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INSIDE THE ARCHIVE

COMBATING AR-15 BOLT CARRIER TILT

COMPETITIVE PISTOL • RUGER SIX-SERIES REVOLVERS • METAL POLISHING • GUNSMITHING THE TOKAREV TT-33

ORIGINAL METHODS. MODERN ACCESS.

ARCHIVE EDITION 161

DIGITAL ARCHIVE EDITION

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PISTOLS

Competitive Pistol

BY AMERICAN GUNSMITH EDITORS MAY 2017

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Gun owners in general, and gunsmiths in particular, should embrace any form of formally-organized shooting activity, including those they don't personally partake. All organized shooting events help showcase all the positive attributes of gun ownership. They are the embodiment of skillful, safe, and responsible shooters and the antithesis of every negative gun owner stereotype.

Informal shooting ("plinking") is all well and fine but this rarely leads to skill beyond casual, novice familiarity and cannot counter negative stereotypes. A hundred safe but casual plinkers can't improve the damaged impression of gun owners given by one shot-up public road sign. Taken as a percentage of total number of gun owners, competitive shooting has declined over the years.

In the 1960s, when the National Rifle Association had just over 400,000 total members and three primary competitive disciplines, almost a third of the general membership held classifications. Today, that ratio is about two percent. Even with a ten-fold increase in card-carrying membership and seven primary disciplines with multiple classifications available in each, raw number of classified competitors has waned. Learning about the options is good first step.

Gun Digest Shooter's Guide to Competitive Pistol Shooting by Steve Sieberts is such a guide. Sieberts is a former member of the Army Marksmanship Unit and has competed in various disciplines up through the na-

tional level for decades. Every author describing a given shooting sport seems to use "fastest growing" as a descriptor. In truth, popularity of specific disciplines ebbs and flows. Conventional disciplines ruled the roost for decades.

Even with the growth of other events, Camp Perry still sees more competitors at the annual NRA and CMP National Matches than any other single event in the United States and there are still more classified bullseye shooters than other pistol disciplines. Silhouette enjoyed dedicated regular columns in a number of periodicals through the 1970s and early '80s and still attracts a dedicated, if smaller, following today.

Practical events started with the Leatherslap contests organized at Big Bear by Jeff Cooper and friends have spawned a number of new disciplines attracting shooters around the country. Participation in anything is a potential win. A well-promoted contest makes gun owners look a little better. For gunsmiths, this is even more beneficial. Competitive shooters shoot. A lot. They'll need repairs more often and will want modifications to chase better scores.

More participation in more and divergent events means more and different types of guns needing work. Gunsmiths with national reputations earned them by becoming the go-to shop for champions. Being aware of and catering to these shooters is great way to build business.

PEOPLE & COMPANIES

Ruger Six-Series Revolvers

Here's a fresh look at Ruger's Six-Series, classic and well-made guns that still see a lot of use.

BY DICK MAHEU MAY 2017

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Ruger introduced its Six-Series with the Security-Six in 1971 and Speed-Six in 1974 as a competitive answer to the double action market that had basically been cornered by Colt and Smith & Wesson to that point. These sold from 1972 to 1988 and Bill Ruger set the industry back on its haunches with the new and excellent Six-Series revolvers in .357 Mag, .38 Special, and 9mm. Some models were also exported in small numbers to Britain chambered in .38 S&W.

Ruger's design was completely revolutionary and made without sideplates, adding to its strength, along with its sub-assembly type engineering. It was designed for simplicity and ease of maintenance and came in three basic models: The Security-Six with squared back butt frame and adjustable sights, the Police Service-Six with squared back butt frame and fixed sights, and the Speed-Six with rounded butt frame and fixed sights. All three models came in 2 3/4" and 4" barrel lengths as well as 6" in the Security-Six.

Special order revolvers such as the Speed-Six featured in this article came with a 3" barrel, originally a special order for the U. S. Postal Service Inspector Force. Target and semi-target grips were also available from the facto-

ry. There were several Commemorative issue revolvers to honor various law enforcement groups as well. Many folks bemoan the passing of these great revolvers as their size and strength made for ease of handling by both men and women alike.

I have owned several of these revolvers in all three models over the years, including those pictured and used in this article as well as the GP-100 and Redhawk pictured for size comparison. I like the size of the GP and Redhawk for hunting use but find them much too large and unwieldy for everyday defense and use. These revolvers can take a lot of abuse and many thousands of rounds fired. Few things go wrong with them. Most of the problems encountered are due to amateur gunsmithing and tinkering!

I'll cover complete disassembly and some common problems along with aftermarket parts that will enhance the use of these revolvers. Although accurate figures are not forthcoming from Ruger management, it is believed well in excess of one and a quarter million Six-Series revolvers were produced and sold during its production time frame.

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Safety Features Only when the trigger is in its rear position is the hammer blow transmitted to the firing pin through the transfer bar. This is a positive means of internal safety designed to prevent firing should the gun be dropped or the hammer struck. When the cylinder is opened, the hammer cannot be cocked, and when the hammer is cocked, the cylinder cannot be opened. Caution: Before any and all disassembly, insure that the revolver is empty of all live cartridges by examining an open cylinder.

Field Stripping Although the revolver can be field stripped using a coin and hammer spring strut, I disapprove of these methods

except in an emergency. The use of proper tools insures proper safety and professionalism in the disassembling of any firearm. Remove the grip screw and grips with care as they may cling to the frame very tightly. I actually have Herrett aftermarket Speed-Six grips on my Security-Six in this article as I like the feel and fit of them.

Just a slight bit of the back of the grip frame protrudes from the lower part of the grips. There should be a small disassembly pin inside the grip aligning roll pin at the bottom rear of the frame, or in some cases, a small hole in the grip. If not, a #43 drill bit shank or similar size pin (paperclip) can be utilized

to capture the hammer strut assembly. Cock the hammer and place the pin in the through-hole at the bottom of the strut and slowly release the hammer with the trigger pull.

Remove the hammer strut assembly out either side of the frame. If the strut assembly needs to be disassembled, place the base plate against the side of vise jaws and press in on the plate with hand protection, removing the pin

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Ruger Six-Series (Specifications subject to change without notice) 1 Barrel 2 Crane 3 Cylinder 4 Cylinder Center Lock Pin 5 Cylinder Center Pin Spring 7 Cylinder Latch 8 Cylinder Latch Plunger 9 Cylinder Latch Spring 10 Cylinder Release Button 11 Cylinder Release Pivot 12 Cylinder Release Spring 13 Cylinder Release Spring Plunger 14 Disassembly Pin 15 Ejector 16 Ejector Rod 17 Ejector Rod Washer 18 Ejector Spring 19 Firing Pin 20 Firing Pin Rebound Spring 21 Frame and slowly releasing the hammer spring.

Do this with caution as this is a very powerful spring. Reassembly is in the reverse. Push the hammer pin out to the right. Pull the trigger to the rear and remove the hammer assembly through the top.

