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MAINTAINING THE REMINGTON MODEL 14 AND 14-1/2

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ORIGINAL METHODS. MODERN ACCESS.

ARCHIVE EDITION 006

DIGITAL ARCHIVE EDITION

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TURNING

Strong Sales Mark 2004 SHOT Show

BY AMERICAN GUNSMITH EDITORS MAY 2004

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Buyers turned out in force for this year's Shooting, Hunting and Outdoor Trade (SHOT) Show to review the latest in firearms, ammunition, apparel, and hunting and shooting sport accessories, helping some exhibitors set sales records along the way. "We sold more product at this SHOT Show than at the last two combined," said Bob Morrison, Chief Operating Officer of Taurus International. "We did as much business in the first morning as we did for the whole Show last year," said Tony Aeschliman of Marlin Firearms. "It's a winner for us." Strong sales reported in all sectors of the show reflected the industry's optimism for the year ahead and confidence in the rebounding U.

S. economy. "This is one of the best shows we've seen in many years," said Winchester Ammunition President Dick Hammett, echoing comments heard throughout the Show floor. "Extremely successful" was how Laura Olinger of Bushnell Performance Optics described her company's successful show. "This is one of the busiest SHOT Shows we have ever experienced—a lot of traffic, a lot of sales." Many exhibitors noted the high quality of the attendees coming to their booths and their eagerness to buy. "The comfort level of the dealers is defi-

nately high, and they're very eager to purchase," Sigarms Vice President of Commercial Sales Mark Kresser said. "The people here are serious dealers, very qualified dealers." "We're extremely happy," said Wayne Holt, director of sales and marketing for ammunition-maker Hornady Manufacturing Company. "This is a great show.

I haven't heard one negative comment from anyone." Many companies use the show to introduce their new products, more than 500 of which were displayed in the New Products Center.

As NSSF President Doug Painter observed in his opening night State of the Industry address, the SHOT Show is more than a trade show, it is the industry's "show of force." Underscoring that point, exhibitors and attendees signed over 20,000 postcards in support of Senate Bill 659, legislation that would halt predatory, junk lawsuits that seek to hold manufacturers responsible for the criminal misuse of their products.

For more information on next year's SHOT Show, call the National Shooting Sports Foundation at or visit Editor Keith Lawrence Technical

PISTOLS

A Complete Guide to Take-Down/Reassembly of the CZ-52

Initially designed to use the Czech Army's M48 machine-gun round, this pistol served until the demise of the Soviet Union.

BY CHICK BLOOD MAY 2004

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We get a slew of calls and emails about the CZ-52, probably due to the bargain prices they sell for on the used/import market. So a full article on the subject was warranted—and, besides, the CZ-52 is a very interesting pistol from several aspects. Would you believe 1,600 fps from its original 7.62 x 25 chambering? How about its being a single-action with a decocking feature like the current crop of DA/SA semi-autos? And why wasn't it based on a John M. Browning design? Aren't all pistols?

Certainly most are, but the Czechs decided to "borrow" the design of the German MG42 for the action of the CZ-52. Technically, it operates on a "roller-delayed blow-back action." We've reported on this kind of action here recently (see "The CETME Rifle," May 2003) and in the past (H&K MP5, October 1993), and this type of action is found in the H&K 91, 93, and P9 Pistols.

The difference in configuration between the long guns and the CZ lies in where the rollers are positioned and how they interact with the rest of the gun. To be specific, the CETME and MP5 rollers are in the bolt. In the CZ, they're linked to the barrel locking it and the slide together. The roller cam retaining the rollers in the locked position seats in a frame lug.

When the pistol is fired, the rollers are disengaged after about 1/4-inch of recoil; the barrel lug engages the frame; and the slide continues to the rear, extracting and ejecting the spent case. While the pistol is a single-action, its firing pin has an automatic safety catch that prevents firing until the trigger is pulled. The frame-mounted safety itself has three positions. Lowest is the "fire" and exposes a red detent to alert the shooter to that fact.

The middle position places the safety into engagement with the trigger bar and rebound notch of the hammer. In this mode, the pistol is cocked and locked and can be

safely unloaded. At its uppermost point, the safety enters the hammer rebound notch to provide the decocking function. A word of advice: When you're handed a CZ-52, check out the safety function in all three positions with unprimed dummy rounds.

It's very possible there has been excessive wear or breakage and the mechanism or parts of it will have to be replaced. Among these will be the firing pin. The one pictured here is in 7.62 Tokarev caliber and is available from Century Arms International which will undoubtedly break under dry-fire conditions. A broken firing pin will, as you'd expect from the previous explanation concerning the safety functions, defeat the automatic-safety catch.

If so, the hammer could fall from a blow to its rear and the pistol could discharge should a live round be in the chamber. Now gather up a couple of drift punches, a pair of needle-nose vise grips, and we'll tear down this pistol.

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Basic Disassembly The chamber is empty and the magazine has been removed. Cycle the slide once. Keeping your finger off the trigger, move the safety lever to its uppermost position. The hammer will fall. Pull down on the take-down tabs located in front of the trigger guard on both sides of the frame. This will allow the slide assembly to move forward and be lifted straight up off the frame. Invert the slide assembly, and insert a flat-blade screwdriver or the magazine base plate in the roller cam slot.

Get a firm hold on the slide, and move the cam forward toward the take-down notch to disengage the rollers from their slide recesses. As an alternate to the screwdriver or magazine base, you can insert a 3/16-inch punch in the hole under it to move the cam and disengage the rollers. Tilt the breech up slightly, and remove the barrel/ recoil-spring assembly from the slide. The spring is quite strong.

You have now reduced the CZ-52 to its four fundamental assemblies, but, of course, that's not enough for our purposes here. Detailed Disassembly No "factory" exploded

diagram exists for the CZ-52, although there is a well-executed exploded drawing that can be found on numerous internet sites. We believe this drawing may have appeared in one of the NRA's publications, but they tell us they do not own the copyrights to it.

In any case, to avoid any possible conflicts, we are not including the drawing here, but you'll be able to find it easily by typing "CZ-52 Drawing" into your favorite search engine (or going directly to <http://www.mek-schuetzen.de/Blueprints/cz52part.jpg> or [Gorge/4653/cz52explo.jpg](http://www.gorge.com/4653/cz52explo.jpg)). The part numbers referenced in the following paragraphs refer to this drawing. Begin the detailed disassembly by turning the recoil spring off the barrel.

The roller cam retaining pin (#29) is drifted out in either direction with a 3/32-inch punch. Note: This pin is staked in and has to be restaked when and if the rollers (#30) are ever replaced. Place the slide upside down on your bench. Locate the firing pin retractor lock (#7). It's semicircular and shouldn't be

hard to spot. Use the 3/32-inch punch to push down on the retractor, tilt the slide, and tap its rear end on your work surface.

The firing pin will slide out, unless it has become trapped inside by fouling. Remove the retractor lock and its spring (#8). The extractor pin (#4) is driven out downward with the 3/32-inch punch to free the extractor (#3) and its spring (#5) and move along to the frame. Remove the grip panels (#10 and #11) and the grip-retaining clip (#12). Now you're going to need the needle-nose vise grips.

The hammer spring (#16) isn't just strong—it's very, very strong—complicated by the fact that it's one of the components holding in the magazine catch (#23). The other is the hammer strut (#17). Ready for a struggle? Fine. Grab onto the magazine catch with the needle-nose vise grips (you have taped the jaws, right?) and push it toward the top of the frame to compress the hammer spring. Keep pushing upward and inward until the catch can be separated from the frame.

