



SEP 2014

DIGITAL ARCHIVE
EDITION

PRECISION ARMS WORKSHOP

AND THE AMERICAN GUNSMITH ARCHIVE

A TECHNICAL JOURNAL OF CRAFT, REPAIR & RESTORATION

09

ARCHIVE ISSUE NUMBER

INSIDE THE ARCHIVE

THOMPSON CENTER ARMS CONTENDER

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ORIGINAL METHODS. MODERN ACCESS.

ARCHIVE EDITION 129

DIGITAL ARCHIVE EDITION

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AMERICAN GUNSMITH

DIGITAL ARCHIVE EDITION • SEPTEMBER 2014

ISSUE RECORD

ORIGINAL DATE	September 2014
VOLUME	Archive volume not stated
ISSUE NUMBER	09
SOURCE ID	ag-b98c434f28665e7940fb8cf5

DIGITAL EDITION

PUBLICATION	American Gunsmith
EDITION	Digital Archive Edition
ARCHIVE STEWARD	Innovation Network LLC
CONTACT	editor@gunsmithmag.com

Editorial fidelity. Article titles, author attribution, issue relationships, source-page references, and article text remain bound to the archive corpus. Layout, covers, navigation, and conversion notes are newly produced for this edition. Historical statements remain part of the original editorial record.

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A complete guide to the searchable editorial work preserved from September 2014.

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FROM THE ARCHIVE

GunsmithInfo.com

BY AMERICAN GUNSMITH EDITORS SEPTEMBER 2014

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Gunsmith Bob Richardson combined his interests in gunsmithing and computer programming to create GunsmithInfo.com, a resource for gunsmiths. The site includes an indexed database of American Gunsmith issues and articles dating back to April 1992 and is updated every month. “I have been a subscriber to American Gunsmith for years. I find the magazine is a great way to continue my gunsmithing education.” Mr.

Richardson says. “Awhile back I decided to work on learning more about the Internet and websites so set out to learn the basics of how to design, build and run a simple database on a website. I wanted to combine my gunsmithing and website interests so I created a database that indexed all of my back issues of American Gunsmith. I have been using it for a little while now and wanted to make this available to all members.” From the main site, click the “Magazine Index” link to be taken directly to the database.

This takes you to an chronological list of back issues. Clicking the “Articles” tab takes you to a listing of individual articles. This list contains basic information such as Title, Summary, Section, and Author. Under each column, hovering your mouse reveals a pop up containing a brief summary of the article. These columns can be sorted by clicking the drop down box at the top of the column. The Title and Summary can be searched by typing in a word or phrase.

GunsmithInfo.com also features a gunsmith-specific search utility for Firefox, Chrome and Internet Explorer browsers. This makes gunsmithing searches quicker and easier by only searching gunsmith-specific sites like Brownells.com and MidwayUSA.com. Gunsmith Locator lets gunsmiths add their contact info and for customers to search for ‘smiths in their area. The newly added Gunsmithinfo Forum for open discussions is also available. Comments, suggestions, and gratitude can be sent to Bob Richardson at

RIFLES

Precision Barrel Fitting, Part Six

More details of thread turning and headspacing are introduced as the barrel and receiver get closer to becoming a complete rifle.

BY CHICK BLOOD SEPTEMBER 2014

ORIGINAL PP. 3-5

By now some readers have noticed there has been no mention of manufacturing rifle barrels from scratch in this series. This is because making barrels requires very large machines to dead center bore a 22" to 27" blank and then install rifling. Also add "extremely expensive" in describing those machines. They very likely rely on computers to deliver their finished product.

Gone are the days when interested individuals taking a tour of a major rifle manufacturer's plant would find row after row of milling machines, surface grinders, drill presses, and engine lathes, each manned by masters of their craft intent on producing excellence in a firearm. Sadly, also gone are many of the schools they attended much earlier in life to begin acquiring the skills they eventually came to apply.

These amassed craft masters, a vanishing breed, have scattered to become treasured fixtures with companies much smaller than the ones they previously spent countless cumulative years. It should surprise no one that the barrel makers presently employing them are the most widely recognized for the consistent quality of their products. Due to the facts just stated there will continue to be no significant mention of aftermarket barrel making.