Push in on the trigger guard plunger with an appropriate pin 22 Front Latch 23 Front Latch Cross Pin 24 Front Latch Spring 25 Front Sight Blade 27 Grip Panel Boss 28 Grip Panels 29 Grip Panel Ferrule, Left 30 Grip

Panel Ferrule, Right 31 Grip Panel Dowel 32 Grip Panel Screw 33 Hammer 34 Hammer Dog 35 Hammer Dog Pivot Pin 36 Hammer Dog Spring 37 Hammer Dog Spring Plunger 38 Hammer Pivot Assembly 39 Hammer Strut 40 Mainspring 41 Mainspring Seat 42 Grip Medallion 43 Pawl 44 Pawl Plunger 45 Pawl Spring 46 Rear Sight 48 Rear Sight Blade 49 Rear Sight Elevation Screw 50 Rear Sight Elevation Springs 51 Rear Sight Windage Screw 52 Rear Sight Windage Spring 53 Recoil Plate 54 Recoil Plate Cross Pin 55 Transfer Bar 56 Trigger 57 Trigger Bushing 58 Trigger Pivot Pin 59 Trigger Spring 60 Trigger Guard 61 Trigger Guard Plunger 63 Trigger Guard Plunger Spring punch.

I utilize a Ruger “popper” I made to use with tools for complete disassembly. There can be a little rust in the plunger cavity so you may have to squirt a little oil or WD-40 in there to ease movement of the plunger. Remove the guard assembly down and out of the frame. Removing the

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guard will free up the cylinder assembly to be removed. Unlatch the cylinder assembly and move it out to the front. The cylinder stop will probably fall out of the frame so take care not to lose it. If it doesn't fall out, remove it downward. You can remove the cylinder stop plunger and spring now. The revolver is field stripped for routine cleaning. Reassembly is in the reverse.

Note, when reinstalling the trigger guard assembly, use a pin punch or small screwdriver to push the cylinder hand forward and right to prevent the back lobe of the hand from jamming in its channel, damaging it and the frame. Detail Stripping I will make note of parts that are not routinely disassembled unless required for repair or replacement. For the trigger guard assembly, pull the trigger slightly to the rear and remove the transfer bar to the left and out. Push out the trigger pin either way.

The trigger pin is 0.0915 in diameter and 0.484 in length for reference. Remove the trigger assembly from the top of the guard. Remove the cylinder hand out the right side of the trigger while restraining the cylinder hand plunger and spring. This spring is of medium strength and will not usually get away from you, but be sure to restrain it. Remove the plunger and spring. The plunger is approximately 3/32" in diameter and 0.370 in length. The spring is approximately 0.095 in diameter and 0.5" long.

Use the appropriate size roll pin punch to remove the trigger bushing. This is normally kept in place unless putting in a custom hammer and trigger spring kit. I've included a picture showing the proper orientation of the trigger return spring with the long arm of the spring going to the front of the frame. This is a stout spring and should be for proper function and return of the trigger to battery. The trigger guard plunger and spring are not routinely removed in normal maintenance unless required for repair.

If necessary for removal, use the appropriate size roll pin punch. Note, this is a very stout spring and the plunger and spring will go into orbit if not properly restrained! Place a drop of oil on the plunger cavity and work it a few times. There is absolutely no reason to put a lighter spring in there. You want to insure that the guard stays in place while firing the revolver! To detail strip the cylinder assembly, remove the cylinder stop plunger and spring. The plunger is 1/8" in diameter, 1 1/16" in length.

The spring is 0.115 in diameter and 5/8" in length and of medium strength. Unscrew the extractor rod clockwise as viewed from the front with padded jaw pliers. It is left hand threaded! Some of these are in tight and it would be a good idea to put empty cartridge cases in opposing chambers to give this effort support. Incidentally, the cylinder turns counter clockwise during

normal operation as from the rear of the revolver. Remove the ejector rod toward the front.

Remove the center pin and its spring toward the front. Make note of the orientation of the pin and its spring when removing for proper reassembly. Remove the crane toward the front, the ejector spring from the front of the cylinder, and the small washer from the barrel of the crane. This washer acts as a compressor for the ejector spring and is very important in the operation of the cylinder. It is very small, so don't lose it!

The factory recommends replacement when it is removed but I personally have never done this and see no need as long as there is no damage and it is serviceable. Remove the ejector/ ratchet from the rear of the cylinder. Note that it is "keyed" for proper reassembly. Push the cylinder lock pin out the rear of the ratchet barrel. Reassembly of the cylinder assembly is in the reverse except where noted above.

For crane latch disassembly and the ejector shroud, unscrew the vertical screw that holds the crane latch assembly in and out the bottom of the upper curved frame. Push in on the nose of the latch with a small pin punch at the center of the recoil plate and remove the latch and its plunger and spring. Restrain the plunger and spring while doing this to prevent their loss. Do not remove the latch assembly if it is working properly. Just give it a drop of oil at the plunger tip and work the latch

RUGER SIX-SERIES REVOLVERS CONTINUED

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a few times. Drift out the small roll pin in the ejector shroud to release the forward latch plunger and spring. As with the latch assembly, don't remove unless it has failed as working in a drop of oil will do. On to the sights. The front sight is retained by a small roll pin. Leave in place if serviceable. The rear sight (Security-Six) is fully adjustable and it and its elevation springs are held in by across pin in the top strap. Leave it in place unless service is needed.

The firing pin retaining pin is contour finished to the frame and should not be removed unless repair is needed. Some damage to the frame usually occurs when this pin is removed. To take down the hammer assembly, pushing out the crosspin at the front of the hammer will allow removal of the double action lever and its plunger and spring. Leave this unit in place unless repair is needed. Reassembly is in the reverse for these previous assemblies.

Reassembly/Troubleshooting Six-Series revolvers have a left-hand threaded ejector rod that needs to be screwed in counterclockwise as viewed from the front. When replacing the cylinder lock pin in the ejector, its larger end goes toward the front of the assembly. Make sure the ejector spring washer is inserted into the arbor before replacing the crane in the cylinder. The washer is usually slightly concaved. Face the concaved part toward the spring.

Be sure to pull the trigger to the rear when dropping the hammer back into the frame so the top of the trigger mates up properly with the double action lever on the hammer. Once the hammer pin is installed, pull the trigger a few times to make sure the hammer comes back on each pull. When installing the hammer spring assembly, the longer portion of the baseplate goes to the front of the grip frame. If you have difficulties, first things first!

Anytime you have a revolver with problems, start with an examination of the parts you can readily see and give the re-

volver a thorough cleaning. Dirt normally accumulates in the crane and cylinder assembly, especially under the extractor "star" and at the front of the cylinder. This frequently causes a sluggish cylinder operation which can create timing problems. If the cylinder is hard to open or close, it's often caused by a loose ejector rod. Make sure it is tight.

I don't recommend any type of Loctite because you want to be able to take this assembly apart readily when need be. If threads have been stripped out, replace the parts. Another cause of hard to open/close cylinders are bent cranes. A lot of "drugstore cowboys" out there like to flip or slam home cylinders. A very harmful practice. It's your money, let your conscience be your guide!

