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INSIDE THE ARCHIVE

SHOTGUN EJECT MYSTERY

LEGALLY ARMED • MEXSAR SEMI-AUTO RIFLE • A SECOND BOLT AND BARREL FOR BOLT ACTIONS • SAKO-STYLE EXTRA...

ORIGINAL METHODS. MODERN ACCESS.

ARCHIVE EDITION 134

DIGITAL ARCHIVE EDITION

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IN THIS ISSUE

Contents

A complete guide to the searchable editorial work preserved from February 2015.

2 Legally Armed
AMERICAN GUNSMITH EDITORS • ORIGINAL PAGES 2

3 MEXSAR Semi-Auto Rifle
CHICK BLOOD • ORIGINAL PAGES 3-6

7 A Second Bolt And Barrel For Bolt Actions
NORMAN E. JOHNSON • ORIGINAL PAGES 7-10

11 Shotgun Eject Mystery
DOUG KELSAY • ORIGINAL PAGES 11-13

14 Sako-Style Extractors On Model XP-100 Pistols
NORMAN E. JOHNSON • ORIGINAL PAGES 14-17

18 It Don't Come Easy
BRIAN E. CAPPS • ORIGINAL PAGES 18-19

20 Bench Blocks 101
DICK MAHEU • ORIGINAL PAGES 20-22

23 Reader Forum
AMERICAN GUNSMITH EDITORS • ORIGINAL PAGES 23-24

PISTOLS

Legally Armed

BY AMERICAN GUNSMITH EDITORS FEBRUARY 2015

ORIGINAL PP. 2

For the trained, responsible firearm user, carrying a concealed handgun can be a prudent safety practice. Unlike automobile driving privileges, which despite their greater lethality enjoy interstate freedom, laws governing the right to bear arms in public vary widely among states. As recently as the mid-1990s most states had No-Issue or May-Issue restrictions but since then states have consistently migrated to less restrictive alternatives.

Currently, every state in the United States has some sort of provision for concealed carry, however, not all states offer reciprocity recognizing other state's permits or laws. Legally Armed Until this is unified, laws will remain uneven. Because ignorance of the law is never an excuse it is up to you to know what's legal and not.

Legally Armed: A Concealed Carry Gun Law Guide is a guide covering concealed carry gun laws nationwide, highlighting common points of law for each state and the District of Columbia to help understand how each jurisdiction differs. Concealed carry permit holders should know how carrying a firearm from state to state varies and this guide covers problems associated with interstate travel or relocation.

Legally Armed begins with an overview of what to consider before obtaining a permit, how to interact with law enforcement when carrying concealed, legal concerns if you're forced to shoot, gun handling and storage, and traveling with firearms.

The bulk of the book breaks down concealed carry laws by state, providing information as to whether or not permits are issued, what other state permits are recognized within that state, what restrictions exist for owning firearms, selected excerpts from that state's actual gun laws, and contact information for authorities within that state who can provide additional information.

Each state is also given a letter grade and color ranking for an at-a-glance assessment of the that state's policy on firearms and carrying concealed. The book has received high reviews on Amazon, averaging a 4.8 out of 5 star rating among readers. If you are looking for an all-in-one reference covering concealed carry gun law this is good, comprehensive guide.

ORIGINAL SOURCE PAGE

2

PEOPLE & COMPANIES

MEXSAR Semi-Auto Rifle

MEXSAR Semi-Auto Rifle Disassembly of the rifle no longer called a PUMA.

BY CHICK BLOOD FEBRUARY 2015

ORIGINAL PP. 3-6

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There are two large and several smaller reasons why the MEX- SAR Semi-Auto Rifle is no longer called a PUMA. Looming large are Legacy Sports and their established Puma Firearms offerings. These include a PUMA lever action that is a clone of the Winchester Model 92, a duplicate of the Winchester Model 1886, a “mare’s leg” version of the 1892, the Model 1897 Winchester shotgun, a .22 caliber rimfire rendition of the legendary Model 1873 and, lest I omit in gross error, the Buntline revolver.

All of the above evidently escaped notice of the gun-moniker brain trust at Century International Arms in their hunt for a sexy name after shopping around for an economical, well-built, tube-fed, caliber .22 semiauto youth rifle. It also escaped several others at CIA. Owners manuals got printed and an ad campaign announcing it to trade and public came close to seeing the light of day. Oh, Sturm und Drang. What to do? Trademark infringement litigations can drag endlessly on, costing hundreds of thousands.

The solution was obvious: Don’t call the rifle a PUMA. The brain trust went back to work. I think I can simulate how they ex-

pressed their collective line of thoughts: “We’ll dream up an anagram!” “Lessee, the gun is manufactured by Mendoza. Start with ‘M’ and call it a ‘Mendoza.’” “No, sounds too much like a dance.” “OK, Mendoza is based in Mexico so add ‘EX’ to the ‘M’ for ‘MEX.’” “How about ‘NUMEX.’” “Nope, too close to ‘NOMEX.’” “OK, add ‘SAR.’” “What’s that stand for?” “Semi Automatic Rifle. MEXSAR.

Get it?” “Let’s go with that!” And so they did. Introducing The MEXSAR I looked the rifle over closely despite having few doubts about quality. More than one US automaker has established manufacturing facilities in Mexico to reduce costs, expand their market and improve the quality of iron rolling out of Detroit. This little youth machine should provide long and favorable service with even decent care and maintenance. As for its accuracy, I’m not working that subjective side of the gun business.

It is up to the owner of any .22 LR to determine which ammo enables the gun to produce the best result. All rimfire guns are equal in that respect. All rimfire ammunition is not. For example, rim thick- 22 LR started life as a lightweight youth model named after a big cat but had to have its

claws clipped before word of it got around. ness can and does vary from brand to brand. As far as yours truly is concerned, how to determine the best ammo for any rim fire has never varied.

Several brands must be purchased, collectively taken to a range and five rounds of each fired at a series of identical targets under identical conditions. A clean patch is run through breech to muzzle and a fouling round of the next brand on the list is fired before moving on. Tedious? It can be but it is the best method of establishing the dietary preference of an out-of-the-box rimfire gun. Over an undetermined and varying time period primarily based on proper maintenance, the taste of a given firearm can change.

You’ll get a pretty fair hint a change is needed when performance begins to drop off to a lower level and remain there. A repetition of the initial testing is highly likely to reveal a switch in brands to be the cure. By that time, however, I figure the current shortage of small bore ammunition of every description will have become a thing of the past. Ammo manufacturers are now turning out rimfire food as

MEXSAR SEMI-AUTO RIFLE CONTINUED

ORIGINAL PAGE 4

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fast as they can. The trouble is most of it is on its way out the door as soon as it comes off the line, with current back orders being the reason. Basic Specifications The magazine capacity of a MEX- SAR is 16 rounds of .22 LR and 17 of .22 Long. The OAL of the rifle is 40.2", barrel length is 21.25" with six grooves. Weight is 6.2 lbs, safety is manual, stock is of imported wood, finish is blue.

The safety lever resembles a rotary burner switch on a gas or electric kitchen stove and is located at the extreme rear of the receiver. Turning it fully to the right covers ared dot to indicate the rifle is on safe. A subsequent and equal turn to the left uncovers the dot. If around is chambered the rifle is ready to fire. After cycling the bolt and checking the chamber, I've always done one more thing before field stripping a tube-fed rifle.

It only takes about 30 seconds but it leaves me with a nice, warm feeling that there's no way alive round can find a pathway into the breech and any chance of an accidental discharge is totally eliminated. I open the lower mag tube, withdraw the follower rod, tip the muzzle sharply downward and, using a slight shaking action, dump any live rounds within into a plastic container. The

short fall doesn't damage the ammo. It can all be used to rearm the gun when I'm through working with it.