As I have up to now, I will continue to concentrate on methodology to be applied with OEM barrels and barreled actions. Certain practices and techniques, including chamber and headspace check-outs, you may opt to apply when a customer has

provided a replacement barrel from an aftermarket maker to be fit to an existing receiver.

OEM barreled actions excepted, determining the internal receiver threads with a thread pitch gauge must, habitually, become the first measurement taken when an aftermarket barrel is involved. This is to be followed, habitually, with any threads present on the barrel tenon. Unless the maker of the barrel has been provided with specific technical data on the internal receiver threads, the barrel tenon will likely be left unthreaded.

With an OEM barrel ordered for a specified caliber and model there is far less risk of a mismatch so the tenon will be threaded accordingly. Check it out regardless. Any discrepancy between the threaded areas on any barrel and those inside the receiver should be followed, habitually, by returning the barrel to its source with sufficient reason why clearly stated along with a request for corrective measures as clearly made, at no charge of course.

I'll assume the measurement passed without complication and you'll be able to move ahead without further interruption or concerns. Among the non-conforming thread problems, one can be ignored but the other cannot. In the easy department are degrees of angle differences in some commercial actions. Most use 60 degree angle threads. Military Mauser 98 actions and their assorted commercial clones use 55 degree angle threads. These angles are so closely related a 60 degree angle tool can be used for turning both.

They are so closely related you may be tempted to have ago at uniting the two, dissimilarly threaded major components. Please don't. Why will become obvious in the next three paragraphs. The key words are "loose fits." Maybe I've made some of you uncomfortable by mentioning the depth of threads and not turning them overly deep. Perform some practice runs with an 18" length of galvanized pipe. Turn a set of 60 degree angle threads to 0.20" depth on one end of the pipe.

Reverse ends and make another set of threads exactly as long and deep as the first. Exactly. Now for the can't-be-ignored department. It exists within the Enfield M14, M17 and Springfield Actions: Square Head Threads. The tool used for cutting these is like a cutting tool, only shorter. The width of the point has to be accurately ground to size. The grinding has to occur off center and to the left on a tool blank. More needs to be said about threads for "square heads." They aren't as easy to cut as 60 degree.

The compound rest cannot be used to advance cutting depth, but the cross-feed can. All cuts must match the finished thread tenon diameter at 90 degrees. After every third pass at no more than 0.003-0.005 per pass, perform a clean up before making another set of passes. Always remember that if you go too deep you will assuredly end up with loose fitting threads. Loose fits have no place in a mechanism subject to 40,000-55,0900 psi. Before attempting the marriage between a barrel and a receiver,

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You will be using it and most, if not all, of the turning operations outlined in this article. There is no single source reference providing the same information for all models of all manufacturers. You'll have to start amassing your own. thoroughly clean the threads of both components. Be positive they are free of fouling or rust. Use a toothbrush dipped in a quality solvent for the cleaning, then throw away the brush. While there are a number of very good solvents for this purpose, they all taste lousy.

Maybe you need a little good news on thread turning about now. Unlike squares, 60 degree angle threads can be cut using the compound rest as your depth guide. The first three or four passes may be 0.020 per pass. After that, reduce the depth by ½, then ½ again as the thread nears completion, or only 0.001 per

pass until thread tenon depth is met. That's met, not exceeded. It also means you will have to perform an increase in cleanups and checking barrel-to-receiver fit between passes. So be it.

Breech End Thread Relief In most receivers internal threads have been cut with a tap. This being the case, it's not unusual to discover the last thread or two haven't been cut to the proper finish depth. There's no way the barrel/receiver fit will end up flush. Don't attempt a resolution of this by applying major force to turn in the barrel. Tenon threads were never intended to serve as a tap. Now what? Carefully hand tighten the receiver onto the barrel.

With Drawing below does the same for cutting square head threads. a feeler gauge, measure the gap between the face of the re-

ceiver and the barrel shoulder. The gauge is telling you how much has to be turned off the shoulder, thereby "setting it back," to achieve the perfect fit. Do as the gauge dictates, plus 0.015. Try the fit again and obey what the gauge says. You may need to make still another reduction ranging from 0.005-0.015 inches before the gauge can take some time off.