With a proper fitting crane, the cylinder should close up smoothly and like a bank vault door with very little separation of the parts. For easier trigger pulls, I recommend an aftermarket spring kit. Brownells sells a very good reduced power kit called the RDA-101 for Series-Six revolvers. It's common to find that someone has cut coils off the hammer spring, giving erratic ignition, so just go with the proven aftermarket kit as it will insure reliable firing.

I don't recommend any filing, grinding, or sanding of parts. Stoning is the only way to go on these revolvers by simply smooth out mating surfaces without changing angles. It's OK to break rough edges slightly, as on the hammer spring strut, frame openings, and the like without compromising the safe and proper operation of the revolver. It's easy to take metal off apart but very difficult to put it back on! Check the double action sear in the hammer for free movement and smoothness.

Do not mess with the factory spring in this assembly as it was engineered properly to begin with. Check the cylinder latch for proper timing and positive locking of the cylinder. You can slightly polish the latch

but do not remove any metal and leave the edges square. Check the two pins in the cylinder that guide the ejector into its proper seat in the cylinder. Bent or loose pins can give you timing and/or latching problems.

In some cases, you may encounter an ill-fitting trigger guard assembly because of someone forcing it open with improper tools. This can cause all kinds of ignition problems. Leave this kind of problem to the professionals! If you have a transfer bar hanging up on the bottom of the firing pin, it could be one of several issues. There again, let a competent gunsmith diagnose the fix. The pawl in the trigger assembly and the ratchet teeth are the heart and soul of revolver operation.

Timing and any problems here should be addressed by a competent gunsmith. Don't try to smooth these parts out for easier operation as you'll be opening up a can of worms! Excessive end shake is rarely an issue with these revolvers because of their engineering. If you have a problem in this area, take it to a competent gunsmith for proper diagnosis and repair.

Parts for these revolvers are getting scarce and you should call the factory before sending any revolver to them to insure proper and timely available service. Some noteworthy specifications. The barrel/cylinder gap should be between 0.004 and 0.008 with 0.006 being optimum. Headspace (the distance between the cartridge head/ recoil shield) should be 0.010 +/- 0.002. Ruger's Six-Series revolvers were well made and finished. With proper care and use they should last your lifetime and then some.

Again, I reiterate, if you're in doubt as to the problem with your revolver, take it to a competent, professional gunsmith for service. AG

FINISHING

Metal Polishing

Before refinishing a metal part on any firearm, the surface must be properly prepared. Here's how I polish gunsmith projects.

BY PAUL MAZAN MAY 2017

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Ve I received questions from readers asking what method I prefer for polishing gun parts before rebluing. As I thought about how to answer, I realized there are many methods and plenty of controversy, not to mention numerous different problems to be solved that would dictate the approach to the job. The material the part is made of, the condition of the surface to be refinished, the geometry of the part, and the degree of finish desired all play a role in determining the method used in getting the wanted result.

Let's break some of this down and see if we can make any sense of it. We'll start with the material of the part. Steel and stainless steel parts are approached in the same way and we will spend most of this article talking about the methods of bringing them to a degree of shine that will allow us to arrive at the wanted finish.

Alloys like those used in the receivers of many shotguns and lightweight handguns cannot be blued so refinishing efforts will be restricted to some sort of alternative finish such as baking lacquers or spray-on epoxies. Most of these receivers are anodized at the factory. If you can locate an anodizer you may be able to have receivers

you work on anodized but it is not a finish most of us can apply. Regardless, the preparation of the metal is very similar to the methods used on steel.

Plastic or polymer parts like the frames of many new pistols and a few newer shotguns are a totally different story. While it is sometimes possible to sand or polish out scratches or dings, it is a hand operation only. Unless you have a lot of experience, most power machinery will melt the polymer at the point of contact before you even realize it is happening and make the job much more difficult. The next consideration is the condition of the surface.

This is the biggest variable in determining where to start the refinishing process. You may be faced with anything from a deeply pitted barrel and receiver that looks like the surface of the moon all the way to something that simply has had the finish worn off. We will start with the worst scenario, although you will have to determine at what point you will jump in with your project.

Considering the geometry of the part, flat receivers such as the Winchester 94 and most shotguns take a different approach

than round barrels or complex metal parts like trigger guards. Each presents its own problems in polishing and each must be approached differently. Small parts present other problems and each has to be analyzed to determine how they can be polished. The final issue is the degree of finish.

Back when I first decided I'd like to be a gunsmith—along with a number of other foolish notions—there were only two acceptable metal finishes: Nickle and high-luster blue. That was it! Fortunately, times have changed because that high luster blue is difficult to achieve and the slightest error stands out like a dude at an Old West barbecue.

Today, we have hunter finishes that are satin and don't shine and reflect the sun into the animal's eyes, tactical finishes that are flat, a variety of colors, and bead blasted finishes that resemble old time Parkerizing. Polishing Example Let's start with a badly pitted gun that is in serious need of help. The first step in any refinishing job requires total disassembly of the gun. You want to remove every screw, spring, and pin to examine each of them and decide how much work each will require. Even some of the

METAL POLISHING CONTINUED

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Start with 60 grit and work down to a grit that leaves the finish you want. Change the location of the file on each stroke to keep from filing flat areas onto the surface. worst guns I've seen have been pitted deeply on one side but had a pristine bore and internal parts. Unfortunately, there are also guns that have been so abused to make them relics only as they cannot be safely refinished as it would require removing so much metal as to render it unsafe or inoperable.

Hang those over the fireplace and forget them. Once disassembled I recommend stripping all the finish off the gun with a good rust and blue remover. These remove all the old finish and any accumulated rust, including in the holes, under dovetails, and in corners that are really hard to get into. This should leave steel parts a light gray in color. Flat surfaces can now be smoothed out by holding them securely in a padded vise. Use a file by placing it flat on the surface and drawing it toward you.

Appropriately enough, this is called draw filing. Like almost everything associated with refinishing, this is a rather slow process and

needs to be continued until all traces of all the pits are eliminated. Round pieces like barrels can also be draw filed to smoothness but require moving the file around the axis of the barrel on each stroke to keep from forming any flats on the barrel. A second option is to use a barrel spinner.

These are available from Brownells (#184-020-000AQ) and are used with an abrasive drum or Be careful around any barrel markings. If they are damaged beyond saving, remove them along with the pits. This should be a last recourse as it makes a much better job leaving them in place and having your finished product retain the manufacturer's name and caliber markings as they were originally. If these can't be saved, remark the caliber for safety's sake using metal stamps before bluing.

With the pits removed, start the polishing process. Production shops normally polish with power-driven polishing wheels, however, unless you have done a lot of polishing I recommend to hand polish using clothbacked abrasives on a hard backer. Start with a 60 grit and sand along the length of the flat part

until all the scratch lines from the draw file are removed. Never sand flat parts just using your fingers as a backer as that is how edges get rounded and screw and pin holes get dished out.

I like a hard felt glued to a wood block, or just a wood block with a smooth surface will do. When moving from the flats to the barrel or any round part, the piece is once again held in a padded vise. Cut your cloth abrasive into strips one to two inches wide and as long as the polishing wheel. It is much faster than filing but you must pull the barrel from the receiver and keep the work moving across the abrasive surface to prevent grinding flats on to it. abrasive sheet.