It must be depressed when removing the firing pin and spring.

A COMPLETE GUIDE TO TAKE-DOWN/ REASSEMBLY OF THE CZ-52 CONTINUED

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Above left and The right-hand photo shows the cam to the rear as it would be when the barrel has been reinstalled in the slide. Now open and close your hand a few times to work out any finger, palm, wrist, or forearm cramps you may have experienced. Once you've recovered, the hammer strut can come out, and you can turn your attention to the hammer-pivot nut (#15). It's staked in and may resist your efforts to remove it with a 6mm socket.

Having prevailed over the hammer spring, you will do the same with the pivot nut. You now drift out the hammer-strut pin (#18) right to left and remove the hammer (#13). The 3/32-inch punch gets called on again to drift the trigger-pivot pin (#44) and sear/ejector-spring pin (#33) right to left half-way out. Why only half-way? That's all the farther you have to move those parts to get the sideplate off, and because they retain the sear spring (#34) and trigger-return/disconnector spring (#45).

With the right side of the frame facing upward, tap below the sideplate on the magazine well and even with the bottom of the

trigger guard. This will cause the plate to lift up enough on its own to be taken off and expose the pistol's innards. There can be seen the trigger bar/disconnector (#42). Lift it off the trigger-bar link pin (#43), unhook the trigger-return/ disconnector spring from the pin and counter-clock the spring out of the gun. The trigger (#41) may come off the trigger pivot pin with it.

If not, remove the trigger as your next step. Moving upward to the rear of the frame, take time out to memorize the positions of the sear, sear spring, and ejector. Push the sear/ejector-spring pin out the rest of the way, but leave the punch in to retain the sear (#32) and sear spring. To remove those parts, slowly withdraw the punch and control the spring's urge to escape. In this process, you will also free up the ejector (#2). Next target: the take-down latch/ hold-open pin (#39).

Drift it right to left while holding your thumb over the latch. Keep pressing down as you pull out the punch, ease off on the latch and lift it out. This will free the hold-open catch (#19) as well. Grasp the catch by its front end, lift and slide it from its notch in the left

rear of the frame. Stay on the left side. Turn the safety lever (#31) to 12 o'clock, and pull it to the left while restraining the hold-open/ safety-detent spring (#20). A leg of that spring fits in a milled slot in the frame.

Note how it fits for reassembly purposes, which is performed in reverse order. Reassembly Tips The short leg of the sear spring rests atop the sear. The long leg extends toward the front of the gun and into its frame recess. A jeweler's screwdriver is a handy tool to have when working in these tight quarters. I hope you took my earlier advice to memorize the installed positions of the sear, sear spring, and ejector. If not, you'll regret it about now.

Those parts should be reassembled on a punch being inserted into the frame, held together, and the punch pushed out with the sear/ejector/spring pin. The center of the coils on the trigger/trigger-return/disconnector spring is placed on the trigger pin.

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Correct reinstallation is discussed in the “Reassembly Tips” section of the article. The hooked end of the spring attaches to the trigger bar. The other end rests in the trigger body. The trigger bar rides in a cutout in the sideplate. When replacing the plate, pull the trigger slightly and put the front of the plate in the frame. Lower the back end of the plate into place and check the trigger bar for freedom of movement by working the trigger back and forth.

To replace the hammer pin, locate its notch in the frame, and align that with the notch in the head of the pin. The body of the pin is also notched where the trigger bar rides. As you push the pin in, push the bar down. End result: The bar has to be seated in the notch in the body of the pin when the pin is fully installed. The firing pin must be installed in the slide as follows: The retractor

lock has a semicircular and a flat portion. The flat portion runs parallel to the long axis of the slide.

The flat of the firing pin mates with the upper flat of the retractor. The roller cam has a circular section that slides over the barrel and a tongue recessing into the bottom of the barrel. The roller cutouts are also located on the underside of the barrel. When you slide on the cam, its rear has to end up flush with the front of the roller cutouts, the rollers are placed in their cutouts, pushed as far as possible to each side, and the cam moved to the rear of the barrel before reinstalling pin #12.

What’s so simple with other semi-autos isn’t with the CZ-52. Reinstalling the barrel/recoil-spring assembly in the slide can develop into a major pothole on the road to success. Select a punch that fills the hole in the bottom of the roller cam, and secure the slide upside down between padded vise

jaws. Slip the recoil spring on the barrel. Insert the punch in the roller cam, and push the cam toward the muzzle. This will begin to compress the recoil spring and the barrel should enter its opening in the slide.

If it doesn’t, the spring has gotten in the way. Slack off and give the spring a quarter of a turn. Keep everything moving toward the muzzle with light downward pressure. When the rollers enter the take-down notch just forward of the ejection port, the barrel should drop down and the rollers will be flush with the bottom of the slide. When that happens, pull the punch, the barrel will move to the rear under spring pressure, and the rollers will seat in their slide recesses.

In case you missed mention of it earlier, make a notation in your CZ-52 file: The only parts of the pistol considered fragile for long-term service are the firing pin and sear. ■

FROM THE ARCHIVE

Proper Epoxy Bedding Techniques

Two-part epoxies are the answer to a poorly inletted wood-to-metal fit. Filling these gaps will not only increase accuracy but will prevent damage to the stock.

BY DENNIS A. WOOD MAY 2004

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There have been many accuracy tricks pioneered by the benchrest-shooting crowd that have been adopted by hunters seeking better accuracy. One of those ideas involves “glass” or epoxy bedding. In the quest for ultimate accuracy and that elusive one-hole group, the benchrest folks learned quite early on that if the wood-to-metal fit is not perfect, group size will suffer.

Through the years epoxy bedding has gone through a metamorphosis with many people adding their thoughts and techniques as to how this should be done. I’ve adopted several of these ideas, and each will be detailed here along with why I believe they are important. Preparing the Metal How do we find out if the wood-to-metal fit is as good as it needs to be? An obvious clue that it is not would be detectable movement of the barreled action in the stock once the action screws have been backed off slightly.

How about the rifle’s groups? Do they shift? For example, do you have two shots pretty close to one another and then the next two cluster higher, lower, or to one side from the first two? This can be a sign of poor wood-to-metal fit. To begin a bed-

ding job, take the bolt out of the action and set it aside, check the chamber to make sure it is clear, and then remove the action screws. The barreled action should now come out of the stock.

We now need to remove all the parts on the bottom of the action that could collect excess bedding compound. Once the bedding compound hardens and it has found its way around the trigger or safety components, it will be very difficult to remove the barreled action without some wood damage. It’s better to remove these parts. With the components removed, we now have some open cavities and pin or screw holes we need to deal with.

It’s best to plug these voids with modeling clay so they are flush with the outer surfaces of the action. After the bedding has been completed, the clay is fairly easy to remove and final removal of any clay residue in screw threads can be done with kerosene. The use of action-guide pins will maintain alignment of the barreled action in the stock while the epoxy agent hardens. Insert action-guide pins of the proper thread size and wipe all the external metal down with an oil-displacing solvent.

The product I like best for these bedding jobs is Brownells Acraglas Gel. When mixed, it has the consistency of peanut butter, and stays where you place it. Previously, the liquid form of Acraglas was the standard for doing this type of work, but I find that this type is quite runny and sometimes the non-filled areas need to be redone, which requires a second patching process.

Acraglas still fills my need for those jobs requiring a less viscous epoxy that will run down and settle into place, such as repairing broken or cracked stocks. The Acraglas Gel comes in a kit, along with a release agent that prevents the barreled action from becoming a permanent part of the stock. Brush the release agent on all the areas of the barreled action that fit into the stock where the epoxy will be placed. I do this twice in case I missed any spots on the first coating.

