made. For example, the body profile of the trigger housing has changed radically aft of the trigger; the sear now has an extension downward to contact the trigger; the sear-lever configuration has changed; and the safety lever and safety spring no longer exist, having been replaced by a three-position button safety which is not visible in the profile photo.

How It Works Today With the bolt cocked, the sear is perched on a step at the rear of the trigger and is in contact with the sear-stop lever (Figure 2). When the sear stop is depressed with the trigger finger, the stop rotates under the sear, but the sear remains on the trigger step (Figure 3). Continuing to squeeze the trigger rotates both it and the stop lever from under the sear and allows the hammer to fall (Figure 4). All this can occur only after the redesigned trigger-blocking safety has been moved to its

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To adjust trigger pull, the factory-supplied tool is inserted at the arrow to contact the trigger-return spring, then turned clockwise or counterclockwise to increase or lighten the pull. Other key elements are the sear-stop lever (A), trigger (B), and the sear (C). “fire” position. Here’s the big finish: Even if the gun is jarred or dropped with the safety disengaged, the stop lever still blocks the sear. Why? The trigger hasn’t been pulled.

Adjusting the Accu Trigger Every Savage rifle wearing an Accu Trigger arrives with a pull-adjustment tool. It’s very simple. A knurled knob is at one end. Rising from the knob is a rod with a milled cut in its end. To use it, the action is removed from the stock, and the slotted tool is inserted into the bottom of the trigger-return spring to engage the spring tail. For a heavier pull, up to 6 pounds, turn the tool clockwise. The heaviest you can go will be announced by a clicking noise made by the spring.

To lighten the pull to approximately 1.5 pounds, turn the tool counterclockwise. You reach minimum pull when the large coil of the trigger spring contacts the upper rear surface of the trigger. Don’t force things be-

yond this point. Savage Arms recommends that Figure 3. Figure 4. settings from 1.5 to 3 pounds should be restricted to controlled precision shooting only. They believe, as do I, that trigger pulls that light have no place in the woods or on the prairie.

Availability The Accu Trigger is not available as a replacement or upgrade for other Amanufacturer’s rifles. Further, it can’t be used to replace the factory trigger on earlier Savage rifles. Earlier Savage receivers won’t accept the new trigger as they stand, but must be milled to accept it, and no specifications for the machine work are being issued as of this writing.

Therefore, if a customer wants you to fit an Accu Trigger to his Savage rifle, he’ll have to buy or borrow one with an Accu Trigger that you can use as a guide. I would also recommend against disassembling the Accu Trigger. Individual replacement parts are on the not-for-sale list, though complete assemblies are available.

I’ll make a prediction: Once you’ve worked out the necessary machining requirements, you can become famous by being the only gunsmith in town who can mount an Accu Trigger on a Savage Arms rifle that was

FROM THE ARCHIVE

Variable Speed Lathes: A Low-Budget Alternative

In a previous article, we used a DC motor to make a gunsmith's lathe variable speed. Here's a way to do it for a lot less money.

BY CHARLIE BRIGGS DECEMBER 2004

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Because I have a compulsion to improve things—whether they are cars, kitchen utensils, or guns—my wife calls me “Mr. Modification Man.” I’ve always had this compulsion. When I was a kid, I was messing with home-made SCUBA gear made from war-surplus aircraft oxygen regulators. That was followed by years of science-fair projects made from everything but the kitchen sink. Later, when I was in college, I supercharged my Pontiac Tempest with parts from an aircraft cabin pressurizer.

So, I guess it was inevitable that I’ve now repowered the lathe in my gun shop with the guts from a treadmill. Let me back up here for a minute. A few months ago, I was looking through a surplus electronics catalog I got somewhere, when I noticed a variety of 1- to 2-horsepower DC motors. (A DC motor can have its speed varied by changing the voltage applied, whereas an AC motor cannot.) Elsewhere in the catalog I found SCR-based speed controllers.

The SCR (silicon controlled rectifier) changes the motor supply voltage to DC, and incorporates a speed (voltage) control. This is perfect for providing a nice

variable-speed drive for a lathe, drill press, or millas was discussed at length in the September 99 issue of American Gunsmith. I remembered reading the article, and while I found it interesting, I thought the project was a little too expensive for my budget at the time.

And so, for that matter, were the motors in this catalog; together with the appropriate speed control, heat sink, and other parts, a variable-speed setup for a lathe would have cost more money than I wanted to spend. However, as I read, a light bulb switched on in my head. I noticed that many of the motors were made for treadmill-style exercise machines.