Work the abrasive like you were shining a pair of shoes with a cloth. Sand back and forth and move the abrasive cloth down the barrel until all the scratches from the draw file or sanding drum are removed. This is a slow pro-

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cess. When the top of the barrel is done, rotate it in the vise until the entire barrel has a uniform scratch pattern all the way around and from end to end. Change from 60 to a 90 grit abrasive and repeat. Each time you complete the process with one grit, move to a finer grit and work. It is fast and easy to cut a groove in the metal before you know it if you fail to keep the work flat. Practice on junk parts and be proficient before you try this with a customer's gun.

It speeds up the work but you will still have to buff the places the drum can't reach. until all the scratches from the last, coarser grit are polished out. Repeat this process until all the parts have the desired degree of shine. In most cases, 120 grit leaves a nice finish that you can see yourself in. Most folks will stop here. Small parts are polished the same way

but you'll have to find ways to fit into curves, such as the inside of the trigger guard. You may need to use a dowel rod as a backer.

I've used Popsicle sticks as backers and used abrasive strips as small as 1/4" wide on tight radii. One thing I'll warn about is making sure there are no scratches. Far These must be sanded out or they will show through on the finished product. left from any of the coarser grits. As soon as the part is blued, any scratch will stick out and announce to the world that you missed a spot.

Depending on the job, you may not have to start with the file or even the 60-grit paper if the job is on a gun with just a worn finish. You may be able to jump in at the 120-grit level or even finer if working on a gun with no problems other than faded or worn bluing. Now you have the hard and cheap way of polishing a gun. Some of you may be thinking, "No way!

Can't you do a good job with power equipment?" Yes, you can but only if (that's a big "if") you are good with it and have the correct wheels and abrasive compounds. For many years, felt wheels have been used in professional shops and have produced beautiful finishes. The work goes much faster and is much less labor intensive.

The problem is you must have the money to invest in the tools and spend enough time learning on something of little or no value because the one thing power wheels will do in a big hurry is ruin the work. Spend just a little too much time on one spot and the entire piece has to be brought down to the level of that spot or it will show up as a flaw in the finish. If you mess up with power equipment you could be buying your customer anew gun. AG

FROM THE ARCHIVE

Combating AR-15 Bolt Carrier Tilt

BY JOE CARLOS MAY 2017

ORIGINAL PP. 11-16

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Eugene Stoner never designed his AR-15 to be a tack driver. It was intended to be a lightweight battlefield weapon but by good fortune it happens to be easier to work on than its predecessors. In spite of certain design elements, it is far more accurate than it has any right to be. With just a little bit of work, ARs can be made to perform nearly as accurately as expensive custom bolt rifles.

In order to shoot tight groups with any Stoner platform, the custom gunsmith has to correct certain elements of the rifle's design. Among them are tightening the fit of the upper to the lower and making the barrel extension more rigidly stabilized in the upper receiver. Getting uniform bolt lock up and consistently The large (0.078") gap shown at the top of the carrier hints at the severity of the problem. Use feeler gauges to measure. positioning the chambered cartridge is next.

I have written a number of detailed articles for American Gunsmith covering this and more. In order to fully integrate the material that follows here, it would be prudent to

review this. For example, it makes little sense to correct bolt carrier tilt if it just throws the gas tube out of alignment.

For those of you occasionally building a Stoner rifle for single round feeding only, review information and options on neck dimensions concerning chamber selection and conduct magazine checks on precision rifles feeding normally. Although I and other gunsmiths have known about how bolt carrier tilt degrades accuracy in Stoner platforms for decades, the first time I mentioned it in this magazine was near the end of "AR-15 Upper Quick Fixes: Match Bolt Carriers" in the May 2014 issue.

I have talked to gunsmiths and industry folks who actually knew Stoner that were aware of this issue when my younger self was running around the jungles of Viet Nam with an early XM16E1. Why is bolt carrier tilt a problem? The "bore" of the upper receiver is the hole where the carrier assembly lives. It's fat to promote reliable function but that also results in bolt carrier tilt due to gravity. When at rest, the tail section of the carrier bottoms out on the rear of the receiver.

Since the bolt is housed in the carrier, its face tilts at an angle to the bore of the barrel when the bolt face should be perpendicular to the center axis of the barrel. Gunsmiths building custom bolt action rifles use tight, expensive, custom actions to achieve this, some costing more than entire AR-15s. Bolt actions can have tighter tolerances due to manual action but self loaders can't.

Some AR shooters insert weights into the back of the carrier to increase dwell time (how long the bolt stays locked up upon firing) which makes tilting worse. You can see bolt carrier tilt by shotgunning AR and observing the carrier's rear in the upper receiver. This is how things line when using a Bob Sled or other solid, single feed magazine with no follower spring.

The trough facilitates single hand feeding and a spring-loaded plunger engages the bolt stop, but no spring exerts upward pressure on the bottom of the bolt carrier to cause carrier tilt. Conventional magazines complicate carrier tilt as their follower, spring, and ammunition exert upward pressure. Manufacturing tolerances, wear, damage, dirt, etc. causes

COMBATING AR-15 BOLT CARRIER TILT CONTINUED

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individual magazines to exert slightly different upward pressure. To see this, clear an AR-15 and slowly insert a filled magazine with the ejection port open. You'll see the carrier through the ejection port rise up a bit (about 0.010-0.020") as the magazine locks in place. The top cartridge pushes the bottom of the carrier up. The amount of upward lift depends on the fit of the upper to the lower, characteristics of the magazine, and/or dimensions of the upper receiver "bore" and bolt carrier.

A true match bolt carrier that is fatter in the front will normally exhibit less lift. This demonstrates what happens to the front half of the bolt carrier observable through the ejection port, but this article is about bolt carrier tilt and that happens to the back half of the carrier invisible when the firearm is fully assembled.

To visualize this, assemble an AR-15 with the buffer tube (some manufacturers refer to this as a "lower receiver extension") and the stock installed last so the carrier is observable through the back threaded part of the lower receiver. Inserting a magazine then reveals how much tilt is experienced at the rear of the carrier.

If you aren't assembling an AR-15, take a complete upper half and hold a filled magazine below the carrier where the lower normally would be until the bottom of the carrier is pushed up by the top round. It is easy to "overstate" the amount of lift using this method, however, so stop pushing upward before the feed lips contact the bottom of the carrier as this is more upward pressure than found in an assembled rifle as the increased friction would induce stoppages.

Before you ask, the upward lift from a magazine is not a "self fix" correcting bolt carrier tilt. Because of the magazine variables described, no two magazines lift the carrier exactly the same and such variables conspire to alter point of impact. Consider that a car that doesn't sit level while on flat ground will still be crooked if raised by a mechanic's lift. The same is true with bolt carriers. Far Bob Sled magazines for the AR-15, AR-10 (for you grownups), and .22 L.

R. (far right) exert no pressures on bolt carriers. There was an understanding of this issue early in the AR-15's development. I have been lucky enough to find a few of these guys still around who told me of their early efforts. Initial attempts included silver soldering strips of thick shim stock to either side of the carrier bottom. These sections of raised

shim were called "anti-tilt pads" and the term has stuck, though the approach hasn't. Groups were improved but function was hampered.