Field Stripping Plus Major advice: Read the following paragraphs in their entirety before any further disassembly of this rifle. You'll discover why before very long. In the past, owner's manuals, particularly those translated by an offshore maker of firearms trying to penetrate the American market, have led me astray. Once was all it took. Ever since, I have always consulted with OEM or importer technicians in preparing disassembly/reassembly articles. I had no intention of doing otherwise with the MEXSAR.

Remove the stock retaining screw (69) and its washer from the forearm with a flat blade screwdriver. Separate the barreled action from the stock. You can't remove the bolt without removing the bolt handle (60). Unscrew and withdraw it from the bolt. There's more. Depress the striker release lever (30). This part is misidentified on the owner manual parts list. Note herewith that it is the striker release safety. Tilt the action up sharply and be ready to capture your striker release and bolt prizes.

Shift your attention to the bolt and all other pins mentioned from here on. If they are spit, use a roll pin punch. If they aren't, a

straight punch of the proper diameter is all you'll need. Part 20 is the striker guide retainer. Drift it out from the top. Remove the striker (59). This is followed by the firing pin (34) and its spring (9). The spring is likely to accompany the firing pin when it is removed. The extractor retaining pin is #12. To free the extractor (36), remove its pin. Alert!

Beware loss of the extractor spring (10). It is small with a kingsized ambition to wander. There is more bolt work to be done. Check out the positions of the inner and outer recoil springs (13 & 14). One is speared on the striker guide and inserted at the rear of the bolt body (65). The other lives within the front end of the body and is retained by pin #38. Both springs exert pressure on the receiver end cap (53). You have to control this pressure in the process of removing the cap. An Image Reversed?

Look closer at the middle schematic. Does it not clearly indicate the safety assembly (parts 53,04,57,56, 55 and 70) is attached to the front of the bolt? Not so fast, Mr. Mendoza. This disassembly began at the back of the receiver, whereat said safety assembly is located, not at the front of the bolt where it isn't. See what I meant about things getting lost, misplaced or readily misunderstood in translated owners manuals? Don't

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All components related to these sights are included in the parts list. Both feature high visibility elements dash out to purchase a Rosetta Stone course to resolve the problem. Being aware it exists goes along way in avoiding possible pitfalls but some of the material in this manual is definitely misleading. The MEXSAR is by no means the sole import to suffer this inadequacy. It isn't the first and it won't be the last. I will offer further information here on the safety assembly.

Personally, I avoid dismantling safety systems for any reason other than damaged part replacement. With the exception of insisting the red dot must be positioned on the right side of the end cap in reassembly in order for the safety to work, the MEXSAR system should not be the first one you disassemble. As this is written I cannot assure any parts would be available to repair it.

The same is true of the firing mechanism (trigger, hammer, sear, springs etc.) In the latter case, however, prohibiting parts for trigger systems is by no means exclusive to MEXSAR. These days, most other rifle manufacturers, foreign and domestic, sell trigger or trigger related components.

They'll sell you an entire, factory new trigger assembly ready to install on their rifle. But parts? No way.

Schematic Notes Not the usually-seen schematic, the center one makes it quite clear the receiver of the MEXSAR is anything but simplicity personified. It is also quite thin, thereby making it more difficult to discover relationships between the components it houses. **Conclusion** As shown by the accompanying photos on the opposite page, the MEX- SAR receiver houses a large number of pins. As you can see by the schematic, these pins are involved with many springs and the parts upon which those springs act.

As you cannot determine distinctly or quickly from the schematic, several of these pins are clones. For example, the striker release lever is retained by pin #61. An exact duplicate of that pin serves as the trigger pin interacting simultaneously with the trigger (29) and trigger spring (6). These kinds of relationships are present throughout the receiver. Each relationship must be studied under magnification prior to drifting any pin. Does the long leg of the related spring go under or over the pin?

How does the pin fit the part it retains? An ample supply of properly sized and identified slave pins can help making pin removal easier and, if you're very careful, successful. Only proceed after a close examination of how an objective pin is situated in the receiver has been exhausted. This examination must include establishing how any spring involved fits over, or under, its objective, and whether said spring is, or is not, connected to a nearby component. Enter the slaves once more.

This time to gently press inward on the objective, teasing it and its related parts upward enough to allow a quick study of how each fits the other. When the fit has been committed to memory or duplicated with a casually rendered, yet accurate, drawing the slaves are used to push out the objective until a correctly sized drift punch can take over to complete the extraction.

An active gunsmith with 45 years of experience restated precisely, but far more succinctly, what I have just expanded upon regarding work on a MEXSAR receiver: "Never touch any pin in this receiver until you have made a magnified study of how it relates to each and every spring with which it is involved." That 45year vet is SO right. AG

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Century International Arms MEXSAR (Specifications subject to change without notice) 6 Trigger Spring 7 Striker Release Lever 8 Receiver Roll Pin (5) 9 Firing Pin Spring 10 Extractor Spring 1 Barrel Retaining Pin (2) 2 Barrel Band Retaining pin 3 Magazine Spring 4 End Cap Plunger Spring 5 Shell Lifter Spring 20 Striker Guide Retaining Pin 21 Trigger Guard Screw (2) 26 Barrel Band 27 Magazine Tube 28 Receiver 29 Trigger 30 Striker Release Safety 31 Trigger Guard 32 Cartridge Guide 33 Shell Lifter 34 Firing Pin 35 Bolt Guide Rail 36 Extractor 38 Recoil Spring Retainer 39 Guide Rail Pin 45 Barrel 46 Barrel Liner 47 Barrel Extension 48 Magazine Tube 49 Magazine Tube Cap 50 Magazine Follower 51 Stock Retaining Lug 52 Stock Retaining Lug Pin (2) 53 Receiver End Cap 54 Receiver End Cap

Pin 55 Safety Shaft 56 Safety Lever 57 Receiver End Cap Plunger 59 Striker Guide 60 Cocking Handle 61 Hammer/Striker Release Lever Pin (2) 62 Stock 63 Shell Guide 64 Shell Lifter Pin 65 Bolt Body 66 Striker 69 Stock Retaining Screw 70 Safety Retaining Screw RM304 Front Sight Base Screws (2) RM324A Front Sight Base RM424 Front Sight Fiber Optic CU305 Rear Sight Base Screw (2) CU320 Rear Sight Base Washer RM214 Rear Sight RM227 Rear Sight Elevator CU220 Rear Sight Base RM425 Rear Sight Fiber Optic CU 325 Stock Retainer Washer CU105 Spacer CU310 Butt Plate CU331 Butt Plate Screw (2) 11 Bolt Guide Rail Pin 12 Extractor Retaining Pin 13 Inner Recoil Spring 14 Outer Recoil Spring 17 Magazine Cap Pin

PEOPLE & COMPANIES

A Second Bolt And Barrel For Bolt Actions

A unique bolt fitting process for fitting a pair of barrels to Remington Model 700 switch-barrel rifles.

BY NORMAN E. JOHNSON FEBRUARY 2015

ORIGINAL PP. 7-10

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Over the past 16 years I have added bolts and scores of barrels to a good number of switchbarrel rifles. This has included bolt selection from the three common bolt face sizes ranging from .223 Remington, .308 Winchester, and the larger magnums. Most of these have been fitted to Model 700 or Model 40X Remingtons and long and short Savage actions. This worthwhile rifle revision enhances its usefulness and increases overall value. Costs are usually commensurate with parts selection and needs.