When you are convinced the barrel shoulder/receiver interface is optimum, check it again. Is it too narrow? Is it too shallow? In both cases, the problem is usually a single thread (just one measly thread) at either end. Locate it. Relieve it. Try the fit. If no further adjustment rears its head, chambering and headspacing can be pursued. No, I haven't overlooked chambering or headspace. Not everyone agrees



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whether a barrel should be chambered before or after tenon threading. It is no surprise I stand in agreement with John Hinnant. Rough chamber reaming should happen before threading. Why so? A smooth tenon doesn't abrade or wear steady rest jaws as quickly as a threaded tenon. Worn steady rest jaws or even steady rest jaws undergoing the process of being worn lead to an earlier loss of concentric alignment. In addition, after rough chambering, alive center is used to support the barrel breech.

The live center maintains thread cutting that is concentric to the chamber. I'm making the same assumption I made earlier. To wit, you are working with an OEM provided tube and not a barrel blank. I maintain a belief that any human is capable of error and any machine can develop a temporary glitch. Ergo, no hostility or disrespect implied or intended, I practice caution in defense of my good reputation and a deep de-

sire to continue steering clear of litigation by checking out any chamber delivered unto me.

Correct Chamber Depth As you know, strictly adhered to specifications for all American cartridges and chambers have been established by the Sporting Arms and Ammunition Institute (SAAMI), Newtown, CT (saami.org). You can purchase drawings and supporting data for all handguns and shoulder arms or, perhaps after a bit of pleading, only the chamber specs for the cartridge to be fired from the rifle at hand. For the long haul you're probably better off going the full monty.

First off, remove the extractor(s) from the bolt. When more than one is involved keep track of which is which. Reinstalling them incorrectly will lead to extraction/ejection problems that will tick off the rifle owner who will, rightfully, finger you as the cause. Now install a GO headspace gauge in the chamber. The gauge will prevent the receiv-

er from fitting tightly against the barrel. That doesn't mean you've done something wrong. Maybe someone, or something, has though.

Measure the gap between the receiver face and the barrel shoulder with your feeler gauge. You've just discovered how much more the chamber has to be deepened. What is required to accomplish this is a finishing reamer. What isn't required is turning on the lathe. Finish reaming is all done by hand power. I recommend you devote extra time to study of the Hinnant book. Make a slew of notes to serve as step-by-step tips. They'll help a lot to avoid frustrating, and costly, errors.

This advice should be emphasized in approaching and executing the chambering and headspacing phases of barrel fitting. Much more will be said of chambering in Part Seven. Until then, consider the emphasis given.

RIFLES

AR-15 Chamber Selection, Part Three

In another batch of techno-babble, we look at bullet seating sweet spots in select chambers needed for making better ammunition—and a better performing rifle.

BY JOE CARLOS SEPTEMBER 2014

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It's no surprise that every rifle has its own specific sweet spot where it wants ammo to be seated. There is no such thing as a universal seating length or bullet jump. This must be worked out for every rifle built or rebarreled as it is important to group size. My customers receive a free box of ammo with his gun seated to the sweet spot of his barrel. All he has to do is measure the rounds and set his die to duplicate.

In the decade that I was the Armorer for the Army Reserve Marksmanship Program's Service Rifle Team I gave each shooter a hand press with a competition seating die fixed with Loctite. It was the same press I used in the test shed the day I established his sweet spot. We loaded all of our 80 and 90 grain ammo over length so shooters could use their hand press for the rifle in question and final seat. Idiot proof! Six hundred yard scores for the Team skyrocketed using this approach.

Since you don't have to "chase the throat" (a technique used with VLD bullets to constantly lengthen the seating depth to compensate for erosion) with boat tail bullets, the sweet spot I establish initially works for

the life of the gun. I think a tune up is good at the end of the shooting season to establish anew, longer, seating length but it is optional. If you get out to Camp Perry during the CMP Service Rifle phase of the Nationals, stop in my store on Commercial Row (Building 910-A) and visit.

I have pictures of test targets showing the value of working out this sweet spot seating length. I've seen an average group size reduction of 33% from random seating to sweet spot seating and enjoyed a 50% reduction with the guns I maintained for the Army Reserve. I have worked out sweet spot lengths for hundreds of chambers ranging from the short original SAAMI spec to the long NATO spec.

