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DIGITAL ARCHIVE  
EDITION

# PRECISION ARMS WORKSHOP

AND THE AMERICAN GUNSMITH ARCHIVE

A TECHNICAL JOURNAL OF CRAFT, REPAIR & RESTORATION

06

ARCHIVE ISSUE NUMBER

INSIDE THE ARCHIVE

# SEMMERLING LM4 HIDEOUT

MASTER PIECE ARMS MATRIX • J. C. HIGGINS 101.1/SAVAGE 94 • SHOP SAFETY • STUCK PARTS AND EXTREME MEASU...

ORIGINAL METHODS. MODERN ACCESS.

ARCHIVE EDITION 222

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## PISTOLS

# Master Piece Arms Matrix

BY AMERICAN GUNSMITH EDITORS JUNE 2022

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**M**aster Piece Arms (MPA) makes a variety of precision and competition rifles, pistols, and accessories. Their newest is the MPA Matrix, a next generation rifle chassis designed for practical precision rifle competition, such as Precision Rifle Series (PRS) and National Rifle League (NRL) events. With a multitude of configurations in grips, thumb rests, and trigger finger supports, the primary interface between the shooter and the rifle (the grip) has over 100 different variations.

The location of the shooter's hand, closer to the bore of the rifle, provides more variety on how the shooter can set up the chassis. MPA has a hand measurement chart to help identify which grip configuration may work best for each individual shooter. The Matrix Pro Chassis features integrated comp side rails that provide a stable platform when shooting improvised positions using a bag for primary support.

The fully-machined profile of the forend provides 60 percent more stiffness than the first-gen Matrix or ESR (Enhanced Sniper Rifle) chassis. The extended forend is also two inches longer and the rail now offers a simple exit point to slide a bipod off quickly.

The chassis offers each shooter a series of unique plates that are mounted in front of the magwell to protect the magazine during positional use, enhance stability for shooting positional with a rear bag, and give the shooter multiple options to suit his or her specific shooting style. In addition to an internal and external weight tuning system, the chassis design itself has also been redesigned, including a larger hole in the thinner buttstock to shift weight from the buttstock to the chassis forend.

A thin profile cheek riser allows the shooter's head to get more into the rifle. This further enhances the ability for each shooter to fine-tune their balance point. A quick release bag rider offers an adjustment to

the height of the rear bag rider with the press of a button. Barrels are getting bigger and the chassis can handle large straight profiles with its new 1.350 channel diameter without modifying the chassis.

The MPA Matrix Pro Chassis is machined on MPA's CNC Horizontal Machining Centers to exacting tolerances from 6061 aluminum. The MPA-produced buttstock comes with an adjustable cheek riser and length of pull, recoil pad with height and cant adjustment, and adjustable cheek riser. The V-bedding system provides additional clearance for glass bedding action and straight section of the barrel if desired.

The MPA Matrix Pro Chassis is available in eight standard Cerakote colors, including Graphite Black, Flat Dark Earth, Burnt Bronze, Tungsten, Gunmetal, Sniper Green, NRA Blue, and USMC Red. For more information on Master Piece Arms and their product line of firearms, chassis systems, and accessories, visit [MasterPieceArms.com](http://MasterPieceArms.com),

## MAINTENANCE &amp; REPAIR

# J. C. Higgins 101.1/Savage 94

*New tips on disassembly and maintenance of this classic shotgun.*

BY CHARLIE BRIGGS JUNE 2022

ORIGINAL PP. 3-5

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Recently, along-time customer brought me his father's old single shot shotgun. He and his dad had just spent a brief reunion the weekend before, shooting the sixty-year-plus .410. During the shooting session the "top snap"—unlocking lever—had quit and they could no longer open the shotgun. During the lengthy process of repairing the gun, I "invented" two significant tips that will absolutely be a blessing should any of you need to disassemble one of these firearms, which I will share in the paragraphs that follow.

The customer assured me there were no live rounds inside, which was a bit of relief, assuming he was correct. Unable to open the gun to check, the stock had to be removed to get to the mechanism(s) inside. However the stock bolt was frozen! Perhaps rusted in place? Regardless, no amount of screwdriver effort had any effect, despite several days of adding Kroil and firmly tapping on the bolt head. So, as a last resort I rigged up a lengthy screwdriver bit assembly to my air-operated impact wrench.

This is the same kind of wrench often used for removing lug nuts from auto/truck wheels. Mine is a "lightweight" model, delivering about 200 foot-pounds of torque and not adjustable for less! This would be a one shot attempt, I thought. The heavy torque on the bolt head, would either strip away the screwdriver slot, or completely shear off the bolt head itself, or bust loose the rusted threads. In the worst case, I'd have to cut apart the stock to expose the innards and then find the customer anew stock.

Fortunately, it was third result. I had lucked out! Once I got the stock removed, the problem was obvious. The top snap screw (#16 on the exploded drawing) that holds the "paddle and fork assembly" (parts #9, 10, and 11) that connected the unlocking lever to the locking bolt assembly top snap sleeve had worked loose. However, getting to the screw was going to be a problem. At the bottom right corner a screwdriver is being used to unseat the mainspring plunger.

Limited to the picks and screwdrivers in my shop, I was unable to accomplish this, so I had to devise another solution. The hole

where the plunger rested had been drilled all the way through, at the factory, so I threaded it and inserted a bolt to compress the spring, allowing me to remove the assembly. I consulted Gun Digest Book of Shotguns Assembly/Disassembly, Second Edition by Kevin Muramatsu and Firearms Assembly: The NRA Guide to Rifles and Shotguns by Joseph B. Roberts Jr. on the disassembly process.

Unfortunately, neither one of these two books was much help on this specific issue. The area inside the frame was insufficient to get any kind of screwdriver I had in there to tighten the screw. To complicate things further, the mainspring, hammer spring / plunger assembly, (parts 13, 14, and 15) were in the way as well. Here comes the first tip of my solution to this.

First, I had to remove the mainspring plunger assembly, however, there was no obvious way to do this and the books had poor photos showing something like a screwdriver prying the plunger seat out of the gun. I tried a number of screwdrivers, picks, etc. Nothing I tried worked. Then, I noticed the seat in the frame

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The tip of the screwdriver is just above the top snap screw, mentioned above. This was the only way I could access the screw to tighten it. The hole would later be concealed by the trigger guard, that held the plunger was drilled all the way through the end of the frame. I measured at about 0.215" inside diameter, so I tapped it for a 1/4" x 24 thread and cranked in a blunt 1/4" x 24 bolt. This compressed the spring enough to press the entire spring assembly slightly below the rear of the frame.

Next, protecting myself from the anticipated violent release of the heavy spring, I wrapped several layers of shop towels around my left hand. With my right hand, I pushed the assembly outward. The result was another significant victory! As it Using the spindle on the mill, the rod was pressed down to compress the mainspring plunger assembly downward until it cleared the rear of the frame.