Adding a second bolt and barrel requires precise headspacing. For example, if a random barrel from another rifle is used or has combined use with another rifle, the new bolt must be precisely fitted and headspaced to the secondary barrel and action. I accomplish this by reducing the bolt locking lug length. As an example, I'll cover a very adaptable application whereby two previously headspaced barrels, chambered in The bolt comparator, as designed and made by author, precisely measures this dimension.

This information is useful in fitting a second bolt or barrel to a rifle. As anew bolt is fitted, contact here can take place before locking lug

contact, producing an incorrect headspace reading, different rifles for the .300 WSM and 7mm Remington Magnum, along with an altered magnum size bolt, are added to an existing rifle which has a .308 size bolt, and barrels chambered for the .25-06 Remington and 6.5-284 Winchester.

The action is bedded into a target/varmint stock as well as an alternate standard weight stock to serve as a lighter weight carry rifle. One action and scope serves all barrels. In the case of 700 and 40X Remington actions, the bolts are very

A SECOND BOLT AND BARREL FOR BOLT ACTIONS CONTINUED

ORIGINAL PAGE 8

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close in dimension as measured from the rear of the locking lug surfaces to the face of the bolt. This will allow some barrels to be exchanged between rifles and still be within SAAMI headspace tolerance. Such close bolt tolerance offers the gun owner a feature whereby a barrel from one rifle can be used on another rifle if the cartridge headspace is correct.

Thus, when adding anew bolt, where its dimension is longer, it can be a relatively simple matter of shortening the span between the locking lugs and bolt face of the longer bolt to headspace the respective cartridge.

This procedure has enabled me to actually take previously headspaced barrels and use them alternately between different rifles by machining the bolt lugs in attaining proper headspace.

Bolt Alteration Procedure This work requires the experience of a well-qualified gunsmith or shop machinist skilled in precise machining tolerances along with a good knowledge of rifles.

Where an existing barrel is headspaced to a given rifle to be used in another rifle along with the new bolt, I measure each The for-

ward surface of the locking lugs are placed firmly against the chuck jaws to permit precise replacement as the bolt is removed and checked for proper cartridge headspace. bolt from the back of the locking lug to the bolt face to determine if the new bolt is longer than the primary rifle bolt.

If it is longer by even a few thousandths it allows me to shorten the new bolt lugs to the required length. However, if the secondary bolt is shorter, this procedure cannot be successfully accomplished while

A SECOND BOLT AND BARREL FOR BOLT ACTIONS CONTINUED

ORIGINAL PAGE 9

borrowing a barrel from another switch barrel rifle. In this case the barrel shoulder would need to be set back or the chamber lengthened in order to acquire precise headspace. This precludes the use of such barrels in more than one rifle. Another way of checking this out is to put the trial barrel on the action and trying a headspace gauge or new unfired case. If the bolt doesn't close, you will be in business.

To select a secondary bolt I use a bolt comparator of my own design and made by attaching laterally opposing jaws to a cut-down micrometer. This instrument accurately measures the distance from the bolt face to the back of the locking lugs and makes the match between a second bolt or barrel much easier. This is particularly useful where barrels are used from another rifle as I have commonly done. Take-off barrels that fit one's needs may be a viable choice too.

A point of caution when installing a second bolt is to be sure there is ample clearance at the rear of the bolt handle in the receiver or stock cutout. Any contact here before the locking lugs make receiver lug contact will result in a false headspace, and must be corrected for proper clearance. With the secondary bolt and barrel selection made, it is time to move on to actually altering the locking lugs.

As the bolt is placed in the lathe, bolt run-out and locking lug symmetry are checked with a dial indicator attached to the lathe carriage. A Remington Model 700 bolt can be held coaxially between the lathe chuck and live tail stock center. The 0.145-inch shroud, forward of the locking lugs, conveniently allows this. Alive tail-stock center aligns the bolt perfectly as it fits the rear bolt hole.

Lathe setup should find the properly sharpened lathe tool bit making just light contact with the locking lugs with the graduated carriage stop on zero. Then, while cutting, advance the tool bit as little as a thousandth of

an inch at a time. In the process, the bolt is repeatedly removed from the lathe and headspace is checked. A good check to see how things are going is to close the bolt on the headspace gauge while closely observing the gap between the partially screwed on barrel shoulder and rifle receiver.

A feeler gauge will show a close approximation of bolt lug over-length in this way. Finally a fully torqued barrel at normal axial preload is required to arrive at correct chamber/cartridge headspace. I usually use anew unfired case to check headspace as I move along. An unfired case will allow the bolt to be closed before a Go headspace gauge is accepted. As the bolt is returned to the lathe, I make sure the forward surface of the locking lugs is squarely against the lathe chuck jaws.

There is no turning back if the locking lugs are shortened beyond normal cartridge headspace. Don't carelessly cut two or three thousandths of an inch from the bolt lugs when you mean to take just one thousandth. In the work that I have described here, I removed 0.007 inch from the bolt lugs, which allowed me to add a magnum bolt to this Remington Model 700 rifle. This is but the thickness of two sheets of paper used to print this article—less than the thickness of a common playing card.

Yet, this enabled me to add the two pre-headspaced barrels in calibers .300 WSM and 7mm Remington Magnum to the Model 700 rifle. The pre-existing bolt for this rifle was already headspaced for the 6.5-284 Winchester and .25-06 Remington cartridges in a heavy Bell and Carlson target/varmint stock. All barrels could then be used in either the standard weight stock or heavier varmint/target stock with the respective bolts, resulting in one of the most versatile switch-barrel rifles of its kind.

On successful completion of the work, barrels must be properly identified. Here I stamp the car-

A SECOND BOLT AND BARREL FOR BOLT ACTIONS CONTINUED

ORIGINAL PAGE 10

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Where a barrel fits two rifles, this is included as well. tridge name, rifle make and serial number, brand of barrel, and rifling twist. If the barrel fits more than one rifle, all information is stamped accordingly. Considering the many variables involved, there is always some degree of trepidation as to just how well the much-worked-on rifle would perform. This was quickly dispelled as I shot two five-shot groups under a half-inch with the .300 WSM and 0.70 inch with the standard weight 7mm magnum barrel.

Primers remained totally flush with the case head on each cartridge after firing. Used rifle bolts are usually available through gun parts

outlets like Numrich Gun Parts Corporation (gunpartscorp.com), Jack First Gunshop (jackfirstgun.com), or Quicksight Gun Shop. New rifle bolts are often difficult to obtain. Conclusion The addition of secondary bolt, barrels, or stock to a switch-barrel rifle can be accomplished by a qualified gunsmith or good machinist.

The procedure is well worth considering as it stands to greatly increase both the usefulness and value of the rifle. You may end up with one of the most revered rifles you'll ever own. AG From top, a standard weight stock with the altered magnum bolt headspaced for both the .300 WSM and 7mm Remington

Magnum. Along action bolt headspaced for .25-06 Remington and 6.5-08 Winchester cartridge bedded into a Bell & Carlson target/varmint stock.

The Model 700 action is precision bedded into each stock with Brownells Steel Bed. In use, barrels can be switched in less than 10 minutes as the scoped action remains in the stock. 300 WSM with cartridge headspacing accomplished by shortening the locking lugs 0.007". A finer big game carry rifle may be hard to find. A 7mm Magnum barrel is also pre-headspaced for this rifle, which can be installed in just minutes.

SHOTGUNS

Shotgun Eject Mystery

Diagnosing chamber issues in problem shotguns and a head scratcher.