When I compared groups with long range 90 grain Bergers in short and long chambers I couldn't see any improvement in the long chambers. Those comparisons were all done at the end of the bullet seating sweet spot work ups. Getting bullet seating sweet spot right is more important to tight grouping than the length of the chamber. Soft Seating Soft seating is used by some bolt gunners where ammo is seated long like

the Reserve Team has done, with the cartridge shoved into the chamber and the bolt closed very gently.

This jamming effect causes the bullet to be pushed down further into the casing while engaging the lands at the back of the barrel. Remember I said that by providing a custom press and die for each firearm I fielded for the Reserves I pretty much "idiot proofed" the seating process? No disparagement meant, but leave it to Joes to find away to muck things up. Some of my guys got lazy and decided not to use the tools provided to take a short cut.

They instead hard seated, shoving the long rounds into the chamber and letting the bolt slam forward. If you don't believe this is hard seating, stick your finger in there and release the bolt! The bullets seated and there were no slam fires but performance was awful! Chamber pressures went way up—a real safety issue considering we were already at a max load, causing some primers to be blown. If a cease fire was called to unload, opening the bolt pulled the bullet and spilled powder everywhere.

AR-15 CHAMBER SELECTION, PART THREE CONTINUED

ORIGINAL PAGE 7

Groups were fat and the incidence and severity of fliers went through the roof. Hard seating is a bad idea and something you want to admonish your customers against regardless of which chamber they are using. Ordering Custom Reamers After a couple of years of ordering Wylde chambers from barrel makers and getting the hodge-podge I described in Part Two, I decided it was time to get my own custom reamer.

I had worked with Dave Kiff from Pacific Tool & Gauge (pacifictoolandgauge.com), before on custom orders with good luck. There are other good reamer manufacturers out there but my experience is with Dave and Pacific so I'll describe the information I provide him with. First, establish the specific chambering, such as .223 Remington or 5.56mm NATO, and what kind of guns are you going to be chambering. Gas guns that are going to be magazine fed can't have chamber dimensions too tight or reliability will suffer.

Second, talk about the neck. Your reamer maker will want to know what brand of brass you intend to use (some brands are thicker than others) and if you intend to outside neck turn the brass. It is common to tighten the neck diameter in chambers where the shooter is just firing one handfed round at a time. Examples may be long range shooters that never use the magazine. Those necks can be about 0.003" tighter. Third, if your chamber has a name like Compass Lake, Wylde, Holliger or NATO, provide that.

Not all reamer makers will be familiar with the specifics of all these chambers so you will still need to go into further detail. Then establish the leade or throat angle. Fourth, there is a pilot bushing out on the very front of the reamer and its size is very important. Your reamer company will need to know if the lands in your barrel are industry standard at 0.219" or tall like Krieger normally supplies at 0.218". Bartlein offers both land options.

Brux uses a tall 0.218" in their narrow land barrel but a standard 0.219" in their regular land width barrels. Most other barrel

makers use a 0.219" land. Most barrel companies make their grooves 0.2240" unless you order something different. If chambering barrels with differing land heights, get pilots in both sizes as they interchange easily. Fifth, the most common leade diameter is 0.2240" but you should listen to suggestions if your reamer maker thinks there is a need to vary.

Leade lengths vary and they conspire with the throat angle to determine overall length of the cartridge. The best way I know to get this right is to mail the reamer manufacturer a dummy cartridge loaded to the exact length you want and let them cipher it out. Dave Kiff actually suggested this to me, I have done it every time and he gets it spot on with zero error! If I were talking to some other reamer maker and they weren't receptive to this idea, I would hang up real quick!

Trouble Shooting If you get a gun in to work on and the customer doesn't know what chamber is in it you can get some rough ideas by knowing what goes on inside the chamber during firing. The case, which is part of a loaded round that enters the chamber undersized, is caused to expand to the size of the chamber upon firing due to the pressures generated by the burning powder, a temporary situation called obturation. The brass has a memory of sorts.

As the bullet moves forward and the gas pressure subsides the brass contracts about 0.001" toward where it originally started. This is called spring back. By simply asking the customer for a few pieces of his fired brass you can measure the diameters of the case body and neck, add 0.001" to allow for spring back, and get a good idea of what these dimensions are in his chamber. You already know you can take a Stoney Point reading to determine overall length.