Brushing the release agent over the modeling clay will help with clean-up later. Stock Preparation The bedding areas of most concern in the stock are in the rear tang area and the area around the recoil lug.

PROPER EPOXY BEDDING TECHNIQUES CONTINUED

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When shifting of the barreled action in the stock during recoil occurs, it will affect these areas most adversely. Depending on how the stock grain is structured, the battering caused by an improperly fitted action will cause splitting of the stock, either in the wrist area or along the sides of the stock in the area of the magazine box. I have repaired a pre-64 Model 70 Winchester stock that was split in the area behind the recoil lug.

The split went from the rear tang through the left side of the wrist along the wood grain. The split was a clean one, and by gluing and clamping was repaired to an unnoticeable condition using Acraglas. The action was epoxy bedded into the stock, and for the last 20 or so years has served its owner without splitting again. To ensure that the bedding compound creates a perfect fit, we need to remove wood in the tang area and where the rear face of the recoil lug resides.

With this process, the bedding will stay solid as long as the action screws are backed off when the rifle is put away until the next sea-

son. To ready the rifle for the next season, the action screws are then drawn tight, pulling the barreled action back into place. This reasoning was to allow for the changes in humidity that would affect the stock during the summer and winter months.

This loosening and tightening of the action screws has a tendency to compress the wood fibers underneath the bedding compound, causing the bedding to eventually go sour. Not a good thing. The next phase in the process of epoxy bedding has typically been the placement of nylon pillars installed perpendicular to the hollow capillaries in the stock wood to prevent fiber compression when the action screws are tightened.

The current method, and the one I prefer, uses aluminum sleeves through which the actions screws fit. This method doesn't add any more holes in the stock, but does require that the action-screw holes be opened up to accommodate the sleeves. I use 3/8-inch-diameter sleeves that I make myself whenever the action style I'm working with allows it.

When dealing with the small-diameter tang screws on some of the Remington models, I adjust the outside diameter accordingly.

For those action screws that are 1/4-inch in diameter, the 3/8-inch diameter aluminum sleeves with a .265-inch through hole support the action quite well. As I'm doing the lathe work to turn these sleeves to length and drill the through hole, I'll also turn a groove along the outside diameter of the sleeve as though it was a thread. This spiral groove is done at nine turns to the inch and .020-inch deep or just deep enough to capture some of the epoxy and create a more firm bonding of the sleeve to the stock wood.

Setting the Epoxy It works best for me to use a piloted flat-bottomed, counterbore tool in my drill press to open up the action screw holes in the stock. A 1/4-inch-diameter pilot mounted in the counterbore tool follows the action screw holes, while the 3/8-inch diameter cutter enlarges the screw holes for the

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sleeves. It's important that the sleeves are faced to the correct length for each application so they maintain the distance from the inside face of the bottom metal to the inside bottom face of the barreled action. After the action screw holes have been opened up to 3/8 inch, the outside of the aluminum sleeves are then coated with epoxy and installed into the stock.

The Acraglas Gel will hold the sleeves in place, but to prevent any movement, I'll place a piece of cellophane tape over the top and bottom of the sleeves to ensure they stay where they're supposed to until the epoxy hardens up, usually overnight. After the epoxy has cured and the sleeves feel solidly placed, the barreled action is tried for fit with the action-guide pins installed in the action.

To remove the stock wood in the tang and recoil lug areas that will be replaced with bedding epoxy, I find it best to use a 1/8-inch-diameter ball rasp in my rotary tool. This tool I use has a flexible shaft with a pencil-style hand-piece that's very easy to control and direct. Remove material around the aluminum tangs-crew sleeve and undercut the stock sides slightly where the tang fits.

Try not to go up and beyond the top edge of the stock or the bedding compound will ooze up and over the top edge of the stock and ruin the job. I usually remove wood to a depth of around 1/8 inch and leave the wood in a roughed-up state so the epoxy bedding will have an effective bonding surface. For the recoil-lug area, we need to re-

move wood around the sleeve for that action screw using the same diameter rotary ball burr.

Again, undercut the sides of the stock, staying at least 1/8 inch below the top edge of the stock. Move the face of the stock, where the recoil lug would normally rest, back about 1/8 inch by removing the wood in this area. The bedding compound will fill this void and create a solid surface for the recoil lug back face, eliminating any shift during recoil.

To create a support pad for the chamber end of the barrel, I'll rough out that part of the stock-barrel channel in the forearm to a depth of 1/8 inch or so and around 1-1/2 inches forward of the recoil lug cutout. For sporter-weight barrels, a dampening pad is roughed out 3/4 inch back from the forearm tip end. The intention of this pad is to dampen the harmonic waves that affect the thinner sporter-weight barrels after the bullet leaves the muzzle.

On heavy varmint-weight barrels, this is optional, as the nodes are not as extreme in the heavier barrels. Mix up your bedding compound according to the instructions provided. I normally use a bit of brown dye sold explicitly for this purpose on all dark walnut stocks, but there's no reason the epoxy bedding compound can't be used as is. The trick to mixing this compound is to mix enough for the job. Mixing less than you need causes more grief than mixing a bit too much.

As insurance, it's a good practice to place masking tape along all the upper edges of the stock where the bedding compound will be placed. In the event any compound does ooze up and onto the stock finish, it will be quite messy. The masking tape will aid with cleanup later on. Poke the bedding compound into place where you removed the wood, striving to avoid getting any into the inside of the aluminum sleeves. Once you feel you have enough compound inserted into place, install the barreled action into the stock.

To force the barreled action into place, I use two Jorgenson woodworking clamps. These are wooden clamps with a turn screw controlling both the top and bottom jaws. With reasonable force, they will not damage the stock. The clamps are left in place until the bedding compound hardens up, usually overnight.

Conclusions Once the epoxy bedding compound has cured and the clamps have been removed from the barreled action, I give the ends of each action-screw guide pin a sharp rap with a hardfaced plastic mallet to shock the action loose from the stock. Any of the leftover bedding compound will give you a good idea when the compound has hardened up thoroughly.

The only task left now is to clean up any bedding compound that has entered the stock cutout for the trigger, magazine box, and the area where the bottom of the recoil lug rests in its cutout. For best accuracy, we want the bottom of the recoil lug to free-float in the stock. ■

FROM THE ARCHIVE

Making and Using a Receiver-Facing Mandrel

A precise barrel-shoulder-to-receiver fit is vital to good rifle accuracy. Here's how this condition can be tested and corrected by the advanced shooter or gunsmith.

BY NORMAN E. JOHNSON MAY 2004

ORIGINAL PP. 10-14

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Original caption: Right top: Set up in the lathe here is the completed receiver-facing mandrel made for a Remington 700-Series receiver.

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Original caption: Right bottom: The important part of the receiver mandrel is the precision threading and its relationship to the section of turned shaft that abuts the locking-lug race on the Remington Model 700 receiver, as the barrel shoulder mates with the forward surface of the receiver. Factory-made parts are made in large numbers and assembled with varying degree of precision, and it isn't until the shooter suspects or discovers problems that anything is done to correct it.

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Guns are often tested for accuracy without knowing fully what contributes or detracts from the magic formula. A shooter may get ever so close to a desired level of accuracy, only to be stopped just short by some unknown factor. It can be so perplexing, even the most experienced shooter may not know where to turn. But one fact remains: If everything about the rifle and load, the sighting equipment, shooting technique, and shooting conditions were perfectly uniform, one-hole accuracy could be attained.