Once the assembly was just inside the frame, a pair of Channellock pliers moved everything the rest of the way into place. turned out, the shop towels weren't necessary, but as my Dad used to say, "Better safe than sorry." For the second tip of my solution, I had to address the loose "top snap screw". The quotes are on purpose as this is not shown on the parts diagram. Studying the arrangement, I noted that by removing the rear trigger guard screw I

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J. C. Higgins 101.1/Savage 94 (Specifications subject to change without notice) 1 Top snap 2 Locking bolt plunger spring 3 Locking bolt plunger 4 Locking bolt assembly 5 Firing pin screw 6 Firing pin 7 Barrel 8 Front sight 9 Top snap plunger spring 10 Top snap plunger 11 Top snap sleeve 12 Hammer 13 Mainspring plunger seat could rotate the trigger guard 90 degrees or more, exposing a decent area directly opposite the top snap screw, which would be concealed upon reattaching the trigger guard.

So, I drilled a 3/16" hole there and was able to insert a lightly ground and shimmed screwdriver through the hole to tighten the screw. Ta da! I checked the operation of the lever and everything worked.

Using the newly-tightened lever, I then opened the breach, confirmed there were no live rounds inside, then removed the barrel for cleaning. 14 Mainspring 15 Mainspring plunger assembly 16 Top snap screw 17 Frame 18 Locking bolt, hammer pin 19 Trigger guard screw 20 Trigger spring 21 Trigger 22 Trigger pin 23 Extractor 24 Ejector spring 25 Ejector starter pin 26 Trigger guard 27 Trigger guard screw 28 Ejector hook 29 Extractor stop pin Unfortunately, for complete reassembly I still had to figure out away to compress the mainspring and get the whole mainspring plunger assembly back into place.

Obviously, the blunt 1/4" x 24 bolt wouldn't help, and only one of the two books barely addressed this. The photo caption in the book says, "when replacing the hammer spring assembly, note that the longer lobe at the front of the guide goes at the top.

The best way to install this assembly is to grip the front of the receiver in a padded vise, pointing downward, and use a 30 Extractor lever pin 31 Fore-end spring 32 Fore-end spring spring 33 Fore-end spring spring pin 34 Fore-end spring housing screw 35 Fore-end spring housing 36 Fore-end spring pin 37 Fore-end iron head screw 38 Fore-end head 39 Fore-end wood 40 Fore-end screw 41 Butt plate screw 42 Butt plate 43 Stock 44 Stock bolt 45 Stock bolt washer specially ground Vise-grip plier (not shown) to guide the spring base into place.

There is no really easy way to do it." Ground how? Ground where? Damn right there's no easy way to do it! I studied the problem, with five different sizes of locking pliers and came up with nothing. So, I quit for the day to sleep on it. Accordingly, later that night in bed, where I often get solutions out of nowhere, I thought about incorporating a large Harbor Freight clamp/spreader that I had. The next day, donning my best pair of safety glasses, I put the shotgun action in my milling machine vise, vertically.

In a mill chuck, I put in a slippery 3/8" diameter white nylon rod from my junk box. The plan was to use the rod to compress the assembly and it being "slippery" is one of the reasons for the safety glasses. Moving the rod down with the mill spindle, immediately adjacent the frame, the end of the nylon rod would spread the load. Because it was slippery, I could then move the assembly sideways, incrementally.

Still pushing the nylon rod, I moved the mill spindle down further until the assembly was just below the inside of the frame. Then, using the Harbor Freight clamp, I safely forced the mainspring plunger sideways until it was barely inside the frame. Once there, a pair of Channellock pliers moved the assembly the rest of the way into place. Voilà! I certainly have no idea how they did all this at the factory, but a quick reattachment of the trigger guard covered my drilled hole.

Then, after rechecking the mechanisms, I put the stock and barrel back on, checking again, and everything worked. It turned out the customer was somewhat familiar with the inside parts configuration and was curious as to how in the world I had accomplished the disassembly and reassembly. I recounted the above and he was delighted, insisting on paying me considerably more than I asked! AG

## PEOPLE &amp; COMPANIES

# Semmerling LM4 Hideout

BY ROBERT KOLESAR JUNE 2022

ORIGINAL PP. 6-10

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**H**ideout guns are an interesting category of handgun. They're usually smaller, thinner and lighter than other concealable firearms a citizen or off-duty cop would carry, but still with enough power to save your life with a well-placed shot or two. I don't consider a 22 Long Rifle derringer or 25 Automatic Colt Pistol a viable hideout; there's too many good options out there to consider an unsafe pop-gun.

When you need a hideout, you're in BIG trouble and bringing the best you can find to a gunfight is probably a good idea. Hideout guns are mostly police weapons. Citizens who legally carry a concealed pistol or revolver don't need a back-up or hideout handgun as just having any handgun available puts the concealed-carrying citizen ahead of the game. There aren't too many running gun battles in suburbia or the local mini-mall between heavily armed criminals and the average Joe.

Civilian shootings involv- Semmerlings had very nicely made magazines of steel. These early pistols were beautifully made and hand-fitted. ing someone that is not a member of a uniform-wearing military or police organization are over with one or two shots fired in a couple of seconds or less.

In doing research about legally justifiable shootings a few years back, I could find no instance anywhere nation-wide where someone (not a policeman) had to re-

load their weapon, draw another handgun, or move under fire to a position of cover. It just doesn't happen. Police shootings, on the other hand, occur when the officer responds to gunfire, instead of trying to avoid conflict like a citizen should. Backing off and being a good witness is not an option for a street cop.

A hideout or backup handgun is a tool of last resort when the primary firearm is empty or disabled. There might not be time for a speed reload or your ammo supply has been exhausted. You could have dropped your duty gun or it may have malfunctioned. It happens. Police chasing and sometimes engaging heavily armed suspects with gunfire during the course of an arrest are an almost daily occurrence in the United States now.

Having a second gun on your person is tactically smart and increases your chances of survival if a contact or arrest goes sideways. When I worked the Big City I always carried two guns, sometimes three. It depended on what I was doing that day or night. Mostly my back-up or hideout was a 2" Smith & Wesson Bodyguard in 38 Special. Later on, it was an Airweight S&W. These handguns were what was authorized by my department, so I carried what was allowed. They both worked well enough and

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gave me the option of an additional weapon in sometimes dangerous circumstances. The Semmlerling LM4 would have been an interesting option, had I been able to carry one. Short, thin, and flat with five rounds of 45 ACP punch, an LM4 would have been a great choice in a reinforced leather uniform pocket. A shade heavy at 24 ounces, but you can't have everything. Having to use two hands to chamber each round would be a big concern, but more on that later.