Consider a firearm where the buffer tube isn't in perfect alignment with the bore in the upper receiver. That could cause those silver soldered anti-tilt pads to crash against the leading edge of the tube, much like a potato peeler turning up a section of the pad and jamming up the whole gun.

With early efforts not being entirely satisfactory, it seemed like most gunsmiths just ignored the bolt carrier tilt problem for decades, though I kept it in the back of my mind hoping for "divine inspiration" or anew "smart guy" that might arrive at satisfactory solution. I had my gunsmithing hands full keeping nearly 300 AR-15 rifles operating and researching other improvements to U. S. Army Reserve Shooting Team firearms and was swamped with work anyway.

I remembered reports from early gunsmiths silver soldering shim stock on carriers caused function problems. My initial goal was to try to find a low tech, affordable method to level the carrier, and then run enough machine rest tests to see if accuracy was enhanced enough to warrant further research. The secondary goal was reliability. In

COMBATING AR-15 BOLT CARRIER TILT CONTINUED

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my “misspent youth” I competed in a number of pistol competitions, earning two of my three gold Distinguished badges that way. I own several 1911 pistols customized by Jim Clark, Sr. Some of them have a Giles Slide Guide, a built-up section at the front of the dust cover. The guide is drilled and tapped for two set screws set at 4:30 and 7:30 o’clock, each advanced equally inward until they bear against the bottom of the slide to remove vertical and horizontal slop.

Machine rest groups proved this effective in tightening groups. My first anti-tilt pads borrowed this idea. Not all that difficult! Begin by drilling two holes in the upper receiver, one on either side tight against the lug for the rear takedown pin, and tap to 8-32—the same thread as used in most windage-adjustable front sight housings with four set screws. Use 1/4" long Allen screws. Employ feeler gauges to measure the gap between the top of the carrier and the receiver.

Run each set screw up to where they just touch the bottom of the carrier’s rear. Cautiously continue to move each set screw equally while taking periodic feeler gauge readings. When the gap between the top of the carrier and the receiver is halved, it should be level. Double check with feeler gauges to ensure there is the same measured gap between the bottom of the carrier and receiver.

Once set, thoroughly degrease, then douse the female threads in the re- Far Allen screws are moved in about four times higher than they would be normally to show up better in the photo. ceiver and the threads on each set screw with red Loctite and repeat one last time. To avoid malfunctions, mill, grind, or file a 45-degree bevel on the abrupt factory 90-degree leading edge of the carrier’s bottom rear.

I also heavily grease the tops of the set screws and corresponding bottom section of the carrier with the Tetra Gun Grease.

Thoroughly clean the carrier and receiver after each range session. An ultrasonic unit is helpful. I have never had a malfunction to date with these pads, however, the very first time I attempted to clean the bore of a rifle with this first generation design I discovered I couldn’t get my bore guide in the upper receiver because the set screws protruded too far into the receiver.

The fix is to mill clearance slots in the bore guide but the cost of a quality metal bore guide plus machining time could easily be greater than the cost of installing the anti-tilt pads. Because I wanted the fix to be affordable, I went back to the drawing board. Far For first generation pads, (left) heavily coat the tops of both set screws inside the upper receiver and corresponding contact surfaces on the bottom of the carrier tail.

Right, heavily coat generation two pads and the corresponding surfaces inside the receiver.

COMBATING AR-15 BOLT CARRIER TILT CONTINUED

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An ultrasonic unit will be helpful. Before I describe my second generation attempt, I'll tell you an interesting story with the first generation pads. In my December 2015 article "Magazine Checks", I showed a target scan where one magazine shifted point of impact 2.25" from two other mags at 100 yards and another demonstrating a shift at 300 yards. Those shifts were dwarfed by something that happened when first testing my generation one anti-tilt pads.

I initially had not added Loctite to the threads of the set screws and was beginning my machine rest test groups. One of the two set screws moved of its own volition, likely due to vibration. These test groups show how far a magazine can move the downrange POI at 100 yards, or forces caused by rubbing against the bottom of a moving bolt carrier. I found out later that it was actually screwing up, putting increased lift to the back of the carrier with each shot.

After 18 shots I could tell that the carrier was running funky and was near the point of locking up. Those 18 shots began at 6 o'clock and tracked an incredible 6.75" up and off toward 11 o'clock, way more than I would have

ever expected. I meant to save the target so I could scan it and include with this article but somehow it must have mistakenly gotten discarded.

Sorry about that, however, this clearly points to the fact that the orientation of the bolt carrier has an enormous influence on point of impact and their need to run straight. We also need them to operate consistently or our groups and zeroes will suffer. For my second generation design, I returned to the decades-old practice of locating the pads on the bolt carrier tail using 5-40 (3/16" long) cap screws with small button heads about 2/10" in diameter.

The small heads contribute less drag but provide the needed support. The carrier tail is drilled, tapped, and counter bored at both the 4:30 and 7:30 positions. The locations provide upward lift as well as a little side-to-side stability. The counter boring permits the heads to seat flush with the sides of the carrier in the event the pads interfere with function in any way.

I like the domed-shaped heads because their taper gently eases the carrier both as the back of it enters the buffer tube and travels rear, and then a second time on the forward motion as it reenters the back of the upper receiver. Gunsmiths should thoroughly inspect the area where the Allen wrench enters the top of the head for any burrs or imperfections and stone these absolutely smooth. The adjustment of the cap screws is similar to the first generation.

Advance both screws outward in equal amounts while taking feeler gauge readings. When the gap between the carrier and the receiver at the bottom equals the gap at the top, the carrier should be level and perpendicular to the bolt face and bore axis. As before, generous amounts of red Loctite on the threads holds the adjustment. Lube the button heads liberally with Tetra Gun Grease. Always thoroughly clean bolt carriers following every range session and clean with an ultrasonic unit if possible.

Don't be afraid to add lube to bolt rings and carrier antitilt pads during extended range sessions. I have not had a single malfunction yet with either generation of anti-tilt pads.

COMBATING AR-15 BOLT CARRIER TILT CONTINUED

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Candidate Firearms Thoroughly inspect customer firearms before undertaking a job to note any potential to compromise function or add drag. You can usually see outwardly any misalignment between the upper and lower receivers. As long as both receivers are of the same brand there is Skeletonized carrier on far left will not work with either pad design. usually no problem. Mixing and matching brands was historically more problematic.

Today, there are only a few “chip makers” actually making receivers from scratch so receivers from different companies may be made in the same foundry and stamped with different names. Uniformity and quality has gotten better in recent years. If in doubt, remove the hammer, buffer, and spring from the lower receiver. Gut the bolt carrier by removing the bolt, cam, firing pin, and retaining pin. Place the carrier back in the upper receiver and close up the weapon.

Holding the firearm horizontal, tilt it so the muzzle is higher than the stock and the stripped carrier should travel to the rear of its

own weight. When the motion is reversed, the carrier should return to its normal forward position. Flip the rifle upside down and repeat the test. If there are no pauses or hesitations, install the anti-tilt pads of choice and repeat the experiment.