Of course, this arrangement of circumstances is virtually impossible to achieve. Yet the search goes on. In this article, I'm going to touch on a single factor or condition that is absolutely vital to rifle accuracy, and yet is often overlooked. I'm referring to the joint or union between the rifle-barrel shoulder and the receiver. This juncture is formed by the threaded barrel and receiver,

Discovering barrel/receiver discrepancies is sometimes fortuitous. Not many rifles are going to be blue printed and accurized by the average hunter/shooter, but discovering a correctable problem is always a big plus. So it was with one of my Remington 700 rifles. I purchased the rifle in .223 caliber, with plans to bed it into a Bell & Carlson synthetic stock. As a means of improving accuracy, I filled in the magazine cutout with an aluminum bedding block/cartridge ramp. As a single shot, I felt

MAKING AND USING A RECEIVER-FACING MANDREL CONTINUED

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Original caption: Above top: This is the completed mandrel showing the portion of the threaded section and varied diameters. (See Figure 1 for the exact specs used for Remington 700 actions). Above bottom: The Remington 700 receiver is screwed onto the mandrel while still in the lathe.

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A perfect degree of precision for inspection and possible facing is attained in this way. this rifle would be a performer as a switch-barrel using a cartridge of my own design, with a Shilen 1:14 twist barrel, and a couple others—including a .223 1:7 twist also chambered for a Shilen barrel. 0.925" Initial accuracy with the barrels was borderline acceptable, with some good bullets in the half-minute category.

Then one day, as I removed one of the barrels, I noticed there was poor contact at the receiver face evidenced by intermittent metal pressure contact. Locking-lug contact, as determined with Prussian blue and a snugly chambered cartridge, appeared perfect however. Making a Receiver-Facing Mandrel I pondered awhile before performing a few tests to determine the squareness of the receiver face.

I eventually decided to make a mandrel threaded to the receiver with a shoulder to 1.054" Figure 1. .474" 0.693" 0.995" 0.681" 1.155" contact the inner locking-lug race. This was made with a steel shaft centered in the lathe and was not removed until all tests and receiver facing were completed. I began with a shaft just over 1.6 inches in diameter, with enough extra length for 11 inches beyond the lathe chuck. The tail end of the shaft was drilled for alive center.

The tail end of the shaft was turned to 0.693 inch for 7-1/8 inches (see Figure 1) to a square shoulder to form a square contact with the locking-lug race when the receiver is screwed in place. The diameter of the shoulder was turned to 0.995 inch, just under the minor thread diameter for passage through the receiver threads. The shaft was then turned to the major thread diameter of 1.054 inches for a length of 0.681 inch.

The remaining portion of the shaft was turned to 0.925 inch, allowing for the tool-bit clearance as the receiver face is tested for runout and faced for squareness with the threads. With the shaft prepared thus far, the threads were cut as required for the Remington receiver. Backing-off the live center, I tried the threads for fit and shoulder contact at the recoil-lug race. All was well as I used firm hand torque to install the receiver to the facing mandrel.

Then I tested the receiver face for squareness with the threads. A dial indicator clearly indicated a 0.003inch runout for nearly a third of the receiver face. Thus, receiver facing was in order. Facing the Receiver Total Length - 11.5"

MAKING AND USING A RECEIVER-FACING MANDREL CONTINUED

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With a properly shaped and sharpened tool bit, facing the receiver is a straightforward procedure. It comes down to precisely how much metal is removed from the receiver face. In my case, I elected to use a shim and leave the barrel shoulder exactly as it was. I already had two other barrels headspaced to this action as switch-barrels, so I didn't want to toy with barrel-shoulder turning and re-chambering. Worthy of mention here: Brownells steel of 0.050-inch thickness.

I avoided a shim that would be too thin, and I wanted to stay just forward of the protruding scope base by a few This steel shim is 0.050 inch in thickness—the exact amount removed from the receiver as it is trued. A portion of the receiver ring extends just beyond the threaded mandrel to avoid tool-bit

contact with the shaft while facing the receiver. Montezuma, IA 50171) offers oversize recoil lugs in 0.250 and 0.300 inch thicknesses. The standard thickness of recoil lugs is 0.185 inch.

At a price of \$40, Brownells also offers receiver-facing mandrels for Winchester M70, '03 Springfield, large and small-ring Mausers, and Enfield rifles. So, electing to make a shim, I used stainless thousandths. With the micrometer carriage stop on the lathe set at 0.040 inch, I made my first facing and tried the action for headspace. After a few follow-up cuts, I arrived close enough to try all three barrels for headspace with about 125 foot-pounds of receiver torque. I found them to be perfect.

Replacing the receiver back on the lathe mandrel, I followed up with a careful test for runout. This also was right on the money, with absolutely zero movement on the dial indicator. This told me the receiver threads were square with the face of the receiver at optimal axial preload. Both feel and visual inspection of the barrel and receiver face with Prussian blue indicated a totally uniform contact.

Followup Accuracy Tests For a pretty demanding accuracy test, I used the Shilen 1:14-twist varmint barrel and my 5.6x41 SW-NEJ cartridge. The load was 24 grains of 2015 BR powder, along with 52-grain Shilen benchrest bullets, Lapua cases, and Federal 205M primers. (continued on page 16)

MAKING AND USING A RECEIVER-FACING MANDREL CONTINUED

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050-inch steel shim is sandwiched between the receiver face and recoil lug on this Remington action in the process of truing up the receiver. 050-inch shim used to maintain exact headspace following the receiver-facing procedure. Note by the serial numbers that this barrel is headspaced for another rifle as well—a Remington Model 40X. This is another reason to maintain exact barrel-to-receiver spacing by means of a shim. The first test involved removing and replacing the barrel after each shot at 100 yards.

A special lubricant was used on the barrel shoulder and threads along with 100 pounds of applied torque. Accuracy was under one minute of angle for five shots in this test. For anyone who has not tried such a test, the outcome will prove most interesting. Where barrels are switched frequently—as is common with switch-barrel applications—my experience has shown that a good lubricant on the threads and barrel/receiver shoulder is vital to attaining uniform axial preload as torque is applied.

Lubricant also helps prevent induced bare-metal wear at this juncture. Whereas 150 pounds of torque may be required with a dry-thread application, as little as 110 pounds of torque to a lubricated thread/shoulder will do the same job. In fact, I've performed tests on well-fitted barrels using as little as 70 pounds of torque on lubricated threads—with perfect accuracy results. Even barrel/receiver joint loading produces thousands of pounds of thrust (axial preload).

There is an equation to determine this, but I won't go into it here. Subsequent accuracy tests indicated a definite improvement in performance with all three barrels. Headspace remained unchanged. The 5.6x41 SW-NEJ shot one outstanding bughole at 100 yards and a nice round 0.750-inch group at 300 yards—a first for this rifle and cartridge. Conclusions While barrel/receiver squareness may not matter to most shooters, it represents an important area of accuracy for target and varmint shooters.

And a precision-made, receiver-facing mandrel is the place to start for developing the ultimate accuracy. ■

PEOPLE & COMPANIES

The Case of the 'De-Accurized' Ruger M77-17

When normal accurizing procedures produced unwanted results, our gunsmith/sleuth had to call in a specialist.

BY CHIP TODD MAY 2004

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I was pleased to see an old friend of mine, Rob, at my door the other day, and hastened to invite him inside. Rob is a friend from my drag boat days, and the builder of winning Top Fuel engines and hydros. Since he was lugging a rifle case, I cleared the pool table for him to set it down on. (I took three tries on the 8-ball, however). The gun he brought to me was a Ruger M77-17, but you must have guessed that from the title.