The gun doesn't care what the original length was when it was new, only what the chamber length is now. A barrel starting with a Compass Lake chamber and firing thousands of rounds, eroding forward to measurements similar to anew NATO

chamber now performs, pressure wise, like a NATO chamber. Longer chambers generally pressure up less regardless of whether they are born long or whether the length has come about by throat erosion.

I have remarked many times that one of my least practiced skills was diagnosing malfunctions. That's a good thing! Stoner's platform is a remarkably well engineered weapon. Most malfunctions that do occur are related to bad magazines, dirt or lack of lube, and bad ammo. When customers come in complaining of feeding or extraction problems, right after ruling out dirt or improper lube it is always good to consider their ammo if they are reloading.

If the shooter is hand loading I like to fire several rounds of factory new ammo in his gun and see if there are problems. If my ammo works it's a good indication the customer may not have his reloading dies set up properly. The diagnostic tool for this is a Headspace Gauge Kit from Hornady. It is caliber specific and fits on the comparator which is seated on the bottom leg of a digital caliper. Pick up a few rounds of brass that successfully fired in the customer's chamber and measure with the Headspace Gauge.

Remember spring back and add 0.001" to get the true dimension of the chamber in question. Take measurements of the customer's ammo the same way. The hand loads need to come out 0.003" shorter than the chamber or they may not feed or extract properly. This "shoulder bump" produces ammo 0.003" shorter in the shoulder than the chamber.

Full length sizing and neck sizing are accomplished by different dies but both dies can bump the shoulder back by the required 0.003", usually accomplished by screwing the body of the die down closer to the top of the shell holder. Follow the manufacturer's di-

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rections for this. There can be mismatches between dies and shell holders. Over decades of loading I have found situations where the bottom of the die came down into hard contact with the top of the shell holder but didn't give adequate shoulder bump. If you ever run into such a situation work down the top flat surface of the shell holder, permitting the die to go down further. I have had good luck, function wise, just neck sizing my slow fire rounds in the AR-15.

However, if you gauge the customer's ammo has the shoulders set back the correct 0.003" you might try full length sizing or checking the trim length to make sure it isn't too long. In some of the older ARs chambered with SAAMI reamers I have seen a number that needed brass trimmed 0.010-0.015" shorter than the loading manuals call for. Polish Every Chamber Last, but not least, polish every chamber. I am indebted to Glen Zediker's great book, *The Competitive AR-15 Builders Guide*, detailing how to perform this.

You will need a Brownells Rifle Polishing System with .357 hone (#080-608-338) and Flex-Hone oil. You can follow the instructions in Glen's book or the directions that come with the hone. Two points that seem to be missing from both, however, are cleaning before and after. The chamber needs to be spotless to begin with because you don't want to pick up any debris that can scratch the chamber.

After polishing you need to spray out the abrasives from the chamber and barrel extension with some high pressure aerosol, use a chamber brush and spray again. After

everything has dried, run a couple of patches soaked with Windex without ammonia through the bore and then dry patch. When breaking in gas gun barrels, after firing I soak the bore with a very strong copper-removing solvent and turn it upside down, allowing solvent to pool around the gas port, which is a problem area that likes to hold copper fouling.

Because I don't want to get excess solvent running down inside my front sight housings I leave them off during the break-in shots. That means I am extracting all fired casings by hand using the charging handle. I find that I have to apply quite a bit of muscle to extract brass from unpolished chambers. The same barrel with a polished chamber lets casings come out very easily, about half the effort. If that doesn't tell you something about the effectiveness of this process nothing will.

It takes longer to dig out the items you need than it does to perform the polish. It is that easy! Do it with every gun you build. If you take in a gun built by another armorer and the customer is complaining of function issues I suggest looking at the chamber with your bore scope. Military armorers replace more barrels ruined by improper cleaning or neglect than those genuinely shot out. Rusty chambers are not uncommon and the polishing process can often salvage them.

Preserving The Chamber Rust leads to pitting and this can start within a handful of days after shooting. Corrosion can happen regardless of barrel steel type. One of the best ways to avoid it is to clean the bore, chamber and barrel extension after each fir-

ing. Then, if the gun is going to be stored for more than just a few days, apply something to the barrel to ward off corrosion. Brownells conducted a great study on this topic a few years ago (bit.ly/1hh5ttU) and two rust inhibitors got great marks.