Obviously, any Accu-Wedges, Accu- Screws, or other tensioning devices Far Cap screw is positioned deliberately higher than normal to show up better in photo. Add grease to anti-tilt pads for the same reason. designed to tighten the fit need to be in place during these tests. Always admonish the customer to keep the carrier clean and well lubed and to thoroughly function fire any rifle that has undergone any work before leaving on an important hunt or competing in a match.

Also caution the customer to expect some sort of a shift in zero as a result of your work. Unfortunately, not all bolt carriers are candidates anti-tilt pad modifications. Consider a carrier that extends metal forward far enough to operate the trip sear for full auto compared to those that don't. Those cut back too

far don't have enough metal surface for pads. Such a carrier is only good for those instances of rifles not getting enough gas and the lighter mass can correct some function problems.

My advice is to equip every rifle you build with a true match bolt carrier from Les Baer, JP Enterprises, or Young Manufacturing. Just dropping in a true match carrier can cut your group size an average of 8.8% even without anti-tilt pads. Expectations I have run numerous tests of both generations of pads and keep coming up with a figure of 14% average reduction in group size with both approaches.

That is a nice accuracy gain especially when it is combined with the 8.8% average improvement of just dropping in a true match carrier. Make absolutely sure to check gas tube alignment after leveling the carrier! You may have to make some minor tweaks.

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The left end of the buffer is sized to just fit into the back of the carrier, lightly “locking” the two together. I don’t know what to expect with regard to longevity when employing the first generation set screws. The twin set screws in my Clark 1911s with Giles Slide Guide have remained straight and tight after tens of thousands of rounds, however, they are drilled and tapped into steel. The generation one twin set screws are drilled and tapped into less substantial aluminum. Will they hold? I am not sure.

Accurized M9/Beretta M92 pistols use set screws in their aluminum frames and have worked fairly well.

The second generation approach seems to counter side-to-side movement of the carrier’s rear a little more effectively, but machine rest tests prove both methods equal in reducing group size, indicating that up and down slop in the carrier has more influence on group size than horizontal movement. That’s fine, because it was downward tilt that we struck out to correct in the first place. Note, avoid the temptation to get greedy and over-adjust anti-tilt pads. These simply level the carrier so the bolt face becomes perpendicular to the center axis of the bore.

Overadjustment results in tipping the rear of the carrier higher than the front and ruins accuracy as surely as letting the back of

the carriers continue to tilt downward. What Didn’t Work The February 2013 issue of the NRA’s American Rifleman featured an article (“Piston Delivery”) on the Adcor Defense B. E. A. R., an external piston AR. These were flavor of the month then, but the interesting part was the company created anti-tilt pads into their bolt carrier.

They appeared to be integral and machined with the rest of the carrier as opposed to being clapped on afterwards. It wasn’t clear to me from the article if their purpose was to enhance accuracy or function. By then, I was gunsmithing on my own instead of for the Army Reserves and decided to test these at my own expense. External piston AR-15s have brought bolt carrier tilt back into the conversation after decades of ignoring the issue.

I found a heavy custom buffer that was designed for external piston guns and purported to eliminate carrier tilt. The section to the extreme left fits into the back of the carrier. This modified buffer was supposed to improve function in external piston guns and did not promise any accuracy improvement. I was hoping that it might and set up a study to determine if it worked. I was also hoping for a tilt solution in carriers with short bottom sections that don’t work anti-tilt pads.

I tested a good cross section of AR-15s with stock carriers and then a second time by substituting the heavier buffer for the stock one. There was no significant improvement and no degradation. I determined that to get any accuracy improvement, the fattest part near the front needed to be significantly larger in diameter than manufactured. Unfortunately, not everything we try ends up working and this is just another example.

In fact, I wrote a dedicated article on this called, “AR-15 Build Problems” in the May 2016 issue. Many positive results are “baby steps” arrived at by trying and learning new things over time. I make no claim to having completely solved a problem that has been around longer than most of you readers but I hope to have convinced you that carrier tilt does limit accuracy and by a greater degree than many have suspected. There are ways of dealing with the problem.

Most of all, I hope some of you smart guys will deliberate and experiment to come up with better solutions than the tiny baby steps I have taken. Nothing would make me happier than to open the magazine in the near future and discover an article written by one of you detailing a better method of correcting bolt carrier. Please, have at it with my blessings! AG

PEOPLE & COMPANIES

Gunsmithing The Tokarev TT-33

The Russian Tokarev TT-33 doesn't get its fair share of respect among service pistols. Here's how to work on them.

BY ROBERT K. CAMPBELL MAY 2017

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The Tokarev was adopted by the Russian military in 1933 after modifying the TT-30 to TT-33 status. Fedor Vasilievich Tokarev used proven Browning locked breech principles in his design; the locking lugs, barrel bushing, guide rod, recoil assembly, and magazine release are straight up Browning. The pistol has no manual or grip safety, however. The pistol features an en bloc removable hammer group, an important step in ease of manufacture and maintenance.

The TT-33 was produced in an era when handwork was done on machines to make each part and is among the most advanced handguns of the pre-World War Two period regarding ease of mass manufacture. The

Tokarev was intended to be maintained by soldiers with minimal skills or experience. It excels in this regard. There are no screws in the design, even down to the attachment of the grips. Tokarev made several design changes in the Browning template and ended up with a unique firearm.

An example is the keeper is used to positively retain the slide lock. This small sheet metal lock slides over a notch in the slide lock's protrusion on the right side of the gun and must be pressed to the rear in order to free the slide for disassembly. Since the pistol has no manual safety, the action was modified to allow half cock carry. This is an important

distinction. The Colt 1911, as an example, is a single action design but half cock carry is neither recommended nor safe.

Tokarevs were designed for this and it is mechanically safe. Another reason half cock is needed with TT-33s is when the pistol is chamber loaded due to the positive firing pin. Far Being longer than most, when the hammer is fully down the firing pin will protrude and touch the primer. There were many stores of 7.62mm Mauser ammunition in Russia during the 1930s. The popularity of the C96 Mauser, a Bolshevik favorite, was one reason the TT-33 was chambered in 7.62 x 25mm. The long fir-

GUNSMITHING THE TOKAREV TT-33 CONTINUED

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ing pin insured ignition with off spec or older stores of ammunition. The pistol must be carried on half cock if the user chooses to carry a chamber loaded TT-33. Clone Guns There are many clones, near copies, and a few modern upgrades of the TT-33. Polish pistols are often cited as the most refined and best finished, the Romanian guns are very good, the Egyptian guns are roughly finished, and the Chinese variants are the least desirable. Oddities such as a high capacity version and .38 Super chamberings exist.

All operate on original TT-33 principles and disassembly is identical. The most important variations deal with safeties. Since the pistol needs certain import points for importation

—a complicated, bureaucratic process worthy of much discussion—some of the TT-33 clones have a manual safety added on. I worked on a 1953 TT-33 with a safety added on before current importation rules with a sliding safety that locks the trigger. It isn't obstructive and doesn't get in the way of normal operation.