This particular one was equipped with a black, synthetic stock and was so fresh out of the box that he hadn't yet had time to install a scope on it. Since the Ruger M77-17 was the first .17 HMR firearm I'd seen when another friend brought one by, I was somewhat familiar with it. One of my gunsmithing students specializes in Ruger 10-22 rifles and other Ruger rimfires, so I was familiar with Ruger's rimfire designs, having being around so many that Bruce had modified.

Outside of my shop, however, I wasn't very familiar with these rimfires. Rob's problem, as he saw it, was that the gun was much more accurate than his ability to shoot; he wanted me to reduce its accuracy so that he could feel superior to it. After checking to

see if I had been really listening to him, he told me he was kidding and told me what he really wanted.

The rifle shot cloverleaf-shaped 100yard groups right out of the box, but since I had had such good luck when accurizing some other guns for him, he wanted it bedded and the barrel floated to achieve the same increase in accuracy as his other rifles. With Rob's background in building 6,000-horsepower engines, and from his renting time on my lathe from time to time, I knew that I could get some straight talk from him when I asked questions.

We discussed what he expected of the gun, whether he would be shooting from a bench or standing and shooting off-hand, so I could determine what would be needed to increase its accuracy and repeatability. We decided to smooth and lighten the trigger, bed the receiver, and float the barrel. I'm a big fan of floated barrels and had never failed to increase the repeatability of a rifle by full-floating the barrel. With this plan decided, I began to assemble the tools I'd need to do the trigger job.

After the trigger was smoothed and down to a 2-pound pull, I taped around the trigger assembly, using clay wherever there was a place for bedding compound to grab. After bedding the action and letting the

compound harden overnight, I mounted the stock in the mill's vise and removed black plastic until I had what I felt was a reasonable clearance around the barrel.

Bedding and barrel floating went well, so I mounted his scope with its 56mm objective, after having to go to Ruger for ultra-high mounts that would fit the scope and rifle combination. Keep in mind here that this is a .17-caliber rimfire rifle with a pretty large scope on it. If it's not already too late to make along story short, Rob went out to shoot the gun and came back dragging his knuckles on the pavement.

The rifle had progressed from nice halfinch groups to something like 3-inch groups with more frequent fliers than most airlines can boast. I decided that this wasn't a good time to try to sell Rob some stock in my gun shop. After checking out the gun and all the work that I had done, I could find nothing that was any different from the other bedding/floating jobs that I had done countless times, and always with success. I then called Bruce, my Ruger guru, and learned what I had done wrong.

It went against all that I had believed in and had preached for years. Can you diagnose the problem from the information given above? (answer on the next page.)

THE CASE OF THE 'DE-ACCURIZED' RUGER M77-17 CONTINUED

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Answer to This Month's Gun Clinic (continued from previous page) I have never been a believer in "pressure points" where the stock is in hard contact with the barrel, so was surprised to hear Bruce tell me that I had to go back and re-establish a pressure point about an inch or less from the end of the forearm. The barrel-wedge-and-screw method that Ruger employs on all of its rim-fire rifles just isn't sufficiently sturdy to maintain one barrel setting.

The loose slip-fit of the chamber end of the barrel to the receiver is necessary for the easy removal that Ruger wanted, but the tolerance necessary for that ease

of removal makes a poor barrel-retaining system. On my own 10-22, which has been sleeved for a .17 High Standard cartridge, the barrel stub was knurled until it was a medium press fit so that I could float the barrel. A cure for this would be to mount the scope onto the barrel.

After reestablishing the pressure point against all I previously believed, the rifle now shoots onehole ten-shot groups at 100 yards. Better yet, my customer and friend has a rifle that truly shoots better than it did when he bought it. That was the goal in the first place. ■

MAINTENANCE & REPAIR

Maintaining the Remington Model 14 and 14-1/2

Although not the first introduced, the Model 14 was the strongest and most advanced rifle of its time and the first really popular center fire pump—and it's still going strong.

BY KEN EDWARDSSEN MAY 2004

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Sometimes I get lucky and get the chance to work on a really nice old gun. Such was the case recently with a Remington Model 14- 1/2 in .44-40. A slide-action produced in .38-40 and .44-40 calibers, it was one of several Remington models produced from 1909 to 1955 based on a J. D. Pedersen design. This design featured a solid, almost fully enclosed receiver with side ejection and no external hammer.

Introduced to the Remington-UMC line in 1912, it was discontinued around 1922 although it showed up in the Remington catalogs until around 1931. Total production was approximately 126,000, which includes the Model 14 chambered for .25, .30, .32, and .35 Remington. According to the Remington web site (www.remington.com), the Model 14-1/2 was offered only in standard grade, and the only variation offered was the Model 14-1/2 Rcarbine with an 18-1/2-inch barrel.

In .44-40 caliber, the Model 14-1/2 was popular with many police departments but, being chambered for a medium-power cartridge, didn't achieve as much popu-

larity as the Model 14. This particular gun was purchased by its current owner from an estate sale, and he wanted some restoration work done on it. All of the original parts were there, although the magazine tube configuration was a little different.

The barrel was the original, round 22-1/2-inch length, but the magazine tube was only 16- 1/2 inches long and there were two circular dovetail cuts for magazine rings in the underside of the barrel. A magazine ring was installed in the rear dovetail and supported the magazine tube. The front dovetail, located 4 inches back from the muzzle, was empty. I suspect there was a fulllength magazine tube installed at one time, but it may have been shortened to accommodate a barrel-mounted sling swivel.

An empty hole in the buttstock likewise indicated there had been sling swivels installed at one time. The bottom of the pistol grip had the number "32" stamped into it in 3/8-inch-high numbers. Marking a stock with their own control number was a universal method for military

MAINTAINING THE REMINGTON MODEL 14 AND 14-1/2 CONTINUED

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and law-enforcement armorers to keep track of their guns. (It was easier to see than the serial number.) This gun had the earmarks of having spent its heyday in the care of an armorer, which probably accounted for its exceptional condition. Since I had never taken down a Model 14-1/2 before, I started looking for some documentation to keep me on the straight and narrow. I couldn't find anything except a parts list on the internet, which stated that the Model 14 and 14-1/2 were the same.

The parts list had several parts that weren't in the gun I was working on. I therefore solicited help from the Remington on-line support center. To their credit, their response was swift. They sent me an "owner's manual" for the Model 14 which they also said was the same as the 14-1/2. Most of the owner's manual information matched the 14-1/2 I was working on, but also listed several parts I could not find in the gun. I'm no longer so sure that the 14 and 14 -1/2 are the same.

Because I had some difficulty in obtaining all the correct data for the Model 14-1/2 I decided to document the one I had in my hands. Hopefully, this information will help someone else some day. Field Stripping Before starting any disassembly, depress the unlocking plunger on the breechblock, open the action, and make sure the gun is clear of ammunition. I also do a preliminary inspection for general appearance, Figure 1.

Takedown Procedure overall condition, and manual functioning when possible using dummy cartridges. Refer to accompanying photos for parts identification and orientation during disassembly and assembly. Start disassembly of the 14-1/2 by doing a basic field strip. The gun was designed to break down without any tools into three major sub-assemblies: barrel and receiver, trigger guard and stock, and breechblock. Cock the firing pin by opening and closing the action.