Semmlerling History Designed in the early 1970s and patented in 1979 by Phillip Lichtman, the LM4 ("LM" stands for "Lichtman Model" and the #1, 2 and 3 were pre-production prototypes) is a very interesting pistol. Mr. Licht- An easy operation to chamber anew round using the support thumb on

the slide serrations, with only an inch and a half of slide travel. man had a degree from Harvard, dabbled in everything from butterflies, cars, model airplanes, and astronomy, and held over 30 patents.

Lichtman envisioned the LM4 as an uber-concealable pistol that could be used by law enforcement or as a deep undercover piece for Central Intelligence Agency types overseas. It is still the smallest 45 ACP five-shot made, being about the size of a pocket 32 ACP. The LM4 magazine capacity is four rounds with one more in the chamber. Five 45 ACP rounds in a package the size of a little .32 caliber pistol will definitely work if you're in trouble; if a .38 or 9mm is good, a .45 is better.

Weight is 24 ounces, which helps somewhat with recoil. About 600 pistols were originally made outside of Boston; these are now very collectible. Initial price was \$685, which translates to about \$3,000 in today's dollars. Supposedly the US government bought some; no one is really sure how many were purchased or what agency they went to. In the early 1980s, the company's patents and trademarks were purchased by American Derringer Company in Waco, Texas.

Normal production of the LM4 ceased in 1998, however, American Derrin- Far Slide only travels 1.5" to load another round. With a little practice a quick flick of the support thumb on the slide serrations will chamber another round.

## SEMMERLING LM4 HIDEOUT CONTINUED

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Rails are very nicely machined, fitted and polished. Far Fixed rear sight is integral to the slide. Very nicely machined muzzle crown definitely helps the LM4 accuracy-wise. ger will still build you one special order for somewhere over \$4,200. Advertised as a “vest pocket” sized .45, the Semmerling is a small pistol that fulfills its intended role as a deep hideout gun. At first glance, it appears to be a semi-auto, but it’s actually a manually operated repeater with a double action trigger.

No safeties or visible hammers on the LM4; this makes for a sleek gun with nothing to snag onto when drawing. Sights are fixed, with a serrated ramp front and a simple notched rear. Considering the size of the LM4, the sights are quite good. Both front

and rear sights are mounted on the slide. The extractor takes a very large bite out of the cartridge case; no worries on the extractor doing its job; it’s huge. Chambering around in an LM4 is, well, different.

A magazine is inserted and the slide is racked forward and then pulled back, picking up the top round, pushing it against the fixed breech and chambering it. Obviously, this is completely reversed to what a pistol shooter is used to but it works. I fed a couple of loaded magazines using dummy rounds through the pistol; very slick and smooth. Magazines are robust, easy to load and eject without any hangups. Once I got used to the loading and chambering, it was an easy and simple process.

Shooting the LM4 My live-fire time with the LM4 was purposely limited; small concealable guns aren’t designed to be shot extensively. The LM4 is a strong gun, though. Beautifully made and handfitted from S7 tool steel (later Texas version was made from stainless steel), it was built to last a career of being carried in a concealed shoulder holster or pocket, subjected to a daily regimen of leather wear, body sweat, and an occasional dropping on concrete.

I headed out to my favorite range in San Antonio on a warm fall day with some GI 230 grain hardball match and a box of jacketed 185 grain semi-wadcutters. My old Los Below and Fixed sights are integral to the slide. Serrations directly in front of the rear sight break up light reflections and distortion.

## SEMMERLING LM4 HIDEOUT CONTINUED

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Angeles Police Department partenero and fellow gun accumulator, Craig Taylor, loaned me a minty Bostonmade Semmerling LM4 that was one of the early hand-made guns. I put 35 rounds of factory ball and SWC down-range without any malfunctions... about what I expected. Accuracy was quite good at the ranges I fired (7 and 15 yards) and the point of impact was spot on with a center-hold point of aim. Several groups (four shots each) went into one ragged hole.

I had no inclination to shoot this at 20 or 25 yards because the LM4 wasn't designed to be a Bullseye match gun. Recoil was definitely there, but not as bad as I expected... about the same as my Airweight Chief with 38 Special +P duty loads. One magazine was

shot as quickly as I could shoot, racking the slide forward and back to eject the fired Very easy to check the status of the pistol. case and chamber the next round.

A magazine can be emptied this way in 3-4 seconds, which is While the S&W's lighter (the 24 ounce Semmerling versus the 15 ounce Airweight), the LM4 is smaller, flatter, and hits harder with five rounds of 45 ACP. The LM4 is about half the size of the Colt and 16 ounces lighter, unloaded. fast enough. Working with dummy rounds at home would probably cut the time down some. Using only the thumb of the support hand to rack and chamber is easy due to no recoil spring or hammer.

The slide only needs to move about 1.5 inches to eject the fired case and chamber the next round. There is a technique mentioned in the manual, using a one-handed wrist "snap" to chamber around but I didn't try that one. If I were carrying this pistol as a backup, I'd spend some time learning to manipulate it one-handed. The LM4 has a nice smooth double action pull that, if you're a revolver shooter, is easy to like. It's a very short stroke and completely safe.

The trigger must be released after each shot or the pistol won't fire. Also, if the barrel isn't snug against

## SEMMERLING LM4 HIDEOUT CONTINUED

ORIGINAL PAGE 10

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The LM4 is quite small and compact for a five-shot .45. Above center: Despite the LM4's size, it hits hard with five 45 ACP cartridges. Overall size is about what a .32 or .380 auto would be. the breech and fully closed, the trigger cannot move and the LM4 won't discharge. Mucho safe. No worries about carrying this in your pocket. Concluding Thoughts As much as I liked playing with this gun, I probably wouldn't carry one. Shooting and manipulating this pistol two-handed bugs me.

Having drawn my back-up 2" revolver more than once as a cop, the idea of having to reload and chamber around two-handed with a back-up weapon is a serious tactical drawback. One-handed display and use of a second gun can be critical to winning a confrontation. While we all train now to shoot two-handed, the handgun is still a one-handed weapon by design and needs to be handled that way when necessary. That should be obvious.

An early Semmerling pistol is a very collectible firearm now, with nice examples going for \$6000 to over \$8000 and more. Much too valuable to be sitting in a pocket holster; the best place for a Semmerling LM4 today is in a gun safe, awaiting its semi-annual fondling and wipedown. A well-used .38 or 9mm is still a better choice for concealed carry. I'll stick with what still works for me. AG Group was fired with GI Match ball at seven yards.