BY DOUG KELSAY FEBRUARY 2015

ORIGINAL PP. 11-13

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We have been seeing a rash of shotguns at KELTEC Systems over the last year or two wherein the spent shell sticks in the chamber. We suspect you have seen similar symptoms, based on the quantity we've seen. We wanted to provide an update on that symptom and what we've done so far. And as you'll see, it's still a bit of a mystery.

The basic symptoms are, after firing the gun, either the slide will not open (in the case of a pump), the gun will not cycle (in the case of an auto) or the shell won't extractor eject (in the case of break type guns.) In all cases, the spent shell is still stuck in the chamber. It is my expectation that the gun "naturally" eject the shell—that is, to do it without the aid of a ramrod, pry bar or a swift rap on the chamber.

We have always seen the occasional gun with these symptoms and found most were fixed with a good cleaning. In some cases it took a lot of work with some solvent (the venerable Hoppe's #9) and a bore brush on a drill. You wouldn't believe the crud that gets caked in some chambers over the years. Even after this we'd have a few that were clean but the spent shell still stuck and wouldn't "naturally" eject.

One way to assist in diagnosing this problem is to coat a shotshell with Dykem layout fluid and, when dry, fire it in the chamber. After forcibly popping it out, you can occasionally see scratch marks where the shell is being scratched by something in the chamber. Multiple tests of this type may indicate the location of the chamber that is causing I needed to replace the right extractor to re-cut it with the chamber reamer to ensure it was fit properly. the trouble, such as a burr in the extractor area.

After burr removal (if necessary), if the shell was still sticking, we'd hone the chamber, either with a brake cylinder or bottle brush type. This polishing would usually take care of the problem. Over the last couple years though, we've seen many that, even after a thorough cleaning, deburring, a good polishing and a dab of oil or grease to lube the chamber, the spent shell would still stick. Based on the data from our shop, there seems to be two basic causes of this type of failure.

The first is one that is more based on the manufacturing of the gun than the hygiene. We saw this problem with a many Remington 870s and a few 1100s re-

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The right chamber appears much smoother than the left yet it still causes shells to stick. cently. We correlated the serial number range and in a quiet conversation with Remington service found out that there was apparently a batch that had this problem. We had tried our usual process on the gun and it still didn't work. We would then send the gun to Remington and usually get it back with anew barrel. Occasionally it was the same barrel so we figured they had some process we didn't. More on this later.

Remington was always very good about not charging for the repair and had good turnaround time, most likely because they realized there was some problem they had at some point and it truly was a manufacturing defect. On at least one occasion we had polished the chamber with a brake cylinder hone that has hard stones. It was very clear that there was a bulge in the chamber because the hone marks were in front of and behind the bulge but not inside it.

There was no corresponding bulge on the outside indicating an overpressure problem. We suspect that during the chamber reaming process there was some problem that allowed for a buildup of chips in the reamer, thus causing the bulge. Regardless, Remington treated us well on all occasions. We now see less of these, so it appears that problem is less prevalent than it was.

I don't know how big the installed base of guns that might exhibit this failure is but with the production volumes of Big Green,

there could still be a few out there. If you get a Remington gun in for this symptom, have already done the cleaning, and if you have a brake cylinder type hone, you might look for the bulge.

Please note that when honing a forcing cone, a chamber or a choke (or the cylinder on an internal combustion engine for that matter) you want to cycle the hone into and out of the cylinder fairly rapidly, relative to the RPM of the hone, and create a crosshatch pattern. Do not let the hone simply spin in one location. It messes up the stones and gives you a poorly shaped profile or bulge.

The optimum crosshatch pattern is something like 20-45 degree angle, depending on the material, the coarseness of the stone and purpose of the cylinder. I used to be an engineer at a (yellow) chain saw factory decades ago and we had big Sunnen hones that would cycle exactly the right angle on the cylinder and the pattern was evident.

The other thing to note with hones is that you don't let the stones exit the cylinder more than about 10-20% of the length of the stone, and only then if you are trying to change the shape of the cylinder, such as creating a "lead-in" or micro-chamfer. For instance, if your stone is about 1/2" long, you should not let more than 0.050" to 0.100" of the stone out on the end of the cylinder. Generally, always try to keep the stone in the cylinder. Make sure you use some good honing oil. Lots of it.

You don't want the stones to clog or gouge. This chamber work, observations, discussion with Remington tech folks, and trial and error helped in trying to identify the problem with the other guns that came in. The other symptom we saw were similar but were not manufacturer specific. Again, most problems were fixed with cleaning or some polishing but we had some stubborn ones that we could just not make work. On some, we used a chamber reamer to check the chamber and found the chamber was under size.

European chambers and bores are occasionally tighter than ours and we suspect some are at the minimum or below Sporting Arms and Ammunition Manufacturers' Institute (saami.org) specifications. Some older guns built prior to SAAMI may be under size as well. On these, we could re-cut the chamber and bring it to a known good profile. Occasionally, using the reamer would show a bulge, scratch or other irregularity and just rereaming the chamber and a little polishing with the hone fixed the problem.

However, we have had two stinkers that just would not work, no matter what we did. We even replaced the ejector springs with heavier springs to compensate. I am not a believer in



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“if it doesn’t work, just use a bigger spring.” That is not a sound repair philosophy as opposed to truly diagnosing the problem, which may really be based on bent parts, finish of the parts or other causes. In this case, unfortunately, we were getting desperate. On these two, we tried all of the above and on one even made a custom chamber polishing tool to help fit the area of the base of the shell. The chamber was polished to almost mirror smoothness. The shell still stuck.

Coincidentally, both of these are double barrels. One was a Sarasqueta over and under from Eiber (in the Basque Country of Spain) and the other was a Savage Fox side by side in which one barrel worked and one barrel wouldn’t. Our last attempt to solve this dilemma was to order a “max-spec” reamer. I suspect Remington may have had something similar to this, as I alluded to above, but I can’t say for sure.

Pacific Tool made us a custom reamer that was at the maximum Keltec Systems Gunny’s Red Oil. The story of Gunny’s Red Oil is an entertaining blend of fact, fiction, history, myth, and a probably a bit of what is swept off the stable floor. At seventeen years I went away to gun school 700 miles from home. I first heard about “Red Oil” in gun school in the early 70s. Some of the stories

there include the idea that back in WWII, the military had to test 1911s for evaluating new components and ammunition.

A team was expected to shoot 10,000 rounds from a single gun as soon as possible. Of course the gun would get filthy and jam up after some time and disassembling the gun and thoroughly cleaning it took too long. After trial and error they came up with an oil that would clean and lubricate under these conditions: Red Oil. As test guns jammed, they would liberally apply (slop on) some Red Oil, hand cycle it a few times and commence firing again. This process dimensions of the SAAMI spec.

Our hope was that, as this reamer should be bigger than the current chamber, we could re-cut the chamber, polish it and we’d be starting with a new chamber that should work. The new chamber helped some but didn’t fully solve the problem. The “good” barrel would work no matter what ammo used, either cheap stuff or high end. The “bad” barrel wouldn’t work except with high base brass or, as we recently found out, Winchester AA, which we just happened to have a box of and thought to try on a whim.

The only thing we've been able to determine is the steel based ammunition will be more likely to stick than the brass based ammo. Note that just because it looks like brass, it is most likely brass plated steel. Check it with a magnet. You'll find that most ammo is steel based nowadays. The Double As are still real brass. There may be other real brass shells out there, but these Winchester shotshells are the only one we've found would repeat for the entire test.

The real facts of this story are lost to history, though some of the old farts in the gun school claim to have had firsthand knowledge. Based on some of the other stories they told me, I'm not so sure. They also taught me some words and phrases I hadn't heard before. Few of them repeatable in front of my mother, I later found out. Experimenting with various blends and formulae, I set up some tests.