Unscrew the takedown screw (#1) and pull it out to its stop. With one hand, grasp the barrel and receiver assembly (#2) forward of re-

ceiver, and with the other hand grasp the trigger guard and the stock assembly (#3) by the pistol grip. Push straight down on the pistol grip and Figure 2. Breechblock Removal/Installation the rails on the guard will slide out of the grooves in the receiver. Place the barrel and receiver assembly upside down on the bench.

Remove the breechblock assembly (#4) by depressing the unlocking plunger on the side of the breechblock and opening the action. Tip up the rear end of the breechblock slightly, and hold the front into the clearance hole in the receiver. This will allow the breechblock to disengage from the action bar. Pull the action bar forward and lift the breechblock out. Detailed Disassembly Barrel and Receiver. Remove two forend screws (#5) and slide the forend (#6) forward.

Remove the action-bar cover screw (#7) and slide the action-bar cover (#8) forward. Tip the Figure 3. Barrel and Receiver Components

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muzzle down and let the cartridge stop (#9) fall out of the receiver. Move the action bar (#10) rearward and out of the receiver while lifting off the forend and action-bar cover. Be careful when removing the magazine plug (#12); it's under spring tension. Remove the magazine-plug screw (#11), magazine plug, magazine spring (#13), and magazine follower (#14). It's not necessary to remove the magazine ring (#15) unless replacement is required.

To remove it, insert a plug (hardwood or brass) in the ring, and then turn the ring 90 degrees to the axis of the barrel and lift out the ring. I did not remove the parts described in the following paragraph and they are therefore not shown. The takedown screw (#1), threaded (#16) and plain (#17) bushings, and the retainer (#18) were all serviceable, and I did not wish to risk damaging them by removing them unnecessarily. I would not recommend removing them except for replacement.

The following information was taken from the Remington manual. To remove the threaded bushing, turn the takedown screw into the threaded bushing one or two

threads. Drive the bushing out of the receiver by striking the head of the screw, then remove the bushing from the screw. To remove the plain bushing, pull the takedown screw to stop. Use a drive punch with the Figure 4. Action Bar Components same outside diameter as the plain bushing.

Insert the punch through the left side of the receiver and drive the plain bushing, retainer, and takedown screw out the right side of the receiver. Don't drive on the end of the takedown screw to remove the plain bushing as this will damage the retainer and/or screw threads. Lift the retainer out of the bushing and remove the takedown screw. Action Bar. There are some very small parts under spring tension in this assembly, so use caution.

Drive out the loading-door pin (#19) and remove the loading door (#20), loading-door spring (#21), and loading-door plunger (#22). Drive out the carrier pin (#23) and remove the carrier (#24), friction-spring plunger (#25), and friction spring (#26). Drive out the carrier-lever pin (#27) from right to left and remove the car-

rier lever (#28), carrier-lever plunger (#29), and carrier-lever spring (#30). Remove the magazine screw (#31) and unscrew the magazine tube (#32) from the action bar. Breechblock.

Before starting disassembly of the breechblock, uncock the firing pin (#45) by raising the back of the sear (#42). This will remove some tension from the mainspring (#44). Remove the sear-lock pin (#33), sear lock (#34), sear-lock plunger (#35), and sear-lock spring (#36). Remove the action-bar lock pin (#37), action-bar lock (#38), action-bar lock-spring case (#39), and action-bar lock spring (#40). Note that the sear is under tension from the mainspring. Drive out the sear pin (#41) and release the sear.

Remove the sear, mainspring plug (#43), mainspring (#44), and firing pin. Move the ejector (#46) so that the semicircular lug lines up with the matching cut in the breechblock body and lift the ejector out. Push the ejector rod (#47) forward and out of the breechblock. Pry the Figure 5. Breechblock Components

MAINTAINING THE REMINGTON MODEL 14 AND 14-1/2 CONTINUED

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Figure 6. Trigger Guard and Stock Components extractor plunger (#49) rearward and the extractor (#51) up and out of the breechblock. Remove the extractor plunger and extractor spring (#50). Trigger Guard and Stock. Remove two buttplate screws (#52) and the buttplate (#53). Remove the stock bolt (#54), lock washer (#55), and flat washer (#56), and pull the stock (#57) straight back to separate it from the guard (#58).

Drive out the carrier-dog pin (#59) from right to left, and remove the carrier dog (#60) and carrier-dog spring (#61). Use a drift punch with the same outside diameter as the trigger bushing to drive out the trigger bushing (#62), and remove the trigger (#63), trigger-spring cap (#64), trigger spring (#65), trigger-spring rod (#66), and safety (#67). Sights. Loosen the front-sight lock screw (#68). Both the front sight (#69) and rear-sight assembly (#70) are removed from left to right.

The rear sight has a miniature flat spring that functions as a detent for the sight-elevation wheel. When the elevation wheel comes free from the sight base, the spring is loose. There is also a threaded stud and a threaded setscrew in the center of the elevation wheel. Clean, Inspect and Repair Clean parts of all grease, oil, dirt, and foreign matter which might obscure the true condition of the parts. Dry all the parts thoroughly but do not lubricate prior to doing a detailed inspection of each part.

Lubricate as required during assembly. Visually inspect all parts for burrs, cracks, and breaks. Check for missing parts. Inspect threaded parts for ser viceability, and check the chamber and bore. Repair as required, keeping in mind that replacement parts may be scarce. Remove burrs on functional surfaces until flush with the surface of the parent material. Do not remove any material from or change the shape of any functional surface.

Reassembly Reassembly is in essentially the reverse order of disassembly, but there are enough potential stumbling blocks that I will go through the procedure step by step. Sights. The sights are installed from right to left. Assemble the detent spring in the rear sight (#70) base. Turn the threaded stud into the elevation wheel. Install the elevation wheel in the sight base with the "A" lined up with the index mark.

Align the bottom of the stud in the elevation wheel with the slot in the barrel and install the rear sight base in the dovetail. Install the setscrew in the center of the elevation wheel stud. Install the front sight (#69) and secure with the setscrew (#68). Trigger Guard. Start the trigger bushing (#62) into the guard, leaving enough room to install the trigger. Install the safety (#67), trigger rod (#66), trigger spring (#65), and trigger-spring cap (#64) in the guard.

Align the trigger (#63) with the trigger bushing, making sure the trigger spring cap is in Figure 7. Trigger Guard Components



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Figure 8. Front and Rear Sight Components the hole in back of the trigger and the trigger-spring rod (#66) has properly engaged the safety. The trigger-spring rod also serves as the detent for the safety. Install the trigger bushing to secure the trigger. Insert the 90-degree bent end of the carrier dog spring (#61) in the hole in the bottom of the guard. Orient the carrier dog (#60) with the relief cut for the spring aligned with the spring.

Depress the carrier-dog spring slightly and install the carrier-dog pin (#59) from left to right, securing the carrier dog. The carrier-dog spring must engage the detent groove in the carrier dog pin. Trigger Guard and Stock. Assemble the stock (#57) to the trigger guard (#58). Secure with the stock bolt (#54), lock washer (#55), and flat washer (#56). Install the buttplate (#53) with two screws (#52). Breechblock. Install the extractor spring (#50) and extractor plunger (#49) in the breechblock.

Rotate the plunger so that the notch on the plunger is facing inboard. This will allow it to correctly engage and retain the extractor. Compress the extractor spring and plunger with the extractor (#51) until the pivot post on

the extractor can be seated in its recess in the breechblock. Seat the extractor and make sure the plunger (#49) is properly engaged. Install the unlocking plunger (#48) and the ejector rod (#47). Line up the slot in the rod with the lug on the front of the ejector (#46).