## SAFETY &amp; COMPLIANCE

# Shop Safety

*A vital subject, here's how to stay safe when working in your shop.*

BY PAUL MAZAN JUNE 2022

ORIGINAL PP. 11-12

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If you're like me, the very title of this article has you nodding off. But, hold on a second. What you don't know can hurt you and disable you for a lifetime. We have all been given the safety rules of handling firearms many times and observe them because the consequences of not observing them can be fatal. But, how about the in the shop? According to the Bureau of Labor Statistics there were approximately 421,000 work injuries in the manufacturing trades in 2019 that required a day off.

There is no telling how many total injuries there were. If you think about the number of opportunities there are around the shop to get hurt it is mind boggling. I was fortunate to have worked for Bob Brownell, the Founder of Brownells Inc., for several years and he was full of practical advice gained from years of gunsmithing experience. Best of all, he was always willing to share it. One of his Nearly every operation in the shop presents a danger to your eyes.

Milling drilling, chemical splashes, even buffing and carding. Wires can work loose from wire wheels and cause a hazard. Protect your eyes! When operating some machines, especially when operating several machines at once, mundane jobs like fitting a recoil pad can be loud enough to

damage your hearing as much as a gunshot. Many observations was, "If you're not willing to drink it, wear gloves when you work with it." Many chemicals can be absorbed through the skin and have harmful effects.

That brings us to the four areas of concern I would like to discuss: Hands, Eyes, Ears, and Lungs. Hands For every gunsmith, his/her hands are vital. Because they are used in every aspect of our work, they are the most likely to be injured. These can be incurred from minor cuts and abrasions suffered from coming in contact with cutting or polishing tools, to major injury suffered from an accident at the lathe or mill. Unfortunately, there is not much available to protect our hands and fingers except gloves.

When handling chemicals like bluing solutions a good pair of gloves offering temperature and chemical protection is mandatory. Like so many situations, the only real protection you have is what lies between your ears. We all can get complacent and often when we are setting up machinery or doing repetitive tasks operating it, our minds are on the project rather than the machine. Of course, that is when the machine takes the opportunity to bite you.

Hard as it may be to keep your mind on what you are doing, it is the only way to stay away from trips to the emergency room. Eyes From chemical splashes from hot bluing salts or other chemicals we use regularly, to metal chips that come flying off the lathe or mill, to a simple poke in the eye from a tool that slipped, our eyes are nonreplaceable. When is the last time you read the safety warnings printed on every bottle of cold blue? Let's take a look at just a couple of them.

Birchwood Casey Super Blue is available in pretty much every big box store that has a sporting goods department. The label clearly states "Danger: Poison, Corrosive". It contains several acids and is corrosive to the eyes! "Caution: Protective gloves and eye protection are recommended when using this product." I'll bet you don't use either of those do you? Truth be told, neither do I. But we should.

Howa bou t Brownells Formula 44/40 Instant Gun Blue, a cold blue that has been around for as long as I can remember. "Danger: Causes burns. Respiratory irritant, may be harmful or fatal if swallowed. Wear rubber gloves and goggles during use." is printed right there on the label in

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Any job like heat treating, bluing, or case hardening requiring high heat and/or caustic chemicals is a burn hazard. Along with your eye protection, a good pair of chemical and heat resistant gloves is a must. bold letters. This is not stuff to be played around with, yet we do. How many times have you been using a wire wheel and had a bristle come flying off and hit you? Were you wearing safety glasses? When shooting, have you ever had a punctured primer?

I have, and in that instance the gasses vaporized the lubricant in the bolt, blew back in my face, and coated my shooting glasses with a fine mist of oil. Had that mist been sprayed into my eyes it would have been much more serious than simply cleaning my glasses. Anytime you are grinding, polishing, wire brushing, or any of a hundred jobs in your shop, protecting your eyes should be of prime importance. Ears We are all aware of the need for ear protection when shooting.

Be it on the range or out hunting, the sound of a shot can do permanent damage to your hearing. If you have ever been out shooting and come home with your ears ringing you can bet that your hearing has suffered some damage. The damage is accumulative and just because the ringing stops does not mean that your hearing has returned to what it was before the incident.

Hearing damage doesn't heal. Every shooter I know wears hearing protecting on the range but very few do in their shop.

For many operations hearing protection may not be needed but if you're running several machines at the same time, such as a sander and a vacuum when grinding a recoil pad, the noise level may well warrant the use of ear protection. A decibel meter might surprise you as to how loud power tool use can be. If you don't have such a meter, there are sound meter apps for smart devices (Android, i OS, etc.) that can provide a cheap or free means to check.

Despite this, I'll bet very few of us have ever thought much about it. Lungs We really don't think much about damaging our lungs even though we often use chemicals that can be quite dangerous. Many of them, when inhaled, can also lead to kidney damage. The biggest danger to your lungs is probably from aerosols. From paint strippers, stock finishes, degreasers, and fumes from hot Products have warning labels that you should read.

Rubber gloves keep chemicals off your hands and approved masks protect your lungs, keeping you safe and healthy. bluing tanks, we often don't even think about the dangers until we are on our way to the emergency room. To illustrate the dangers we ignore every day, I walked into my shop and selected a few products at random and

here is what I found on the labels. On Brownells Aluma- Hyde II, "Use only with adequate ventilation, do not breath vapors or spray mist. Wear proper respiratory protection.

Failure to wear proper respiratory protection may result in permanent brain and nervous system damage. May cause liver and kidney damage." Of course, this isn't limited to gunsmith-specific products as many items we use in our shop available at hardware stores have similar safety precautions. On the label of common mineral spirits, "May affect the brain or nervous system causing dizziness, headache or nausea. Causes eye, skin, nose and throat irritation. Avoid breathing vapor or spray mist.

Repeated and prolonged exposure may cause permanent brain and nervous system damage." From Minwax Tung Oil Finish, "If you experience eye watering, headaches, or dizziness, increase fresh air or wear respiratory protection or leave the area." These are just a few of the chemicals we come in contact with and not even the most dangerous. For your health and safety read the labels on the products you use and follow the directions.

Be sure your shop is supplied with rubber gloves, facemasks, eye protection, ear protection, and adequate ventilation. You need to look after yourself because nobody else is going to. AG

## MAINTENANCE &amp; REPAIR

# Stuck Parts and Extreme Measures

*Have a stuck part that absolutely needs to be removed but refuses? This guide will help you remove it.*

BY ROBERT K. CAMPBELL JUNE 2022

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If there is anything I learned working in my family's scrap yard, it was metal. When unibody construction replaced a real chassis beneath vehicles it was difficult to adjust my working procedure. Later came some pretty flimsy stuff. Making a dune buggy, I learned that among the hardest tempered metal in the world, and very difficult to cut with a torch, was the Volkswagen Beetle. All this experience in metal working would come in handy in gunsmithing. Stuck parts demand extreme measures.