On any semi-auto that came in for "failure to cycle", I would first slop on some of my experimental oil and commence firing. If that fixed the problem, I knew it was a "clean and oil" repair. This has led to a much more cost-effective diagnosis process for my customers. I found some additives helped, others did not, and some depended on the design of the gun or failure mode as to its effectiveness. The name "Gunny's" is inspired by a blend of characters I've met over the years. Gunny didn't have "sayso far."

They work every time in both guns, in both barrels, as do some random brass high based shells we tried. Seems most high base is still brass, but not all! Most folks around here want to use their shotguns for dove season and to use high base is not very practical as BB size shot is just a wee tad overkill for most doves. We don't like to have to tell the customer his only option is to buy a better quality shell, but at this point that seems to be the only answer we can come up with.

Seems that something about these guns just won't tolerate anything but brass based ammo. The reason why one barrel exhibits the problem and the other does not is still unsolved. I suspect that some of you have run into this problem. If you have been able to solve it by some other method that we have not tried, please let me know (contact information omitted in this digital edition , For the rest of you readers, I hope this may help you in the future. AG ings", he had YELLINGS. Ya never had to ask "what?" to Gunny!

ORIGINAL SOURCE PAGE

13

FROM THE ORIGINAL PAGE

We actually use Gunny's in our shop for lots of tasks. It is a good, general purpose oil. It cleans, lubricates and protects. It can also be a bit messy in Gunny's quantities, but Gunny never worried about that as "grease is cheaper than parts." We prefer selling this wholesale to gun shops and let them sell it to the customers. AG

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PEOPLE & COMPANIES

Sako-Style Extractors On Model XP-100 Pistols

How to open the bolt face from .223 to .308, add a second bolt, and install a Tubb Speed Lock Extractor Kit on a Remington Model 700 Series rifle bolt.

BY NORMAN E. JOHNSON FEBRUARY 2015

ORIGINAL PP. 14-17

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The Sako-style extractor kit we'll be using is available from Brownells (#562-102-000AD) and fits medium-size bolt faces, including .22-250 and .308. The Remington Model XP-100 incorporates the same size bolt head, locking lug system, and receiver/barrel threads as the 700 Remington series rifles. Converting its bolt face to a larger size and add an extractor conversion does not compromise the function or strength of the action.

As advised in the extractor kit instructions, modifications necessary to install these parts are permanent and none reversible, and will void factory warranty. If you have never made this modification before, they recommend practicing on a piece of 0.750 inch mild steel round stock shaped to the dimensions of the bolt face being modified. It is strongly recommended that only experienced gunsmiths who are properly equipped and practiced in this type of work perform this job.

If you have any doubts about your ability to correctly install this product, do not do it. The Tubb Speed Lock Extractor Kit comes with additional instructions covering bolt modification and extractor installation on several of Remington models, including Models 721, 722,

725, 700, 600, 660, 40X and XP-100, Model 7, and Sportsman 78. Though it is a very exacting procedure, I encountered no problems in performing the work, including bolt face enlargement on the added bolt.

However, bolt steel used on the older XP-100 bolts is quite hard and it may be advisable to use carbide drilling and milling equipment. Bolt faces show smaller case head size as used on the .221 Remington Fireball cartridge. One bolt is about to undergo a serious transformation. The bolt must be totally stripped down, including removal of the firing pin assembly, extractor, and ejector. Before enlarging the bolt face from .223 cartridge size to .308 cartridge size it should be carefully measured.

The lathe work is performed by centering the stripped down bolt in a lathe with bolt head in a center rest. A threaded centering bolt is turned into the cocking piece hole as a means of holding and turning the bolt in the lathe. A boring bar set up or a properly sharpened tool bit in the compound rest can be used to enlarge the bolt head recess to proper diameter. Caution must be exercised to not remove any metal from the bolt face plane unless the bolt face has run-out.

SAKO-STYLE EXTRACTORS ON MODEL XP-100 PISTOLS CONTINUED

ORIGINAL PAGE 15

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This same style on right shows installation of a Sako-style extractor installed on an XP-100 bolt where the bolt face has been opened to .308 size. Set Up Let's cover setting up and cutting the new extractor slot and drilling hole for the retaining finger. With close attention to the instructions, the bolt is set up horizontally in a milling machine for cutting the extractor slot and drilling the hole for the extractor retaining finger.

Be very careful in positioning the extractor slot adjacent to the correct locking lug. Be certain to reference the instructions. With some variance in the type of extractor used, the depth and length of the slot is cut using a

proper size end mill. It is best to cut the slot in several passes to avoid problems with the cutting process. The instruction sheet quite clearly shows the relationship of the slot to the bolt face.

It is recommended to allow 0.004-inch clearance on each side of the extractor slot and be sure the depth of the slot provides relief for the extractor as it passes through the receiver bolt hole into the bolt/barrel recess. I found the slot depth to be 0.125 inch. Fitting And Installing Now we'll fit the extractor retaining finger. Beneath the rear of the extractor around retaining finger, 750" diameter piece of mild steel before taking on the job.

This is a good idea because, as shown here, there is not much room for mistakes. 223 to .308 size. The ball bearing center rest jaws are an invention by the author. Note special threaded adapter used on Remington bolts to hold and align bolt in lathe chuck, or lug, is located. This finger is later positioned into a properly positioned hole at the back end of the extractor slot. The size of this hole is 0.191 inch, the size of a number 11 drill.

This finished hole is actually 0.010-inch larger than the retaining finger which allows for a small amount of upward movement at the

SAKO-STYLE EXTRACTORS ON MODEL XP-100 PISTOLS CONTINUED

ORIGINAL PAGE 16

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308-size cartridges. Directions must be followed to the letter here. Note the position of the extractor slot located within a few thousandths of the bolt lug. The bolt remains in the milling vise for these two operations. tip of the extractor as the cartridge snaps into this extractor claw. The hole is drilled right through into the firing pin hole. Advance the drill very slowly at this juncture to avoid bit breakage. Try the extractor into the slot and test the finger hole for fit.

It must fit without bind as it allows some upward lift of the extractor. The front edge of the extractor should be flush with the front

edge of the bolt. Next, install the extractor retaining spring and plunger. The bolt is now placed vertically in the milling machine vise set up for drilling a hole for the spring and plunger. A 0.104-inch hole is drilled at the back of the slot center about 0.065 inch from the bolt wall. Directions recommend appropriately spacing from the bottom of the slot.

This hole is drilled to a depth of 0.450 inch, which I set on my milling machine index and used a drill guide. This allows for plunger spring compression and travel, which must be flush with the rim of the hole as extractor retaining finger pops into place. Now try in-

stalling and removing the extractor. 450" depth and to fit the diameter of the spring. Author recommends use of a drill guide to start this hole. One miscue in the milling and drilling process can ruin the bolt. ing the extractor.

A few hints for installing and removing the spring loaded extractor assembly on the finished bolt should prove helpful. Being spring loaded, we don't want parts flying around as we install and remove the extractor assembly. Secure the bolt horizontally in

SAKO-STYLE EXTRACTORS ON MODEL XP-100 PISTOLS CONTINUED

ORIGINAL PAGE 17

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A lot of precision gunsmithing went into this process. a padded vise with extractor slot upward. Carefully insert the spring and plunger into the hole with the square face of the plunger downward. At this point the plunger will extend about 3/16th inch outside the hole. With the extractor held horizontally in the slot use it to push the spring and plunger inward until the extractor finger pops into its hole, locking the assembly functionally in place. The extractor should now be in full working order.