After examining the safety, I recommend it be carried at half cock as originally designed. The M70 and M88 variations use a slide mounted safety that blocks the trigger and hammer, and rotates to cover the firing pin when applied. Cocked carry is possible but it isn't "cocked and locked" as found with 1911 or High Power pistols as these Tokarev vari-

ants don't lock the slide with their safety catch. Most other Tokarev variations are caliber variations, typically in 9mm.

Many Tokarevs are purchased by less sophisticated shooters that seldom clean and maintain as they should. Fortunately, the design is robust and not highly demanding of maintenance. Primary complaints are poor cleaning and congealed grease solved by a thorough detail cleaning. Some Tokarevs I've examined exhibited hardened grease and Cosmoline-like deposits in the frame or trigger action. Heavy solutions of aerosol spray get these deposits out.

It should be slid to the rear and not completely removed during disassembly.

GUNSMITHING THE TOKAREV TT-33 CONTINUED

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For illustration purposes, the slide lock retainer clip has been removed from the frame. If the pistol is misfeeding, it's usually the ammunition or magazine. Various military surplus loads dating to World War Two are commonly available. Norinco ammunition is sometimes seen, though it's not consistent with distinct differences in the report. Wolf Ammunition, Sellier & Bellot, and Prvi Partizan are reliable, including their JHP loads.

I have also ran handloads with the Hornady XTP in 60, 85 and 100 grain bullets with good results. Original magazines seem never to give trouble, though there are several types of new aftermarket magazines. Those with a white sticker on the bottom reading "Made In Taiwan" give good results. The other, common at gun shows, sometimes give the bullet a nose dive and may be the cause

of a Tokarev feed problem. Disassembly Remove the magazine, rack the slide to the rear, and confirm as completely empty.

Lower the slide and press the trigger while controlling the hammer down. There is a retaining clip on the right hand side of the frame that acts as a keeper for the slide lock. Press this to the rear. It does Press the slide lock out right to left. The slide may now be pressed forward off the frame. Carefully raise the recoil spring and guide out of the slide. The recoil spring is lifted up and to the rear of the slide. Rotate the barrel bushing 180 degrees to allow removal of the barrel bushing.

The barrel may be removed forward out of the slide. The hammer assembly may now be lifted out of the frame. It is a press fit and there are no retaining pins. There are few aftermarket grips for the TT-33 but the grips are broken from time to time, sometimes

from the owner attempting to pry them off. There are no retaining screws, just flat levers in the grip itself. Remove the left hand panel. At the bottom of the magazine well is the end of the locking bar that locks the grips in place.

This end should be notched. Use a small, hardened screwdriver to press the locking bar stub toward the rear of the pistol frame. This releases the locking bar's hold on the frame. With the left hand grip panel removed, locate and release not have to be completely removed. There is a small cut out on the stem of the slide lock that accepts the end of the retaining clip. the right hand grip panel locking bar. The hammer group should be secured in a padded vise for disassembly.

Note, there are cartridge guides that are part of the assembly. Do not warp or bend them in the vise. To disassemble the hammer group, use a small screwdriver to re-

GUNSMITHING THE TOKAREV TT-33 CONTINUED

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Original caption: Bottom: Simple pins hold the hammer group together. Most of the time a thorough cleaning aids the trigger action. The hammer pin and sear pin are easily pressed out. The hammer group is then disassembled. If desired, the magazine release may be removed. There is apart on the right hand side that looks like a screw but isn't.

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lease hammer spring retaining pin pressure. Press the hammer retaining pin out of the hammer group. While a rugged pistol, the metallurgy is uncertain.

The magazine release is held by a split-type pin. A 1/8" diameter punch is tapped into the end of the spring guide to drive it out of the left hand side of the frame. With the spring guide removed, the magazine catch is removed from the right hand side of the frame. On the Romanian TT-33 with added safety, the safety lever is removed by pressing it out to the left by pressing on the right hand side of the safety lever from the right side of the frame. There is a Remove the trigger.

Press the trigger to the rear and guide the trigger bow into the magazine well. The trigger then is removed from the bottom of the magazine well. To replace the firing pin, drive out the firing pin retainer pin from right to left. This is usually a split pin, however, new production M88 pistols have a roll pin. By habit I drive the pin from right to left but the M88 roll pin appears to be good to go right or left. The firing pin spring will come out with the firing pin.

The extractor is held by a pin that is removed by driving it from the slide from inside. Note, the extractor is powered by a coil spring. The coil spring seldom comes out with the extrac-

tor. It lies in a blind hole. I have used a paper clip to remove this spring. The Tokarev in all its variants is a rugged and effective handgun that seldom needs repair. When it does, the problem may likely be abuse or simply age. The pistol is easily worked on and repaired but spring-loaded detent in this part.

It is small and very difficult to find if it flies out. never regard it as simply another Browningtype variant. There are significant differences in the pistol that make life interesting. AG The author would not attempt to modify sear and hammer angles but would clean and lubricate well for improved function.

SHOTGUNS

Bolt Action Shotgun Conversion

Converting an old Ranger bolt action shotgun into a single shot brought new life into a customer's gun show bargain.

BY DAVID W. MANNEY MAY 2017

ORIGINAL PP. 21-22

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Original caption: Top: A Ranger 101.12, also known as the Stevens Model 39.

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In my area, .410 shotguns have become extremely popular. Some of the worst guns I have ever seen have been coming out of closets and hidey-holes where they've been hiding for ages. Most of them have not been worth more than their scrap value. So, when a customer brought in an old bolt action shotgun, my first thought was, "Here we go again!" Handed to me was a Ranger 101.12 that he had picked up a gun show for a fantastic price.

However, once home, he could not get it to hold shotshells in the tube magazine or feed them into the chamber. Pulling the bolt back and looking down into the receiver, I could see the lifter was missing and as well as a few more parts. Disassembling the action off the stock I found out that all the parts needed to feed ammunition from the magazine into the chamber were missing! Not a very good buy on his part. Fortunately, the chamber and bore were in like-new condition and the bolt had some minor wear to it.

With the exception of the missing parts, this was a decent enough gun to put back into working order. He left the gun with me asking to have it repaired. I pulled out my Store Brand Crossover List, available for free download at NRAMuseum.org, and figured out this was essentially a Stevens Model 39. Looking online for parts, I quickly discovered that the lifter for a Stevens M39 is not available anywhere.

Now, I could have put this on my list of parts to fix guns and store it with the other ones I might find apart for. Instead, I thought I could get this bolt action to work as a single shot. Having seen inserts used in competition to convert bolt actions into single shots, I figured I could do the same. I called the customer and talked to him about doing this instead of trying to find or make the parts needed (along with the expense...) to return the shotgun to full working order.

He agreed, so I set about figuring out how to do this. The first thing was to look for something that was close to being a tray to

hold a shotshell, I thought of bending a piece of shim around a piece of pipe. Finding a length of half-inch pipe was just the right shape and size to make an insert, and 1/2" black pipe has just the right curve and thickness to hold a .410 shotshell.

I cut the pipe just a little longer than the receiver opening, then used a lathe to true up the ends and trim to fit into the receiver. Then, I painted the section of pipe that was to be cut out with layout fluid. Measuring the opening with calipers, I transferred this on to the pipe. Using a square on the end, I dragged the caliper down the ruler part and cut the section out of the pipe. A mill would make this quicker, but mine was down for repairs so I just hacksawed it out.