Line up the lug on top of the ejector with the matched cut in the breechblock and seat the ejector. Push the ejector forward. Install the firing pin, mainspring (#44), and mainspring plug (#43). Start the sear pin (#41) into the hole in the breechblock. Orient the sear correctly against the mainspring plug and compress the mainspring with the sear until the pin hole aligns and the pin can be installed.

Install the action-bar lock spring (#40) and action-bar lock-spring case (#39) in the hole in the bottom of the firing pin. Install the action-bar lock (#38) and secure it with the pin (#37). Install the sear-lock spring (#36) and sear-lock plunger (#35) in the hole in the bottom of the breechblock. Install the sear lock (#34) and secure it with its pin (#33). Action Bar. Install the magazine tube (#32), line up the screw holes, and secure with screw #31.

MAINTAINING THE REMINGTON MODEL 14 AND 14-1/2 CONTINUED

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Install the carrier-lever spring (#30), carrier-lever plunger (#29), carrier lever (#28), and secure them with pin #27. Next, install the carrier-friction spring (#26) and carrier-friction plunger (#25) in the carrier. Then depress the carrier-friction plunger, install the carrier in the action bar, and secure with the carrier pin (#23). The carrier pin is headed and must be installed from left to right. If the head of the pin is not on the left, the action bar cannot go fully forward.

Install the loading-door spring (#21) and loading-door plunger (#22) in the loading door (#20). Install the loading door in the action bar and secure with the loading door pin (#19). Barrel and Receiver. Install the magazine follower (#14), magazine spring (#13), and magazine plug (#12) in the magazine tube, and secure the plug with the plug screw (#11). Install the action bar into the barrel and receiver from the rear. While moving the action bar forward, put the action-bar cover (#8) and forend (#6) in place.

Install the cartridge stop (#9) in the receiver. Secure the action-bar cover to the receiver with the cover screw (#7). Secure the forend with two screws (#5). Slide the action bar forward and place the barrel and receiver assembly (#2) upside down on your bench. In the breech-

block, cock the firing pin (#45). Use a screwdriver and push straight back on the front of the firing pin until it engages the sear (#42). Place the breechblock in the receiver with the front in the clearance space in the top of the receiver.

Move the action bar to the rear. Press down on the rear of the action-bar lock and slide the action bar all the way to rear. Push down on the rear of the breechblock to engage the action bar, then move the action bar with the breechblock all the way forward. The breechblock will lock into the receiver. Pull the takedown screw (#1) to its stop. Line up the rails on the trigger guard with the mating grooves in the receiver and slide together. Tighten the takedown screw.

As a final check, I use dummy cartridges again to make sure everything is assembled correctly and functioning properly. If the gun is going back into service with live ammo, be sure to check the headspace. Conclusions The design of the Remington Model 14 and 14-1/2 made them among the strongest and most advanced slide-actions of their time. They could handle cartridges of considerably greater power than any other rifle of similar type.

FROM THE ORIGINAL PAGE

This design became the basis for other rimfire and centerfire rifles designs, as well as some shotgun models. There are still a number of these guns in the field, and with the proper care and maintenance they will be around for another 90 years. ■

THIS DIGITAL ARCHIVE PRESERVES THE RECOVERABLE SOURCE TEXT.

RIFLES

Reader Forum

BY AMERICAN GUNSMITH EDITORS MAY 2004

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Savage Side Mount? I have a customer who wishes to acquire aside mount for a Savage Model 340. Does anybody still make such a thing, and can you suggest a source? Bill Van Steamburg We don't believe aside mount is made specifically for the Model 340, but there are several side mounts available for other bolt-action rifles. Perhaps one could be adapted for your customers' gun. We suggest you call Williams Gun Sight Company and discuss the possibilities with them.

SIG Trigger I recently purchased a used SIG 220 whose trigger stacks up at the end of the pull. It seems particularly evident in single action. (I have a SIG 226 that does not have this problem.) Can you give me any direction as to what I can do, or where I can go to get further info on making the trigger pull better? Could it be as simple as fully dismantling and cleaning (or using a preferred spray cleaner), or will it require some kind of stoning, etc.? Thanks in advance.

Doug "Jack" Goodworth A good cleaning can't hurt, particularly since you don't know how well the gun was cared for by its previous owner. The cleaning should be followed by proper lubrication. Three past articles were dedicated to the SIG pistol and may be of further help;

they ran in August 2001, January 2000, and January 1994. Mistimed S&W I hope you can give me some hints for a problem I'm having with an S&W Model 629-1 .44 Magnum a customer brought in.

About twice in every cylinder load, the hammer will fall on the empty case that was just fired. It does this in both single and double action. I numbered the chambers to see if it was doing this on the same chambers, and it is not. It's allowing the cylinder to come unlocked when this happens, and I can rotate the cylinder about 1/16 inch to make it lock back up. This only happens during recoil; I can't reproduce the problem when dry firing with the gun empty. Let me know if I didn't give you enough information.

Thanks. Ed Cockrell York, South Carolina You have a timing problem, Ed. Specifically, the hand may be deflecting away from a ratchet because the frame window is worn. This can be corrected with an oversize hand that's thicker than the original. Another possibility is a high ratchet. For more information, see the articles "Revolver Science" (December 2000) and "Correcting Timing Problems with S&W Revolvers" (September 2002).

If you need copies of these issues, call The Ithaca M37 Slam-Fire Myth In reference to the letter about the Ithaca Model 37 that fired while closing the action with the trigger squeezed, they do that. It is not safe, but is normal for earlier Ithaca pump shotguns as well as the Winchester M97, M12, and many other brands of older shotguns and slide-action rifles. They do not actually fire unless the breech bolt is locked.

If the trigger is held on an old-style lever gun and the Winchester/Browning single shot and the action closed, they will also fire. This also happens with my Browning Traditional Hunter. When and where the “slam-fire myth” originated I cannot say. Back in the 1970s, gun dealers used to sell the Ithaca M37 shotguns with the words “Slam Fire” on the price tag.

Then they would proceed to tell you that the Ithaca Gun Company had invented the Slam Fire: “All you gotta do is hold the trigger back, and slam the action back and forth, and keep firing.” If the Winchester M1897 predates the M37 Ithaca by 40 years, and fires while closing the action with the trigger pulled (as does the 1890 .22 pump), then the Ithaca Gun Company didn’t invent anything.

Somewhere I read that when Browning reintroduced the M12, the action had to be redesigned with a positive disconnect to prevent this in order to be imported. The Ithaca has also been modified, but I do not know when or at what serial number. The term “slam fire” probably originates from the Vietnam war, and is exactly what the GI point man would do in jungle combat—hold the trigger and keep firing, especially during an ambush. Earlier Ithaca M37 repeating shotguns can be uncocked.

Clear the firearm of any live ammo and with the safety off, release the bolt stop, slide the action back about 3/8 inch, and release the hammer with the trigger. The hammer will hit the back of the bolt, and prevent an actual dry-fire. This is good for long-term storage. This is the same procedure used for some autoloading rifles and shotguns, such as the M-1, the M-14, the Mini-14, the Remington M8, and the Ithaca -51. The Model 37 is the only pump shotgun that I know of that will do this. Kenneth H. Windeler St.

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Augustine, Florida Belgian Double I have a double-barrel, side-by-side 12-gauge shotgun that I need some parts for, but all I know about it is from the markings on it. One side is marked "Occidental," while the other side says "The Interchangeable." On the barrel, it says "Belgium, Choke Bore, Best Rolled Steel." It also has an oval with a crown on top, and inside the oval is "." One last note: It has two external hammers in the shape of "6." Do you have any info on it?