After a moment’s thought, I reasoned that treadmills were large cumbersome items that people bought with good intentions and used a few times, and many of them would probably end up in a simple cylindrical sheet-aluminum fan guard (not shown) was made to surround the area between the fan and heat sink to improve cooling and protect fingers.

VARIABLE SPEED LATHES: A LOW-BUDGET ALTERNATIVE CONTINUED

ORIGINAL PAGE 19

gathering dust in dark basements. I further reasoned that the motors ran off direct current (DC) so the exercise speed could be easily varied with an SCR circuit. So, my next move was to the classified ads in my local paper—the little budget-type ads where people announce garage sales, advertise their old Beta Max, Elvis records, and stuff like that. Yep. There they were, used treadmills! One advertisement even read: “Free...You Haul.” Now, “free” is my kind of price.

A phone call confirmed that it worked fine, but was just taking up too much space in the spare bedroom. I picked up the free treadmill, and took it apart right away, being careful to label any wires I had to disconnect (few, as it turned out). The motor was rated at 1-1/2 horsepower, (more power than the original motor on my lathe) and at pulley was about half the size of the pulley on my existing lathe motor, however, so the resulting maximum input speed to the lathe was fine and would produce more torque to boot.

Can you believe that the pulley’s belt size was the same as the one on my Atlas lathe? As a result, the motors were easy to swap, and having tagged the wires, hooking up the power and speed control was also easy. I mounted the treadmill’s speed-control rheostat and knob at a convenient spot on the lathe’s drivebelt enclosure, with the treadmill’s on-off switch next to it.

An SCR unit usually has a finned aluminum heat sink to keep it cool. Mine did, too, and I placed it next to a small fan attached to the motor (see photo). Other

treadmills may have a self-contained “muffin fan,” like the one used in the earlier American Gunsmith article.

Either way, make sure you make some provision for a guard or fan cover to prevent fingers from interfering with the fan. (My gunsmithing work often requires 12 or more fingers. Seven or eight would be tough to work with.) In addition to the variable-speed benefit of DC motors, they are also easily reversible: You simply swap the two power-supply wires.

This can make the actual placement of your new power-plant even easier. (You certainly wouldn’t want your lathe to run backwards, just because you wanted to mount the new motor with its drive pulley on the left.) There were a few other little benefits of my free treadmill. With a little modification, the treadmill’s mast and “dashboard” made a great new floor stand for my small bench grinder, giving me more bench space.

And the treadmill’s rubberized fabric belt (mine was 18 by 102 inches) is great for making a non-mar workbench cover, lining tool box drawers, or even for making grips for semi-auto grips. How does the new variable-speed lathe work? Terrific! I can now start a cutting operation carefully—at a crawl—and then dial up the speed as I wish. In fact, I’m already watching garage sales and classified ads, looking for a bigger treadmill to repower my milling machine. ■

PEOPLE & COMPANIES

Reader Forum

BY AMERICAN GUNSMITH EDITORS DECEMBER 2004

ORIGINAL PP. 21-24

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Remington M17 Assembly I'm trying to put my brother's Model 17 back together. It seems that some mishap occurred and he ran over the shotgun. The barrel and magazine are off the gun, and I'm trying to put it back to rights. Any reference information you could share would be greatly appreciated. Ron Crim We've never done an article on the Model 17. We do have access to an early Remington Factory Service Manual and will send you copies of the appropriate pages on the M17 by mail.

Understand, however, that parts will be a serious problem. Any parts available must be secured in the aftermarket. To assist in your search, call Brownells and ask for a free copy of their "Parts Source List" for out-of-production firearms. AR-15 Feeding and Extraction A friend of mine has an AR-15 that is having feeding problems, and fails to eject after firing about 30 rounds. He took the weapon to a Marine armorer who worked over the extractor and pin, the buffer, and the spring. They looked good to go.

But the problem still exists. Could you please provide some insight into potential reasons for feeding problems that I could check. Thanks you for any advice you can give. Bradford Jones Check the chamber; look over the gas system for looseness, leakage, or fouling; and check for a broken ejector or jammed ejector spring.

If short recoil is the cause, the bolt rings aren't staggered as they should be or are missing, dirt has built up in the carrier key or outside the gas tube, or movement of the bolt carrier or buffer assembly is being restricted. Finally, check to make sure that neither the carrier key nor the gas tube is loose. Fitting Rem11-48 Ejector I need some help on the proper way to take out an old ejector and fit anew one on a Remington Model 11- 48 12-gauge shotgun. I can't find any written info on this.