Try a cartridge for fit. If it works, pat yourself on the back. Extractor removal can be very tricky but I did discovered a good way to do

it. With the bolt placed horizontally in the padded vise, lift the extractor nose upward just enough to slide a thin metal wedge along the bottom of the extractor and be ready to pry the extractor finger upwards. At the same time, push inward on the spring-loaded plunger with a thin square punch which allows the extractor finger to be lifted upward and out of the recess.

Use care that the spring and plunger don't fly wildly and get lost. Removal of these parts while inside a transparent plastic bag may be a good idea. Conclusions As with most highly precision machining projects, close attention to 22-250 cartridge with Sako-style ex-

tractor, compared with original bolt chambered for .223 Remington. detail is very important. This was particularly true where I took on the two fold task of enlarging the bolt face and successfully installing a totally different type of extractor.

Though the standard Remington style extractor and ejector system has been very reliable, I have found a need to replace several of them. I can highly recommend the Sako-style extractor for its positive function. In the final analysis the choice of extractors becomes a judgment call between the gun owner and gunsmith. AG

FROM THE ARCHIVE

It Don't Come Easy

The life and times of a gunsmith.

BY BRIAN E. CAPPS FEBRUARY 2015

ORIGINAL PP. 18-19

I knew it was gonna be one of those days. The boss— my friend, mentor and fellow gunsmith—had obviously awakened on the wrong side of the bed and was in a foul mood. Things didn't go right all morning. Just before getting ready to go out to lunch, the buzzer on the front door went off signaling that we had a customer. I went up to the window to offer my assistance and, in a loud voice, the man announced that he wanted to see the owner. Hearing this, the boss asked if he was a solicitor; the answer was no.

Putting down the parts he was trying to assemble into a working trigger group, the boss came up to the window and immediately launched into an obscenity laced tirade. The "customer" had an arm load of cheaply made items for sale, junk that most flea markets would turn away. "Darn it, [this is the nonobscene version]

I thought you said you weren't a solicitor." Upon hearing this, the man drew himself up to his full height (about 5' 3") and announced, "I ain't no solicitor, Iis a salesman." Can't argue with logic like that. We hustled him out the door and went to lunch. Gun shops seem to draw a group of real characters and gunsmiths also get their fair share. We had one guy I called Peter Paul because every time he showed up he had two or three Mausers he wanted repaired or modified.

We always wondered why a man would want that many virtually identical rifles, though I shouldn't cast stones as I have a fairly large accumulation of Mosin-Nagants. He always requested that we test fire each unit and provided us with some ancient 8mm Turkish surplus ammo. The task of test firing was always my job and I hated it. Even with earmuffs and poking the barrel several inches into the bullet

trap, the concussion of the first shot had me flinching the next time the trigger was pulled.

Sure enough, one of the rifles had a soft spring and wouldn't pop that rock hard primer (and yes, I flinched.) After replacing the spring with a new one, the gun went off as planned and I was shocked by what happened next. Hearing me unleash a "Holy Cow" (clean version again) at the top of my lungs, the boss came running to investigate. When asked what had happened, I explained that this particular test shot included a bright, white fireball that climbed up my arm shortly after the gun went off.

Thinking I was crazy, he fired a magazine of five rounds and nothing happened (naturally.) Later that afternoon Peter Paul arrived to pick up his rifles. We told him the story of my fireball incident. He looked at me like I was not only crazy, but a wimp as well. "Let ME try it," he said, grabbing one of his Mausers and a fist full of ammo. The first shot was normal but the second included the return of the fireball. Now I had some witnesses.

We discussed the matter briefly, deciding it must have been some slow powder, still burning as it exited the barrel and then the ball of flaming gas bounced off the end of the bullet trap. It then proceeded to travel up the arm of the disbelieving shooter and vanish. Peter Paul quietly paid his bill and left. We didn't see him again for several weeks. I have my own shop, but still occasionally work for my friend because of his knowledge and good company.

It doesn't hurt that he also has a mill, lathe and almost every special tool on the planet. A woman I had worked with called about a project that didn't require any of my friend's special tools, just lots of time

and creative thinking. She wanted to have me restore her husband's old Winchester .22 so she could surprise him on his birthday. In good shape, this rifle wasn't worth a hundred bucks, in its current condition it wasn't worth twenty.

The story was that the woman's husband and his first wife had gotten into an "argument" and she tried to club him with his trusty Winchester; I'd say a pretty good reason for the divorce. She missed him, but did connect with the refrigerator, shattering the stock into several pieces. The sorry old gun was stuck in the closet for a few years, allowing several pieces of wood to disappear and the metal to rust. As I examined the rifle, one quick look revealed that the little .22 should never be fired again.

The bore was a solid mass of rust which would surely trap any bullet that someone was foolish enough to fire. I told her I felt certain I could locate a good used stock for a friendly price, but she wanted none of that. She decreed that only original parts were to be used for the "restoration." I explained that, good as I may be, the stock was too badly damaged for me to repair, especially the side that had collided with the fridge.

A few days later, she pitched the idea of mounting the rifle in a shadow box, "good" side facing out. It seemed doable, so I began what ranks as the dumbest project I have ever taken on. I disassembled what was left and, first things first, ground the tip off the firing pin and noted on the work order that the gun was unsafe to fire. The bolt assembly was in surprisingly good shape, so I cleaned it up, oiled the parts, and put it back together. Next was the barreled receiver which was soaked

IT DON'T COME EASY CONTINUED

ORIGINAL PAGE 19

in rust remover, then bead blasted. Some aggressive blasting disguised the worst of the pitting, so it was time for anew finish. I started by grabbing a bottle of Oxpho-Blue cold blue off the shelf. Did I mention that the nice lady wanted all this done as cheaply as possible? The bluing compound was applied with some 000 steel wool (I know that sounds weird, but it works) and soon the metal was looking as good as it ever would. I was dreading the next step, resurrecting the stock.

There were several chunks missing and the biggest break was so jagged that there was no way it would all fit back together. The only solution was to saw off the jagged bits and butt the two freshly sawn pieces together. Surprisingly, it actually didn't look half bad. Then I decided to adapt an old benchrest trick and glued the barreled action into the stock. Piece by piece, I re-assembled that metal and wood jigsaw puzzle with the aid of Acraglas epoxy and a moderate amount of stupid luck.

Once the glue had dried, the "remodeled" stock was steamed to remove the worst of the numerous dents and refinished with a quick coat of varnish. The whole thing turned out much better than expected, mainly because most of the rifle was hidden by the shadow box itself. When all was said and done, I collected \$40.00, netting me about 75 cents an hour. Dumb. Fall for gunsmiths is, to quote a famous author, the best of times and the worst of times.

We stay very busy and actually make a few bucks, but everybody wants the job done yesterday. Never mind that there are several months in between the end of the old hunting season and the beginning of the new one. No one seems to plan ahead. Shorten a stock for my son, fit anew recoil pad, mount a different scope. The requests for service seem endless. Then there is the guy with his trusty muzzle loader which needs a "quick check-up" in order to be ready for the new season.

At first glance it doesn't look too bad, just dusty from hanging on the wall above his fireplace. While I was writing up the service ticket, the customer filled me in on his trophy buck (aren't they all trophies?) taken last year. After he left, I set to work—remember, it had to be done yesterday. A flashlight showed the bore to be kind of rough and a phone call to our intrepid hunter revealed that he had not cleaned it after his successful hunt.

If possible, I like to remove the breech plug from the barrel to allow the best view of the bore. No such luck, the plug was rusted solid. I tried a variety of concoctions (most with an odor which would gag the proverbial maggot) before failure forced me to call my gunsmith buddy. He is a world class storyteller and related some information he had gotten from a machinist mate who had served on a nuclear sub.