I have stood on lug nuts, broke the lug nut and stud off, and did more damage than good. I learned from this experience. If you have a stuck or frozen lug nut or chassis bolt you can- Sometimes the brass end is needed. It is used to teach others and allows the author to learn as well. not discard the whole vehicle and neither do want to discard a firearm for the same reason—although I have been forced to a time or two.

While not as large, the same extreme level of stuck parts has occurred to some when they broke bolts in a firearm. Some of the things I

learned with vehicles can apply to firearms and I have applied some of those techniques there. The rub is, these techniques should only be used when standard procedures fail. When the end result is either get the part out or wreck a major component the stuck part lies in, we have to think hard about our procedure.

The story begins with a rusted or stuck part that won't come off or out. Some have been rusted in place for years. Others were forced into place. Penetrating oils begin

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with WD-40 and then we run up the scale to more advanced compounds. We can also use heat. This means a propane torch. Some recommend only candle power for light work but I find this is too cautious. The hard work here is now past candle power! An old plumber's torch, designed to thaw pipes, will sometimes work. My friends who work in a salty climate up north supplied much of the material for study and it transferred well to my work in humid climates. Rust is different in different areas it seems.

Yes, this may not be a scientific observation but I am certain there are different species of rust from surface rust to others. So, while Brownells is a fine source for specialty penetrating oil there is no reason not to run to your local hardware store and grab some PB B'laster or a similar penetrant as well. Remember, these don't work instantly but may work overnight. Use penetrating oil liberally and let it set long enough to allow it work. Also remember, hands, skin, and eyes must be protected.

Any stuff powerful enough to break down years worth of accumulated rust overnight is potent stuff and can do the same to you! Another odd sounding idea I wrote

about perhaps ten years ago is to leave the parts in the freezer overnight. Cold expands and heat contracts and this seems to work when you put heat to the parts the next day. If you bring the parts to red hot or white hot you may affect temper so a bit of practice on scrap may be useful. Next up is hammer and punch use.

A hammer is directed at apart such as a bolt or screw with a broken head. Apply the torch to the part. Hammer a carefully lined up punch and hit it hard. Rust creates a bond in away, not unlike glue. Hopefully, the molecular bond is not complete and shock from a hammer and punch will send force into the parts, which may be enough to just move them apart and eventually free up movement. Be certain of your aim! The goal is to move the parts, not peen the mortise or opening the part is stuck in.

The point is to have a shocking effect on things that should be able to move but are stuck. The part you Far Since it cost about five dollars at a flea market, it doesn't hurt to have it on hand. are hitting may be destroyed by Far

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Rust, in the background, is ready to attack! This shotgun has a patina but no rust. Far Another of the author's oddities, this device works as new—it is a pump type using compressed air to power a surge of water. this—if it's really stuck, it almost certainly will be—but you will be able to replace it and salvage the bigger component. It's better to sacrifice a screw in a grip instead of the frame it's stuck to. The goal is not to destroy the larger part the small part rests in.

Remember to always wear safety glasses. Tiny pieces of metal are often thrown about. Sparks too! Bits of finish, grease, or oil may be burned away and pop and fly about. Hopefully, heat works wonders. The parts are different compositions of metal and as a result they heat, cool, and expand differently. Hopefully shifting at different rates will break the bond between the metal, the main part, and the part you are heating and beating. Stainless steel is properly called "stain less".

Many years ago in the garage, my father used a trick that at first I thought odd until I observed it work many times. When a vehicle was running badly it was sometimes because of carbon deposits. He would pour water into the carburetor until the engine almost choked. Sometimes he applied this several times. It usually helped remove carbon. If you are heating apart and then douse it, this is a shock and sometimes works to loosen the parts. A few warnings.

While most parts will let go and are easily removed by less vigorous methods, it isn't always that easy. Most of the time you will not damage the finish if you're careful, however, if you're heating things to much above five hundred degrees you should count on having to re-blue the firearm. While using a punch or screwdriver by hand is sometimes workable, clamping the gun in a vise and using a drill press is the better program.

Recutting the screw slot to provide leverage works in less severe cases, especially where the slot has been destroyed. This is tedious

but works okay most of the time. The last technique for removing ing metal rather than beating or burning it away. You weld up a section of weld onto the stuck part. As an example, consider a screw that will not budge and the screw slot is destroyed. Maybe you could drill and tap it out or perhaps not.

If not, a welding rod can be used to weld on top of the broken screw or stuck bolt. Then, latch onto this extension you have built up and turn the screw or bolt out with the increased leverage your weld created. The problem here is that the welder will have destroyed your finish. Replate, re-blue, or refinish as necessary. stuck parts involves serious work and expense and someone very good at welding. This involves add- This is a guide and outline on a serious subject.

Removing stuck parts is one of the most difficult chores gunsmiths have. It sometimes cannot be avoided and isn't something to address without planning. AG

## MAINTENANCE &amp; REPAIR

# Stoeger Shotgun Repair

*Working the ejection mechanism on a 12 gauge Stoeger double barrel shotgun.*

BY MICHAEL PRIEGO JUNE 2022

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The project of this repair is the ejection mechanism on a 12 gauge Stoeger double barrel shotgun. This firearm has an ejection rod that allows a slight lift of the shells to be raised and then manually extracted after they are fired. In the problem shotgun on my bench, the ejector seemed to be jammed or caught on something to the point it would not provide the small amount of space from the barrels needed to remove empty hulls or unfired shotshells.

A few things need to be considered before taking the firearm apart. What type of ammunition is being used and is it the correct size? Perhaps ammunition choice is at play. Every firearm should have an engraving that lets the operator know what type of ammunition

is to be used with the firearm. This shotgun is chambered for threeinch 12 gauge shotshells, so if there The action can be opened and barrels removed to access the ejectors.

When the button is depressed rearward the guard will be able to come away from the barrel, allowing removal of the barrels from the action. is an improper size shell in the barrel it could cause firm friction on the ejector and keep it from being properly removed. The shells used by my customer were Winchester 12 gauge brass shells. I did not start by removing components to see what could possibly be jamming the ejector or creating the strain and breaking internal components.

I began with the removal of the forend guard to free up the barrels and to take a look at the ejection mechanism. There is a small button lever on the underside of the guard that can be depressed to free up the guard so it can be removed. With the guard removed, I lifted the barrels from the hooks that hold them into place on the stock. This exposed the under barrel area for inspection and revealed a small set screw that is holding the barrels in place, along with some minor appearance of light rust.

Once the screw is removed, I was able to look at the ejector and the channel that Remove the barrels by letting them fall forward and detach from the action.

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it rests within. The ejector seemed to have a build up of rust and debris on it which could be causing issues with the shells being lifted and removed. The tools used were a small aluminum bristle brush to free up the carbon and debris, small cotton tipped cleaning sticks, Hoppe's Black Cleaner, and plenty of

shop towels. I started by taking an alumi- Once this screw is removed the ejector can be extracted from the barrels.