Any information you could give me on this would be greatly appreciated. Allen Gerlinger Allen. D. Gerlinger@conocophillips. com Remove the magazine cap, forend, and barrel from the action. Heat the barrel extension around the ejector to melt the brazing material and remove the ejector. Clean the ejector slot. Place the new ejector flush with the rear end of the extension and braze it in place.

Caution: Apply heat only to the extreme end of the extension, and use heat-sink paste to prevent heat transfer to the barrel itself. Glock Model 21 Problems? A recent issue of the Oregonian reported the recall by the Portland (Oregon) Police Bureau of all Glock Model 21 .45 ACP pistols in service. There were 230 pistols affected. They will be replaced by Glocks in 9 mm Parabellum (no model mentioned). The reason for the recall was the catastrophic failure of two Model 21s during training, three days apart.

One officer firing the pistols had minor injuries, the other was uninjured. A similar incident had occurred in 1997, but apparently did not lead to any doubts about the pistols because the ammunition was suspect.

Early in the article, the Chief of Police stated that the pistol "basically exploded in his hand." However, later on, a more helpful description from an internal memorandum said the following: "An examination of the two guns revealed rupturing of the barrel, bulging of the slide, and the destruction of the trigger bag (sic), magazine-release mechanism, magazine, and receiver." In each case, a failure to feed led to ignition out of battery, with the resulting rupture of the case blowing out the magazine (and, apparently, doing the other damage described).

The Portland Police Bureau is negotiating with the Glock representative for replacement of their Model 21s with 9mm pistols. Portland Police training officer, Lt. John Tellis, remarked: "The design of the 9 mm Glock is different and would eliminate the possibility of this happening. That's why in our opinion, the 9mm is the safer gun." I'm sending you this because I thought you might not have heard of these incidents, and may wish to look into the matter further. It may be of interest to your readers.

HAVE YOU HEARD OF THIS PROBLEM WITH THE MODEL 21? IT WAS NEWS TO ME, AND

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I read widely in the firearms press. I write to you, however, as you are the only magazine not dependent on manufacturers for advertising. The reasons for the vulnerability of the Model 21 to this malfunction is not clear from the journalistic account, and the statement of Lt. Tellis was too vague and unconvincing. Perhaps you could ask Glock or the Portland Police Bureau. H. E. M. du Coudray We spoke with the NCO in charge of the Portland Police. There were no misfires.

The cases blew above the feed ramp, because they weren't supported sufficiently. Two lots of ammo were involved—both Federal Hi Shok 230. It is believed, but not confirmed, that the angled cut at the top of the ramp was the cause. Some aftermarket barrels for the .45-caliber Glock do not have this cut. As you probably know, at one time there were numerous blown cases in M1911 frames with .38 Super loaded to major factors. As a result, the ramped barrel was born to give full support to the high-velocity round.

We can't confirm this, but it is suspected that someone opened up the throat of the Glock 21 pistols, thereby creating the problem. As far as we've been able to determine, these are isolated incidents and are not evidence of a design problem with the firearm. Torquing Scope Mounts In reference to the article by Dennis Wood titled "Scope Mounting: The Right Way" (April 2004), Mr.

Wood seems to be unaware of the purpose of uniformly torquing screws and bolts that are being used in conjunction with others to hold a common fixture in place—especially when they are used to hold optical instruments. On scope bases and rings, the actual amount of torque used to seat the screws is

irrelevant for all practical purposes, as long as it is uniform among the screws and is sufficient to hold them in place under the shock of firing.

The reason a torque wrench is used for this purpose is to gain uniformity in the tightening that is impossible to achieve by "feel" alone. This is the same reason that trigger-guard screws on bolt-action rifles are tightened to a uniform inchpound setting. It is not a procedure used to merely keep screws and/or bolts from backing out under the stress of recoil, as Mr. Wood implies.

I'm sure a mechanical or optical engineer could explain the purpose and advantage of using calibrated instruments for the tightening of all screws on firearms, including scope bases and rings, but I think you get the idea. Rick Barker Thanks for your follow-up, Rick. As it happens, Mr. Wood is a mechanical engineer, and we agree with him that trying to torque a screw as small as #6 or 8 is likely to lead to broken screws. We also agree with Mr.

Wood that using thread-locker, rather than excessive torque, is a better means of ensuring that screws don't shoot loose. We agree with you, however, that uniform tension is the goal. But with small screws, locked in place with with thread-locker, we believe that the gunsmith's "feel" is probably sufficient for mounting most scope bases. Locked Up Longhorn I have a Texas Longhorn Arms Gro ver's Number Five. This model is rare and the manufacturer is no longer around.