It seems that, due to the air supply on board a submarine being constantly recirculated, the US Navy doesn't allow petrochemical solvents such as WD-40. The substance they do allow is oil of wintergreen. I thought this sounded preposterous but found a tiny bottle of the real thing at the grocery store and gave it a try. Damn, it really works and even makes the shop smell great. Sure enough, the neglected barrel was junk and time for anew muzzleloader. The expensive lessons are always the best way to learn.

This situation triggered an amateur test of my ample supply of penetrating oils. I dug through a pile of old motorcycle stuff (I make it a practice not to have any inexpensive hobbies) and pulled out a brake rotor and carrier assembly that had a heavy coat of rust on the bolts that held them together. All the bolts received a dousing of different types of "miracle" stuff (all of this done outside as I'm not THAT much of a glutton for punishment) and gave it some time to work.

The material that seemed to do best for me was good old Marvel Mystery Oil (marvelmysteryoil.com). I took a whiff and it

sure smelled like oil of wintergreen to me. Now when muzzleloaders are brought in, they have a couple of ounces of "Marvin's Mystery" (what I now call it) poured down the barrel and set in the corner to give it time to work. And best of all, I don't have to invest in some frilly air freshener to keep my shop smelling fantastic.

I earlier wrote about "restoring" a "family heirloom" and the fun to be had with such a project. Most people have no idea of the time and effort (and money) required to make an old, abused firearm look new again. It is generally easier and cheaper to build one from scratch than to attempt a real restoration. I was working with my gunsmith friend when a group wandered in with some sorry looking guns and brought up the "R" word.

My buddy did everything in his power to discourage them, citing the considerable amount of hours and dollars needed to accomplish what they wanted. It was against his better judgment but he accepted a substantial down payment and took on the job. Over the next few months, we would work on these guns as time would permit. This was a daunting task and it was obvious that time had truly taken its toll on the wood and metal. The stocks were dented, one also had a large crack, and the steel parts were pitted and rusty.

After a tremendous amount of careful, painstaking labor, the project was done and the customers were called with the final payment needed. When they arrived, we showed them the fruits of our labor. We didn't know it but we were in for a shock. Tears of joy came to their eyes as they remembered the good old days when their long dead relative used these guns to put food on the table. They thanked us profusely and left with the rifle and shotguns in their hands and gigantic smiles on their faces.

Yup, being a gunsmith can be a struggle but times like this make it all worthwhile. AG

FROM THE ARCHIVE

Bench Blocks 101

Bench blocks come in many shapes, sizes, and uses!

BY DICK MAHEU FEBRUARY 2015

ORIGINAL PP. 20-22

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This is a subject that I have never seen covered to any extent. After looking around my workshop I decided to write an article giving some ideas for your workbench. Bench blocks are pretty simple, or are they? We all have at least one or several. Just what constitutes a bench block? Let's try to define what a bench block is called upon to do.

We use them to support, prop up, balance, elevate, align, block, separate, combine, mount, rivet or work on gun parts and assemblies in the process of disassembly, reassembly, modification, repair and a whole host of chores we encounter in the shop. Materials for bench blocks run the gamut. Steel, aluminum, brass, copper, polyethylene, urethane, plexiglass, rubber, phenolic laminates, vinyl, leather, granite, rock, cork, various hardwoods, the list is endless.

There are also many specialty bench blocks specific to certain firearms. Brownells carries some of these specialty bench blocks which I'll touch on in this article. Bench blocks have been with us from the beginning of man's existence when he placed

food items on a flat rock or log and beat them with another rock to pulverize them for eating or cooking. Anvils of all shapes and sizes can be termed and utilized as bench blocks.

Man's discovery of iron ore and other alloying metals opened many avenues of invention which have been greatly refined with modern technology. A great many commercially made bench blocks are available for purchase today. However, as practicing gunsmiths, we seem to like and most often use on our bench the one's we have made or modified ourselves. There is just something special about utilizing a tool you have created or modified through your own ingenuity.

It has never ceased to amaze me at some of the ingenious modifications and devices I have found in firearms while working on them that some other gunsmith has come up with to exact repair.

There is a lot of knowledge and exceptional ability in the I picked it up in a salvage yard and have no idea what it was originally

used for but it has assisted me in taking apart hundreds of guns over the years. gunsmithing fraternity and I have gotten many great ideas over the years from various gunsmith acquaintances, gunsmithing books and articles. Let's look at a few commercially available bench blocks on the market. I have listed and show, five commercial type bench blocks I have in my shop.

The Wheeler Engineering block is probably the most versatile bench block I own. Although having several functions that were specifically arranged for work on Colt 1911, it has much versatility in the working of all types of firearms. I highly recommend this bench block. It is made of non-marring urethane and is available from Midway USA, Amazon.com and other outlets. It is 4 x 1- 1/4 inches in size and runs between \$17 and \$24. It is a solid block.

The steel bench block is very rugged and will take a lot of pounding. It is made of solid steel and partially hollowed out on the bottom for gun pins to fall through when being

BENCH BLOCKS 101 CONTINUED

ORIGINAL PAGE 21

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It is one of the most versatile bench blocks I own. Top left, Wheeler Engineering bench block; top right, a steel bench block; bottom right, Blue Pistol; bottom left, a rubber bench block and center, an aluminum bench block removed. This block is sold under many different brand names but virtually all alike and apparently produced by the same facility. Prices vary greatly on this bench block from \$18 to \$85. You get to choose what "brand" name you want on your bench!

I obtained mine from Grizzly Tools for \$16.00 some years ago. It is 3 x 1-1/2 inches in size and sees a lot of use on my bench. I highly recommend it for the tough jobs you will encounter. The Blue Pistol Bench Block is very much like the Wheeler block but not as versatile. It was the forerunner of the synthetic blocks but remains quite versatile in the shop. I've had mine for some time now and it saw a lot of use in the past. It is obtainable from Brownells and is priced very reasonable at \$17.

It is made of non-marring polyethylene and is 4 x 1-3/8 inches in size. It is a solid block. The Beadalon solid rubber block is advertised as a jewelry making block. Your own ingenuity will show how you can use these types of items to assist you. but is very handy for the gunsmith. I use it mostly as a base for smaller metal blocks when working parts or assemblies. It is sold as a 4 x 4 x 1 inch block but is slightly smaller in size due to rounded corners. It sells for as low as \$5 on Amazon.com.

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My aluminum bench block may not be a commercial block as I acquired it used at an old tool shop but it is extremely well made by a gifted machinist. It is 1-3/8 inches high by 2-5/16 inches wide. Accordingly, I have no source or price for this block. Incidentally, we have several of these used tool places close to where I reside here in Maine and I have found many useful tools for gunsmithing in them or tools I could turn into jigs and special gunsmithing tools.

I hope to cover some of these tools in upcoming articles. Search out some of these used tool places in your area as they can be a treasure trove for the gunsmith. All but the steel block are nonmarring. The many different sized "V" blocks I use, while not bench blocks in the vernacular, are often used as bench blocks on this gunsmith's workbench, often times, in conjunction with other bench blocks or to secure round work.

The Machinist's Step Block has eleven different height steps and is made by Jergens Machine Tool (jergensinc.com). It is very handy when setting up parts or assemblies with different height sections or in machine set ups. I picked mine up at a used tool shop and they may be available direct from

Jergens. My main bench block is made of aluminum and came with ready made holes of different sizes.