Inspect the channel and the extractor for any damage or build up that is creating a jam- ming issue. Since the ejector is out of its lo-

cation we will inspect the channels as well for any build up. num brush and dry scrub- bing the ejector shaft to remove hard build up of the debris. I then applied a light appli- cation of cleaner and allowed it to sit for a few minutes to

## STOEGER SHOTGUN REPAIR CONTINUED

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The channel should be smooth enough to allow the ejector to slide rearward when the action is open. It should smoothly and freely glide rearward. Soak into the hard to reach places. With that done, I applied some of the cleaner to the cotton sticks and applied it to the channel to remove any possible build up that maybe causing excess friction and jamming the ejection mechanism. While the channel appeared to be clean and there are no visible signs of debris, I started cleaning the rest of the ejector.

The aluminum brush was delicate, yet firm enough to remove any of the debris that was hardened enough to remain stuck on there after the cleaner did its job. While brushing the ejector I could also inspect for any other issues that could possibly be creating problems other than the debris. I looked for anything like chips or bends in the shaft that could be causing the poor performance of ejection. After a thorough cleaning and inspection, the parts were ready.

There did not seem to be any issues with the ejector itself as there was no obvious damage or deformation of parts. I assembled the

shotgun back to working order. Testing the ejector with a snap cap revealed it was working like it was supposed to. My customer was pleased that the now-working shotgun did not require any major repair or parts replacement. Many times, a thorough cleaning and knowledgeable inspection with function check is all that it takes.

AG Test the firearm with a snap cap to ensure that it is slightly released and opening for extraction. This type of test was conducted a few times to ensure that the firearm was functional.

## SAFETY &amp; COMPLIANCE

# FFL Software

*Tools to help keep your firearm retail business in compliance with the Bureau of Alcohol, Tobacco, Firearms, and Explosives.*

BY DEAN MEIER JUNE 2022

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Compliance with the Bureau of Alcohol, Tobacco, Firearms and Explosives is an absolute necessity for all Federal Firearms Licensees. Any gunsmiths or other FFL holders that fail to properly track transactions and comply with BATFE will create legal problems.

The Government Paperwork Elimination Act led the ATF to develop e Form 4473 to ease completing Federal Firearms Transaction Records (ATF Form 4473), however, this doesn't solve all of the FFL tracking requirements nor does it help with managing retail or inventory tasks. Record keeping is a tedious task that people are notoriously bad at it so a solution that solves compliance issues and manages record keeping would be an aid.

Let's look into statistics on ATF compliance issues using 2020 statistics as our sample year with data compiled by Jamison Collins of Fast Bound. According to the ATF, there were 2,653 special agents who served as personnel in 2020.

Special agents are described by the ATF as "highly trained, elite law enforcement officers who investigate violations of federal laws and regulations related to the criminal misuse of firearms." They're sworn law enforcement officers authorized to make arrests for federal offenses in the U. S. and remain involved throughout each stage of a criminal investigation. From the initial moment an FFL is found to be in violation of

ATF compliance to the moment they're convicted or acquitted, a special agent is present.

Industry Operations Investigators work directly with FFLs to ensure they're in compliance with current firearms regulations, both on the federal and state level. In 2020, there were a total of 760 IOIs that worked on ATF compliance inspection cases, traveling frequently to inspect business locations all over the country.

Possessing a detailed knowledge of regulations, it's their job to examine FFL's records to make sure there's no falsification of records or any activity linked to the criminal trafficking of firearms. There were significantly less IOIs than special agents in 2020, but it was still a sizable number.

There were a total of 130,525 active licenses in 2020 with 52,795 dealers, 7,114 pawnbrokers, 52,729 collectors, 1,807 ammunition manufacturers, 14,126 firearms manufacturers, 1,136 importers, 127 Destructive Devices dealers, 422 Destructive Devices manufacturers, and 269 Destructive Devices importers. Dealers and collectors account for the largest percentage of FFLs at more than 80% between them, manufacturers of firearms are 10.8%, pawnbrokers at 5.5%.

In 2020, there were 8,025 total cases recommended for prosecution. Each case remains open for about four years so this was the total number regardless of their stage in the judicial process. This included 6,934

indicted cases, 5,181 convicted cases, and 1,639 criminal group and gang cases. Of the cases recommended for prosecution in prior years and the 2020 fiscal year, the ATF closed 6,251 of them.

In these cases, 10,012 total defendants were recommended for While software solutions aren't required, they can help automate things. prosecution. 70,439 people in these 8,025 cases had prior arrests and 18,192 had prior convictions. So, based on ATF numbers, there's a definite pattern where most defendants recommended for prosecution had prior criminal histories. Of the more than 10,000 defendants included in this data, there were more than 70,000 prior arrests and over 18,000 prior convictions between them.

This averages out to 7 previous arrests and 1.8 prior convictions per defendant recommended for prosecution. So for most people, getting caught not adhering to ATF compliance isn't an isolated incident in terms of getting into legal trouble. The average person has already been arrested 7 times and convicted nearly twice. Of those recommended for prosecution, most ended up being convicted at nearly 72%, which shows the majority of defendants are ultimately found guilty.

However, only a small number received a life sentence at 0.0003% and 0.002% received a death sentence. In 2020, the ATF performed 5,827 firearm compliance inspec-

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tions. Based on the 130,525 active FFLs in America that year, only 4.5% were inspected. Of those, there were no violations in 3,277 (56.2%) inspections. Report of violations happened in 1,289 (22.1%) of the inspections with 804 (13.8%) receiving warning letters and 306 (5.3%) warning conferences. A license was surrendered in 96 (1.6%) of the inspections.

This indicates that of the 41.2% of FFLs who weren't fully compliant with firearms laws and regulations, the offense wasn't severe enough to demand a serious action like surrendering their license, having it revoked/denied, or going out of business. Only a tiny percentage of FFLs encountered that level of reprimanding, with 1.6% having to surrender their license/go out of business and 0.7% having it revoked/denied. Finally, the ATF conducted a total of 10,525 firearms applications inspections.

Of those, 8,385 (79.6%) were approved and 237 (2.3%) were denied. The rest of the 1,903 (22.6%) applications were either abandoned or withdrawn. This shows that nearly 4 out of every 5 firearms applications that are inspected are ultimately approved and only a fraction are denied. Having a clear perspective on ATF compliance inspection cases shows how many personnel are overseeing cases, how many licensees and defendants there are, how many criminal investigations are being launched, and more.

Most FFLs remain compliant without issue but they have to continue to work at it. Even though it demands compliance, the

ATF doesn't validate software or tools. Here are some recommendations to help in your shop. Fast Bound Since 2010, Fast Bound (Fast Bound. com, has been offering FFL software for Acquisition and Disposition and 4473 recording, having processed over a billion transactions for thousands of FFLs with guaranteed ATF compliance and an attorney-backed legal defense.