Jerry Griffith The only note we could find on your shotgun turned up in an early edition of The Firearms Price Guide. There-in, it is cited as Belgium, circa 1880, various gauges, external hammers, and

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READER FORUM CONTINUED

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Damascus barrels. Maximum value is listed as \$150. You might get more information by writing to the NRA Museum (Waples Mill Road, Fairfax VA 22030). We doubt you'll find any parts for it, and seriously suggest you do not fire modern high-brass loads in the gun. Winchester Model 93 Parts I recently acquired a Model 93 shotgun in great shape. The problem is it doesn't always strike the firing pin with enough force to fire.

I'm thinking to give it a good cleaning first, but with that failing, where can I get parts or drawings for the 93? Will parts for the Winchester 95 or 97 work? Also, is it safe to fire modern loads in the 93? Thanks for your time. Charles Potts The actions are different and the 93 parts do not interchange with the 95 and 97. We suggest you try Buckingham's for parts and the NRA Museum (Waples Mill Rd., Fairfax, VA 22030) for a schematic.

Mosin-Nagant Firing Pin I have a Mosin-Nagant M-44 7.62 X 54 that I am sporterizing. I want to replace the bolt handle with a bent handle to accommodate a scope. I am able to break down the bolt to a point, but I don't know how to get the firing pin out. The screw in the back of the bolt turns out to a stop and in to a stop, but doesn't release the pin, and I'm hesitant to force it. It seems to me that all this screw does is adjust the firing-pin travel. Any information you have for me would be greatly appreciated.

Tom Jones From what we've read and heard, the bolt-cocking piece is pulled back and turned counterclockwise (to the left as the cocking piece faces you) until it stops turning. The bolt head and firing-pin guide

are pulled off to the front. The bolt head is then turned to the left and removed from the guide. Get a good grip on the remaining assembly, push the firing pin down against a soft wooden block firmly enough to disengage the cocking piece from the bolt.

Then unscrew the cocking piece and remove the firing pin and firing-pin spring. Silver Solder Info In your May 2002 issue there was an article about silver soldering. The author recommended inserting a hardwood dowel into the barrel before heating it to prevent "scaling." Well, the dowel charred up and left charcoal inside the barrel next to where I removed the sight ramp. I am having no luck removing this, and fear that I have ruined the barrel. Any ideas on how to remove it or what I might have done wrong?

What is "scaling" and how does this technique prevent it? Dave Belzak "Scaling" means to flake and form scales—almost like fish scales. As stated in the article, when it accumulates on rifling, it is next to impossible to remove. During the silver-soldering process, the hard wood dowel is supposed to prevent scaling when the wood chars and smokes.

If the deposit remaining in your barrel is charcoal, try immersing the muzzle in turpentine, Varsol, or mineral spirits to soften the material, then attack it with a bronze bristle brush. If the deposit is indeed scaling, and little more than a hazing in thickness, you could try a dry bronze brush, then the same soaked with copper solvent and again with the brush wrapped in 0000

steel wool or synthetic steel wool. Should all those measures fail, the barrel will likely have to be re-rifled.

You didn't mention what type of silver solder you employed, but the condition existing in your barrel suggests it had a high melting point.

Custom Gunmaker's Guild metalsmiths have advised the use of 444 silver solder (available from Brownells) which contains no lead and has a low melting point. These experts tin both cleaned surfaces to be joined with 444, secure them in position, and then apply heat to "sweat" the related parts together. Model 12 Carrier I am having a problem with a Remington Model 12, .22 Rem. Special. The customer brought this gun in because it had no carrier.

I have since replaced this, but it won't lift the cartridge high enough into the bolt face to feed. I also tried anew carrier dog, but that also did not cure the problem (same problem). Is the carrier of the .22 Long Rifle different from the .22 Special? Thanks. Wade Bentley There are significant differences between the .22 LR and .22 Rem. Special in base diameter, rim diameter, case length, and overall cartridge length. It follows then that the carrier, at least, would be as different.

We suspect that this is the problem. Hot Smith & Wesson 27-2 I am going to attempt to "restore" a Smith & Wesson 27-2 revolver, which was left in a burning motor home. It was a real mess! So far, everything checks out good, except for a few springs, which have just been replaced for good measure. I still feel that I want to totally strip the weapon and check everything for hardness

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(continued from previous page) and spring strength. Now come the dumb questions: Before I punch out the barrel-retaining pin and attempt to remove the barrel, I need to know if the thing has a right-hand or a left-hand thread. The 27-2 has a right-hand twist in its 8-1/8-inch barrel, and my 1911 .45 ACP Norinco clone has a left-hand twist in its 5-inch barrel. Is this just a Chinese thing, or what?

My understanding is that handguns have a right-hand twist so that the torque of the fired round pushes the grip into the shooter's hand (For right-hand shooters, that is). Incidentally, I have run a lot of rounds through the Norinco and, bad press notwithstanding, it has always functioned perfectly. I would appreciate an answer about the thread on the S&W at your convenience, and any comments on the CW/CCW twist difference. Bill Farrant No question is dumb and we admire your ambition.

Fire-damaged guns present all manner of problems as has been reported before in these pages. Testing for hardness usually involves the use of a calibrated center punch (see "Flintlock Repairs" in the June 2002 issue). The equipment is expensive and the test can mar or deform the part being examined. Beyond that, some components of the 27-2 are case hardened, which

could be violated by the testing. Consider carefully the high pressures generated by the .357 and reconsider your project.

Our advice is to retire the gun. If you decide to press on regardless, the barrel comes off counterclockwise. No, the left-hand twist isn't a Chinese thing. Hold your right arm straight out from the shoulder as though firing a handgun. Try rotating it to the right, then to the left. You have about 180 degrees of movement in the latter direction before your elbow joint yells "enough" and maybe half that amount clockwise. The M1911 was originally checked out for use by the military with the U. S.

Cavalry and has always had a left-hand twist. The pistol, so equipped, had less of a tendency to separate itself from the hand of a hard-riding trooper. Although right-hand-twist aftermarket barrels can be purchased, they make recovery more difficult due to the anatomy of the human arm. Now you know why the RH twist on some of today's larger hand cannons can and do cause considerable joint pain. And why rapid fire with such guns is infrequently pursued or, when pursued, not often enjoyed.

We are happy for you regarding your experience with the Norinco clones. Ours has not been likewise. In more than one case, the machining was so rough it was impossible to move the slide on the frame. It

must have been a bad day in the land of the Great Wall when some of those things rolled off the assembly line.

Polishing Compounds I was reading in the March 2002 issue, in the article "Modifying Pistols for High-Performance Ammunition," about polishing the feed ramp and the sides of the magazine to help the bullets feed and to eliminate any burrs on the magazine. I was wondering what kind of polishing compound is recommended. I've noticed a lot of different ones out there, and even heard that some toothpastes will work. Could you please steer me in the right direction? Steven D.

Allen We like Crest for teeth, but prefer a fine grit Cratex wheel (from Brownells) in a slow-turning Dremel tool held by a steady hand for feed ramps. And we suggest you use nothing coarser than fine crocus cloth on the magazines. Smoothing the 700 My Remington 700 Titanium has a rough feel when opening and closing the bolt—sort of a "grinding" feel. How can I smooth it up? Also how can the trigger pull be adjusted—it's hard at 5 pounds? Did you ever do an article on this gun?

Tom Leshinski You could try smoothing up the bolt ways in the receiver, and polishing the bolt. There's an article in the October 2002 issue on correcting other people's mistakes that covers adjusting the trigger pull. But don't take it down under 4 pounds for field use.

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