It was made on a Blackhawk frame, but with a left-side loading gate. There is a floating firing pin which the hammer strikes to fire the gun. For safety, only five rounds are to

be loaded, leaving an empty chamber under the firing pin because there is no transfer bar. The problem is that upon firing, the firing pin impales the primer and does not readily release it, which blocks the cylinder from turning. There is a spring to withdraw the firing pin, but it isn't strong enough to extract the firing pin from the primer. The primer indentation seems relatively deep, but does not usually pierce the primer totally.

By drawing the hammer back to the safety notch and releasing it several times, I can observe the firing pin pop back to its normal position and the cylinder will rotate freely. I can't see that the hammer has a rebound spring that is supposed to retract it back to the safety notch. I don't know why the primer is capturing the firing pin and holding it, thus stopping the cylinder. What are your suggestions to approach this problem? Thanks!

Bill Gentry Lewisville, Texas The "Grover" is anew one on us but the lack of a transfer bar indicates the frame is an "Old Model" Blackhawk. We think the problem may be due to excessive cylinder end shake. Try installing end-shake washers (Brownells) to correct it. With the washer(s) in place, your front gauge between cylinder and forcing cone would be .0010 max; minimum .0003. The rear of the cylinder should gauge .0060 to .0065 between the cylinder and frame.

Another possibility is fouling of the firing-pin return spring. Remove the grips and blow out the firing-pin recess in the frame with Gunscrubber or CLP. Of course, if the spring is weakened or damaged, it must be replaced. Finally, you could shorten the firing pin, but have a fresh one standing by in case you overdo it. The result

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(continued from previous page) of that error would be light hits and poor ignition. Thompson Trigger Woes I'm working on a Thompson Center Hawken that fails to fire when using the set trigger. The hammer doesn't fall all the way to the cap. When using the rifle without the set trigger, it works just fine. The hammer doesn't appear to be binding. Any ideas? Mike Di Nardo Apparently, the interference occurs between the set trigger assembly and the hammer.

Inspect using a magic marker on both to isolate the point(s) of contact, and stone them smooth. There may also be damage to the set trigger assembly. If it amounts to more than a bent or loose pin, the rifle may have to be returned to the factory due to parts restrictions.

Remington Model 4 Extraction I have a Remington Model 4 auto in .30-06 that came into my shop with the following info: 1) The extractor was replaced twice by two different shops because the shell was hard to extract. 2) The shell is still hard to extract. 3) I removed the barrel, and the chamber has small discolored pits in it.

My questions are. 1) Can I polish/ recut the chamber with a finishing reamer by .001/.0015 inch and still be safe? 2) What's the right procedure to check headspace in

an auto, as I have not done this before. 3) If you do not recommend this procedure, do you have any idea where I can get a replacement barrel as this is not a very popular gun. Numrich does not show it in their parts catalog. (The Remington 7400 is the closest.) Any help would be most appreciated. Thank you. Douglas Olson Polish. Just polish.

Then make a chamber cast, touch off around, and measure the dimensions of the fired case against S. A. A. M. I. chamber specs for the .30-06. Your chamber could be oversize due to wear and thus allowing the case to expand, with hard extraction being the result. Headspace should be checked with "go" and "no-go" gauges as you would with a bolt action. In this instance, control the forward movement of the Model 4 bolt so it doesn't "slam" into the rear of the gauge.

The bolt should not close completely on a no-go gauge, the gun will remain out of battery, and the striker will not be released when the trigger is pulled. It's an old gun. Finding a replacement barrel will be tough. Call Brownells and get a free copy of their latest parts source list for out-of-production firearms. And don't forget to charge your customer for the numerous long-distance phone calls you'll be making.

Marlin Model 55 Info I'm looking for any information pertaining to replacing the barrel and proper method for setting the headspace on a 12-gauge Marlin Model 55. The barrel threads into the receiver with a washer and what appear to be shims between the washer and the receiver. My assumption is that these washers are what is used to adjust the headspace.

Also it appears that the magazine well/trigger group may have to be removed, although I am hesitant to do this since the recoil lug appears to be the rear of the trigger group. Any information on this procedure and any advice on a source for action wrenches or patterns of wrenches to fit this shotgun would be a great help. Thank you in advance. Dale Annis You are correct; the washers are used to set headspace. But you are incorrect about the need to remove the trigger group and magazine well.

After turning in the Marlin's barrel with the washer in place, insert a "go" gauge and see if the bolt closes tightly (very tightly). If the bolt moves after closing, you can fine tune the fit by carefully filing and stoning the bolt-handle notch in the receiver. Just remember, the bolt must lock down tightly on the go gauge. Your best source for action wrenches and barrel vises is Brownells.

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