I have no idea what its original purpose was for but I have used it to disassemble hundreds of firearms since the middle 70s. I originally picked it up in a salvage yard for next to nothing. It is 3-1/4 x 3-1/8 x 5/8 inches in size. I originally covered one side with moleskin to protect both the block and parts being worked on from marring. I only replaced that just last year with sticky back felt which is available from hobby and craft shops.

My wife is a great quilt maker, having made and given away over 200 quilts, and I often find myself at the Jo-Ann Fabric and Craft store, browsing while waiting for her, and that's where I found and obtain my sticky back felt from. It comes in various colors and is reasonably priced at \$3 or so a package. After all those years, that original moleskin was pretty beat up and dirty but still functional. They also carry dowel rods fairly cheap.

You see fellas, even a gunsmith can find something he can use in a place that you all thought was for the wife only! I have several different items utilized as bench blocks over the years made of steel, aluminum and round plexiglass. All of these items were picked up over the years for very little mon-

ey and have been priceless to me when I needed each one of them for a specific job or task.

While some of these items may look like overkill, you as an individual gunsmith or gun nut need to determine your own needs as you work guns commercially or just for yourself. Brownells carries several special purpose bench blocks for specific tasks, many of them for work on the AR-15 or 1911. Some noteworthy examples include the 10-8 Performance 1911 Auto Armorer's Block (#100-004-369AK), AR-15 Hammer Drop Block (#080-953-000AK) and 1911 Auto Barrel Alignment Block (#080-000-041AK.) They have many others.

Many years ago, while stopping at Brownells, traveling through on vacation, I met the late Bob Brownell himself, and my wife and I were treated to a complete tour by him, followed by a nice conversation on the finer points of establishing a small gun shop/gunsmithing business. A finer gentleman I have never met and the folks at Brownells can always be counted on for top rate service and products. I highly recommend them.

I have shown a couple of pictures of bench blocks in use on my bench but the uses to the gunsmith are without end. I hope this article has given ideas to the reader on the subject of Bench Blocks 101. AG

SHOTGUNS

Reader Forum

BY AMERICAN GUNSMITH EDITORS FEBRUARY 2015

ORIGINAL PP. 23-24

Spanish Shotgun What do you know about shotguns made in Spain? The only markings are on the example in my shop is “Acero Cromado Especial.” JR Weaver Mountain Man Gun Works Admittedly, we know nothing about a shotgun bearing the markings you describe. Our files are far from large enough to cover the entire gun manufacturing world.

Rather than have you wait while we contact an outfit that may have the information, send your request and gun markings to the National Firearms Museum, Fairfax, VA 22030 (nramuseum.org, Colt 1991A1 I am having a problem with a Colt 1991A1 that came in to me to have a new slide release, grip safety, and trigger installed, along with rebluing. Testing after the work was complete revealed the pistol won't extractor eject.

I will admit to not test firing it before I started the work and can only assume it functioned properly. Now when fired the slide will not come back far enough for the case to clear the barrel. I have tried different ammunition with the same result. Do you think I should try different weight springs from Wolff Gunsprings? Kenneth W. Wright Wright Enterprises of Texas Point one, never assume anything about a firearm you're servicing, including the possibility it was handed to another previously for the same purpose.

A possibility for a new or retightened ejector exists. The slide-to-frame fit should be checked for drag. With proper fit, the slide should move freely to the rear when the frame muzzle end is tilted upward. In this test no assistance is to be provided to the slide and only the slide and frame are involved in the testing. Pull out the recoil spring presently in the pistol. Arrange with Wolff to test its poundage, then request one of their variable springs as a replacement.

These springs are functionable under a wider range of operating conditions than a single weight spring and far safer than dropping in a too light spring that can cause frame battering. Closely reinspect the work you

ORIGINAL SOURCE PAGE

23

READER FORUM CONTINUED

ORIGINAL PAGE 24

have done and check it against the same practices described in Colt .45 Automatic: A Shop Manual by Jerry Kuhnhausen. We dread to mention it but the ultimate fear of a bent frame rears its ugly head regardless. Ithaca M37 Action Problem I have an Ithaca Model 37 in the shop with an action problem. The bolt will jam after firing. If I wait a few seconds after firing around I can work the action and eject the spent hull but if I try to work the action immediately after firing, it will jam.

I have checked the slide lock and it is working normally. I have polished the chamber, thinking that the shell expansion in the chamber might be causing the problem but this did not resolve the issue. I've read this is a common problem with the Ithaca M37 but nothing on how to correct the problem. Richard Spencer Spence's Gun Shop Hopefully, you didn't go too far with the chamber polishing and enlarge it.

That being asked, we had a talk with a technician at Ithaca Gun USA, current producer of the Model 37 (ithacagun.com). Excerpted commentary from that conversation raised concerns that the headspace is off. Fitting anew barrel is the resolution. Another possibility, the action is being cycled too rapidly. A third and probably the cause of the problem is ammunition related.

Explaining that further, when an older Model 37 is fed modern shotshells, they might lack the hull strength of those produced back in the day the gun was made. This can create a condition similar to excessive headspace and the "common problem" you mentioned being the hull expands into the barrels extractor notches.

Winchester Model 12 I have a barrel chamber ring mating issue in a 1952 Winchester Model 12, 2 3/4" chamber, of introduction and to anticipate some of your questions, the chamber length is clearly stamped "2 3/4" on the barrel. The chamber ring appears to be properly seated, centered, and aligned with the receiver's extractor cuts. The receiver was originally drilled and tapped for only one chamber-ring screw. The barrel and receiver bear the same serial number.

Both left and right extractors, springs, and plungers have been replaced by me. Snap caps fit, cycle, and extract without problem or perceptible drag. There appear to be no dry fire headspace issues. Regardless of manufacture, all fired shotshells resist extraction. The fired shell is wedged in place and can only be forcibly removed with a wooden dowel inserted in the muzzle end.

Upon close inspection of each fired hull it is clear that the barrel's mated headspace is slightly greater than that of the neighboring chamber ring. Each spent shotshell's brass is almost imperceptibly

bulged just distal to the mating point of the chamber ring and barrel. When I first encountered the problem, on digital inspection of the mated chamber ring and barrel, a very slight, left-sided crescent of step off into the barrel was palpable.

I have since been carefully burnishing the unmated chamber ring's inner surface with emery paper and abrasive cleaning pads to achieve a "best fit" and can no longer palpate a step off once remated, yet the problem persists. Finally, are the headspace cutters and reamers so nicely illustrated in Winchester's 1957 Model 12 Sequence of Take-Down and Assembly Operations manual still available for purchase anywhere? John R.

Cooney, MD Checking a medical dictionary for a definition of "palpable" and "palpate" indicates you could digitally feel something, believe you have eliminated it, but the extraction problem remains. To us, this suggests an enlarged chamber. Check out the suspicion with Nu-Line Guns, a former Winchester Authorized Service Center (nulineguns.com, Ext. 5).

No idea who made the cutting and chamber tooling shown in the factory manuals but Dave Manson produces what are considered top-of-the-line these days (mansonreamers.com). Don't panic when the phone is answered with, "Hello, Loon Lake Precision." AG

SEARCHABLE ISSUE RECORD

Archive index

Legally Armed American Gunsmith Editors	2	Sako-Style Extractors On Model XP-100 Pistols Norman E. Johnson	14-17
MEXSAR Semi-Auto Rifle Chick Blood	3-6	It Don't Come Easy Brian E. Capps	18-19
A Second Bolt And Barrel For Bolt Actions Norman E. Johnson	7-10	Bench Blocks 101 Dick Maheu	20-22
Shotgun Eject Mystery Doug Kelsay	11-13	Reader Forum American Gunsmith Editors	23-24

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