Fast Bound focuses on firearms compliance software exclusively and maintains an attorney-backed compliance guarantee, making them an industry leader. Developed in the United States, Fast Bound has a pricing model to support small, independent shops and large retail chain stores. All Fast Bound plans include unlimited acquisition and disposition record ("bound books") for gunsmithing, purchase, sales, consignment, pawn, etc.

This includes unlimited electronic 4473 forms, unlimited amounts of multiple sale reports, and any number of users for your shop. Fast Bound includes support for NFA Title II items such as machine guns, short-barreled rifles and shotguns, heavy weapons, explosive ordnance, silencers and "any other weapon" (AOW). Importer and pawn support is also provided and the system readily handles bulk acquire and disposal.

Along with unlimited electronic 4473 forms, Fast Bound can conduct unlimited background checks and produce any number of multiple sale reports. Fast Bound is updated for all users at no additional

charge, usually on a weekly basis. In case of ATF intervention, users are provided legal defense from FFLGuard as an addition guarantee.

With Fast Bound, any computer, tablet, or even your buyer's smartphone can create an ATF-compliant 4473 with digital signature support with no transaction fees or special hardware requirements. Fast-Bound pricing is based only on how many firearms you have acquired in a rolling twelve-month period. All plans offer the same features. A shop handling 100 firearms is charged \$8 per month (\$96 yearly).

The 500 firearm plan costs \$24/ month; 1,000 firearms, \$34/month; 2,500 firearms, \$49/ month; 5,000 firearms, \$79/month; and 10,000, \$99/month. Businesses acquiring more than 10,000 firearms per year are eligible for volume pricing. All plans offer a free 14-day trial. No contract is required and users may upgrade, downgrade, or cancel at any time. FFL Boss FFL Boss (FFL-boss.com, is firearms sales solution developed by firearms guys who happen to know code, not the other way around.

The company has support from multiple companies in the firearm industry and has pushed for positive changes in the Second Amendment community that benefit gun buyers and FFLs alike.

## FFL SOFTWARE CONTINUED

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FFL Boss software includes use of electronic bound books and automated 4473s with integrated background checks. The system allows a fully-digital kiosk mode and automates multiple sales form creation and submission, employee activity monitor, and accepts electronic signatures, including FFL e Z check verification. Inventories are more easily managed with label and barcode printing, barcode scanning, and sequential serial numbering automation during acquisitions and dispositions.

Store management is handled with an inventory count assistant and integrated point of sale with individual state-specific modules and Point-of-Sale reporting. You can manage and send copies of your FFL as well as search for others. Title II management is included with an NFA reservation and form automation system. FFL Boss offers three plans. The FFL Home plan for home-based FFLs runs \$19/month, FFL Plus for small retail FFLs at \$49/month, and FFL Pro for large retail at \$99/month. All plans offer a free trial.

Gun Store Master Gun Store Master ATF Compliance Software (GunStoreMaster.com, offers professional firearm ATF compliance software for gun stores. Gun Store Master PRO has features to manage firearm regulatory and inventory requirements, freeing up dealers to spend more time with customers. FFL retailers and manufacturers benefit from Gun Store Master PRO

through ATF regulatory automation, reduced compliance risk and less time entering, searching, storing, and backing up firearm data.

The system uses the e Safe bound book for fast and accurate record keeping. Fast4473 and Fast3310 makes background check forms and multiple sales forms easy while reducing input errors. Gun Store Master can print barcoded labels and price tags. In-depth reporting functions and Fast-Inventory allows dealers to quickly and accurately self-audit in-stock firearms using barcode scanning tools.

Gunsmithing, transfer, and consignment modules help keep transactions and jobs of all sizes organized, professionally documented, and tracked. Individual logins for staff accounts manage all shop employees and data/compliance tracking for training and accountability measures. Gun Store Master has available Point-of-Sale integrations with Celerant's Cumulus & Stratus systems as well as Quick Books Point of Sale. There are specialized features for gunsmiths, manufacturers, importers, and large volume FFLs.

Finally, the Gun Store Master In Store automated backup system creates a peace-of-mind that all records will be secure. Gun Store Master offers a free 30-day demo account allowing you to try before you buy. The Basic plan at \$10/month manages an inventory



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of up to 50 firearms with unlimited transactions and includes the e SAFE Electronic Bound Book. The Basic plan is discounted to \$9/month for a one year term and \$7.50/month for two years. The Pro plan at \$50/month manages an unlimited inventory in the e SAFE Electronic Bound Book, and also provides the Fast4473 System, Fast3310 System, Fast INVENTORY System, and label and price tag printing integration with Quick Books Point of Sale and Celerant Point of Sale.

The Pro plan is discounted to \$45/month for a one year term and \$37.50/month for two years. All Gun Store Master systems and services are accessible via a web browser. Epicor Epicor Software ([Epicor.com/en-us/fflcompliance/solution](http://Epicor.com/en-us/fflcompliance/solution)), ATF-compliant reports for inspections and traces can be generated with one click.

From left, Epicor's service includes a complete firearm acquisition tutorial, FFL compliance menu, and dashboard for tracking firearm sales and inventory. offers their cloud-based FFL Compliance Manager built

in conjunction with Orchid Advisors ([OrchidAdvisors.com](http://OrchidAdvisors.com)). Epicor specializes in industry-specific software for manufacturing, distribution, retail, and service industries with both cloud and on-premises tools.

Orchid Advisors specialized in software, growth and compliance solutions to the firearms and outdoor sporting goods industries and has a staff that includes attorneys and ATF advisors to stay up on current policy. Epicor's FFL compliance system is designed to streamline transaction entry, reduce non-compliance risk, and generate the necessary reports for ATF inspections or inquiries. Accounts are established and priced according to business size.

The FFL Home Based account (\$24/month) works for one FFL holder with up to 250 firearm transactions per year. FFL Standard (\$59/month) works for a business with multiple FFL holders and up to 5,000 annual transactions. FFL Large (\$89/month) handles 5,000-10,000 annual transactions. Each account is accessible with one user, however, additional users can be

added for \$9/month. Once logged in to your account, firearms transactions are logged using a built-in "assistant" that steps through the process.

ATF-compliant reports for inspections and traces can be generated with one click. Bound book accuracy or inventory reconciliation can be done any time with the included tools. Your customers can supply their information through your account just as easily on a tablet, laptop, or other Internet-capable device. The FFL Compliance Manager also integrates with Epicor's Eagle retail business management system.