My first attempt had the pipe's seam right in the section that needed to be used, so I made one that did not. Then, I filed down the edges and kept them parallel until it fit into the re-

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ceiver. On this particular gun there are flats in the receiver that needed to be filed into the insert to make it drop in deep enough. Once it was in place, I tested feeding with a dummy round. I found that I needed to cut the ramp on the receiver a little deeper so that a shotshell would not hang up on it. After this,

I polished the feed ramp, cleaned up the insert and the inside of the receiver where the insert sits. Bead blasting the insert with very fine glass beads gave it a finished look.

To keep it secure, the insert was silver soldered into place. After cooling down, I touched it up with cold blue, then tested. I

was able to do this work in less than an hour. The customer left happy with a functional gun, although it was not a repeater. But it worked, and you normally don't need a quick second shot for treed squirrels. AG

READER FORUM

Reader Forum

BY AMERICAN GUNSMITH EDITORS MAY 2017

ORIGINAL PP. 23-24

Stevens Guns I have a couple old Stevens guns that I need to find information on. I believe I need to contact John Callahan. Can you help me? Am I looking for the right person? You are indeed. John Callahan has been the Savage Historian for many years. Contact him at Westfield MA, 01085. Also, check Savage Customer Service at to confirm for any updates. Wimbledon Shotgun I have a customer who bought in a Wimbledon breach loading 10 gauge shotgun who has kept it because he likes the way it looks.

Where can I find history on this gun? Can it be fired with smokeless powder, only blackpowder, or not at all? Kenneth W. Wright Wright Enterprises of Texas It's only a guess, but we believe you may have been handed an English make. As for exactly when and where it was made, take some photos of it, including close-up views, and send them with your query to the National Firearms Museum nramuseum.org as they'll likely be the best source for information on a gun like this.

As for shootability with modern loads, you'll have to remove, or have removed, the forend wood and examine the barrels. If they show any signs of being twisted in nature, they are Damascus. It is also possible they are so old Damascus, or any other extremely-aged metal, it would be highly dangerous to fire even with a reduced blackpowder load and certainly not with a charge of modern smokeless.

If you cannot be certain if the gun is fit to fire, get to know the department head of metallurgy at the nearest college or university with a well-equipped lab and get some help on the integrity of the barrel metal. R. Lee These foreign-made old timers can and do burn up a bunch of time just performing the basic research on them. Which is exactly what you have been asked to do. Carrying the research far beyond basic information quite often leads to additional expenses being incurred by the researcher.

Your time is money. We always recommend a standing policy to our readers concerning requests to undertake a research project that the customer making the request is either too ignorant or too lazy to undertake. More often than not, it is the latter. Wade Turner A fine cure for this is to insist on a minimum fee prior to accepting any job involving research. Quite often, the request will be withdrawn and no loss to the proprietor incurred.

If they're willing to pay you fairly for your time, proceed as you best see fit. Model 81 I am trying to find a magazine for a Model 81 Remington in .300 Savage. Any advice where to look? Thomas Bates You can try Tom Forrest Lakeside, CA 92040, That failing, call Remington Customer Service in Ilion, New York (RemingtonProducts.com, for additional leads and contact Brownells for their Gun Parts Source List.

Finally, try Metalform (metalform.us, and Gun Clip Depot (gunclips.net, R243 Problems I received a Blaztech R243 and was told that it would not break open after a shot was fired. I tried everything I knew to get it open and finally had to drive several of the mechanism pins out to get it open. The issue I have now is reassembly. All I can find for this gun is a parts drawing. I need assistance finding reassembly drawings and instructions.

I read some online forums on this issue and it appears to be common for this gun. I will try to call the company for assistance but I am sure they will want the gun sent to them for repair. The forum that I checked had several people who had sent their R243 back for this issue and the problem reoccurred when the gun was shot. John Hatchel There is an error regarding the name provided. "Blaztech" was never a manufacturer.

Braztech, sometimes spelled Braztek, was the name of the organization that at one time held exclusive U. S. import rights to Rossi

READER FORUM CONTINUED

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Firearms, maker of the R243 rifles and several models of revolvers. In the 243 series, Rossi produced youth models, centerfire models, and models offering centerfire and shotgun usage via a change of barrels. No information was provided regarding which R243 model was involved. Further, an extensive search of gun-oriented websites revealed no multiple commentaries on hard opening. Ergo, we can assume no epidemic of the same with Rossi R243s.

Of course, opening difficulty can occur with any action of break-open design. Among these, in particular when less-than-required care in handload preparation is involved, are primers not seated deeply enough to allow the action free travel in the opening process. Also to be considered area broken extractor, weak extractor spring, or an extractor cut in the barrel breech so rigidly fouled or damaged the extractor hook is unable to lock on to the case head.

In this instance, a partially extracted case may extend sufficiently into the action to interfere with its opening. Add to that a seriously oversize chamber and/or excessive headspace allowing set back of a fired cartridge. Chamber measurement against SAAMI standards and employment of Go/No Go gauges serve to eliminate or confirm the presence of the latter two conditions. After discovering pins have already been removed from the action in the plunge-ahead phase, we can offer some solutions.

We have initiated contact via Taurus USA, presently the sole U. S. distributor for Rossi, to assist us in contacting Rossi and to secure complete information for a future article on the R243, which still appears in the Rossi catalog. In the meantime, the only quick alternative is to box up the loose pins, the R243, and return it to the factory for reassembly. Old Remington I have a Remington 514 single shot .22 rifle with a defective extractor. My customer wants to keep the rifle and make it shootable.

I have been unable to find any info on disassembly and reassembly of the bolt, extractor, and firing pin for this model and haven't been able to locate a replacement extractor nor the specifications should building one become necessary. Have you done an article on the 514? Any advice where I can turn next? Jim Thompson We haven't published an article on this but the Official NRA Guide to Firearms Assembly has a piece on the Remington 517.

For parts, check in with Numrich Gun Parts Corporation, Jack First, and the Brownells Gun Parts Source List. H&R .22 Premier I am looking for disassembly information and illustrations of the H&R .22 Premier. It is a top break revolver having problems with cylinder timing and the ejector mechanism. While it's a nice little gun, it is almost useless as is. I have been careful lining up the cylinder and can fire shot shells but would hesitate to use regular lead bullets. One cylinder that came with it will not rotate.

Wear seems to be the problem there but the piece that activates the retraction of the ejector seems to be homemade and doesn't function. A gunsmith estimated he would probably require 5-6 hours to make it function but in single action only. Steven Raynis We haven't published an article and don't have photos to share. What you have identified as a possible homemade component should be replaced after locating a suitable replacement.

The wear problem in the cylinder is likely to include one or more of the ratchets that are engaged by the hand to rotate the cylinder. We can offer no hope for securing a new cylinder and little for a new hand. The current H&R entity, presently embedded with the Freedom Group (Freedom-Group.com) along with such others as Remington and Marlin, will not provide service for the revolver because they did not manufacture it. AG

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