This includes inventory management tools, integrated accounting, real-time analytics on sales and inventories, and personalized customer contact management. There are a number of ways to manage your retail sales and remain ATF compliant. For a shop of any size, a software solution will quickly pay for itself in convenience and peace of mind. AG

## MAINTENANCE &amp; REPAIR

## Reader Forum

BY AMERICAN GUNSMITH EDITORS JUNE 2022

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**S**iamese Mauser Conversion I found instructions on building a Siamese Mauser conversion to chamber 45-70 Government in an old copy of Rifle Magazine (issue 12, November-December 1970). Things don't always as smoothly as planned, so here is how I addressed it. I found I needed anew extractor as the original was broken but a replacement did not seem available. I remedied this by using a standard 98 Mauser extractor and then welding up the front of the part using a TIG welder with foodgrade stainless steel.

I set my welded replacement next to the original to compare for a more close fit and contoured my work using a Dremel cut off wheel. I've provided a sketch to illustrate. I also enlarged the feed ramp in the action as this action was made for a pointed bullet profile in military ammunition, which wouldn't work with the Hornady FTX 325 grain bullets I was planning to use.

This works well despite not having an original magazine spring which I replaced with one from a regular Mauser 98 shimmed forward with a soldered piece of metal on the floor plate. I also ground the front of the extractor to push feed the cartridge if it happens not to slip under the extractor. Free Video Library From Paul Mazan. My son Matt passed away in January from complications of Covid. Since his hospitalization in December, the .45 Alpha Charlie Papa channel he started on You Tube has been in limbo.

Since then, Matt's son Quinton has taken over the library of videos there. As I did with Matt, I'm helping Quinton with the content. The videos are free to you and increased traffic helps generate ad revenue for Quinton and his family. Please watch them at You Tube. com/45Alfa Charlie Papa. Series 70 Comparison? On page 9 of the March 2022 issue in the "Future of the

Past" a comparison picture is shown that is purported to be the rear end of a Series 70 Colt 45 ACP on the left and a Series 80 on the right.

My Series 70 looks an awful like the right side of the picture. Since I do not own nor have worked on any Series 80 1911s (I refuse to work on an abomination like the Series 80!) I can't comment about the authenticity of it. Did someone made a mistake labeling the picture? Henry Fischetti Wellsboro, PA Your March Osiris Carter has a photo of two 1911s comparing a supposedly Series 70 next to a Series 80. A Series 70 without an internal extractor and a flat firing pin?

Compare that photo with the attached photo of three 1911s of mine. Left to right in my photo: German Sports Gun 1911- 22, Auto Ordnance Series 70, Colt Series 80. Note the internal extractor in both center fire models. Also, my Series 80 Colt does not have a half-cock position as described by the Dr. in the article text. Is your proof-reader on vacation? Ralph Riggs Dr. Osiris Carter responds. On some 1911 handguns the slide has been updated to have the firing pin block as well.

Those are not widespread as the Series 70 1911s didn't have that safety feature. Harry Volberg Also, the picture was not purported to be a Colt; both of those handguns pictured are SIG Sauer pistols. The one on the left is a SIG 1911-22 and the one on the right is a SIG Ultra Compact 1911. Colt originated the terminology but it has been used by some to describe modifications for an additional firing pin safety (Series 80) or not (Series 70) for SIG, Remington, Ruger, and other 1911 models.

Kimber has made use of the Swartz-type safety in their Series II pistols, which is a firing pin block actuated by the grip

## READER FORUM CONTINUED

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safety instead of the trigger. William Swartz was a Colt employee but his safety design was not implemented in Colt's Series 80 pistols but this is also referred to by some as being a "Series 80" as well. As with Colt's addition of those extra safety parts, describing non-Colt 1911s in this manner is not universally liked. Some historical background. Colt is the original manufacturer of 1911 pattern pistols, making them for the military and the commercial market since 1912.

The first commercial versions differed only in markings and finish. Colt's commercial pistols made before 1970, now dubbed "pre- Series 70", only had minor changes such as eliminating the lanyard loop and increasing the size of the thumb safety. In 1970 the Series 70 was released, Colt's first major design change to the Government Model in nearly 50 years. This included a redesigned bushing with four springsteel fingers in an attempt to improve accuracy by gripping the front of the muzzle when in battery.

Models using this new barrel/bushing set-up were the Government Model and Gold Cup designated the "Mark IV Series 70". The collet bushing did work but was found to be prone to breakage. Colt's next change came in the early 1980s as the "MK IV Series 80" which introduced anew firing pin block safety system. As noted, this was not the first as Swartz's grip safety firing pin block was patented (U. S. Patent 2,169,084) in 1939.

Colt's Series 80 also included are-designed half-cock notch which was changed to a flat shelf rather than a hook. Ruger Rant Perhaps someone with some insight into Ruger can explain who they are marketing to? Ruger made their name by offering great quality at moderate prices. They were successful because the average working guy could afford a Ruger when Smith & Wesson and Colt had pretty well priced themselves out of the market.

They have become so successful that they recently acquired Marlin from Remington when they in turn went bankrupt. Ruger now seems to be following in the footsteps of every firearms company that has failed. First, they offer the 10/22 in a left-handed version. Great, I'm a lefty and ready to put down my hard-earned cash for one. But it isn't a standard version, it's an "enhanced target version" that doesn't take the standard 10/22 magazines.

It also has a muzzle brake installed, a laminated stock, an integral Picatinny rail, a BX trigger, and comes with a hard case, certificate of authenticity, a challenge coin, and a cleaning cloth all for just \$899. Nine hundred bucks for a 10/22, the primary selling point was it being accessible and inexpensive? Let's look at that again.

Lefties are about 10% of the population and because many of them learn to shoot with right-handed rifles only about 3-5% of the shooting population purchases dedicated left-hand guns. Of that 3-5% perhaps

2% are interested in a dedicated target rifle. That pretty much guarantees the volume of sales on this rifle at this price point will be bad enough that it will disappear from their catalog in two years. I get the feeling that someone in upper management at Ruger is lefthanded and wanted a custom 10/22.

It reminds me of when Remington reintroduced the Parker A-1 special shotgun a few years ago. I heard the custom shop produced two of them and they both went to executives. Ruger has reintroduced the Marlin 1895 SBL in 45-70 made in Mayodan, North Carolina. This is great news being American-made and having Ruger quality, but at astronomical pricing with a suggested retail of \$1,399! I'd say it would be a great \$800 rifle.

I can only assume that Ruger hasn't learned a thing from what happened to Remington, Colt, Smith & Wesson, and others when they priced themselves out of the market. Now I may be totally wrong. I know gun prices have skyrocketed almost as fast as gasoline but how shooters with families to support are going to afford to buy these is beyond me. Personally, I've put my wallet away.

I want a left-handed 10/22 and I'd love to have a Marlin lever action in 45- 70, however, at these prices I have to pass and I suspect a large portion of the gun buying public will too. Paul Mazan AG

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