WD-40 scored well and is readily available. Boeshield T-9 also earned high marks and is available from Brownells. When cleaning any firearm that isn't going to be shot again soon, I saturate a clean patch with Boeshield and work it back and forth a few times to burnish it into the pores. Then I spray a good shot of the aerosol directly into the chamber and barrel extension, turn the rifle around and hit the front of the muzzle, crown and flash suppressor.

I have observed the least bit of pitting in the crown will usually spell the death of accuracy. The night before going to the range, spray the chamber and front of the barrel with a shot of high pressure gun scrubber, then follow by running a patch or two of Windex WITHOUT ammonia through the bore and dry patch. I doubt that armorers and gunsmiths will ever entirely agree on the choices of chambers.

Most likely, those advocating long ones will continue to hold onto their reamers until they are pried from their cold, dead hands. Some of those folks make good guns and skillful shooters continue to log winning scores with them. At the end of the day, it won't matter which chamber a person has in his gun if he points the muzzle at the 9 ring. Only a lot of training will prevent those 9s from being pointed out there in the first place! AG

METALWORKING

Thompson Center Arms Contender

BY WENDELL DEANER SEPTEMBER 2014

ORIGINAL PP. 9-16

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It was a beautiful afternoon, not much wind and mild temperature. I was sitting in the shade under a little copse of trees on a small rise. Sandstone rocks jutted up from the pasture land and gave me perfect concealment and a place to use the Harris bipod attached to my gun for a rock-solid rest. I sighted carefully through my scope at an unsuspecting groundhog about 100 yards away, putting the crosshairs right on his nose.

When I touched the trigger the whistle pig flipped backwards off the old stone fence he was surveying his domain from and I knew it was a solid hit. When I checked, the 110 grain .30 caliber “plinker” bullet had taken him just below his chin for an instant kill. My farmer host and friend approved. Big deal, you say? Back in the 70s this wouldn’t have been much of a shot for a dedicated varmint rifle but it opened my eyes to what a Contender pistol could do.

I used that gun with its 14-inch barrel chambered in .30 Herrett to take many more groundhogs. Unfortunately, I didn’t have an opportunity to try it on bigger

game before I sold it. What’s a .30 Herrett? It is a .30-30 Winchester shortened and shaped to what its inventor—wildcatter, and grip designer, Steve Herrett—thought was ideal for efficiency in a short barrel. He also created the .35 Herrett.

Being a gun enthusiast not content with a standard caliber when I could use something exotic, I bought into it and laboriously formed and shortened .30-30 cases until my loading arm was about to fall off. I later realized these “innovations” on the parent case couldn’t do anything the original wouldn’t.

That still didn’t stop me from obtaining a 7mm BR when the only cases available were small-rifle-primed .308 “match” cases that had to be formed and worked over in very expensive forming dies to make it work, but that’s another story. As far as I’m concerned the Contender doesn’t need anything special or exotic to work its best. 38 Special, .357 Magnum and .357 Maximum ammunition. 357 Maximum chambering is a good deer getter.

Standard cartridges work just fine or better in the longer Contender barrels and are often more accurate than when used in revolvers or auto loaders, especially at long range. What set the Contender apart from all the rest was the availability of interchangeable barrels in different calibers that could be swapped in minutes. As long as the pressure was kept under 48,000 PSI almost any cartridge could be used, even up to the .45-70.

The scope mounting capability of this gun made it a true long-range possibility, yet barrels for .410 shot shells can be had—what a hoot when slinging clay pigeons. The Contender is what I call a lovely pistol. It is accurate, inexpensive, and versatile. What could be better? By the way, that bucolic pistol perch where I spent many hours in the cool shade happily plinking at whistle pigs is now asphalted and concreted over, occupied by a giant Walmart. I think I got that last one

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I find the etched cougar scene engraved on the side handsome if not exquisite. While not of the greatest optical quality this one has held up well to thousands of full power loads. at the end of aisle four, women's undergarments. You don't know what you have until you lose it, I guess. Disassembly The Contender is pretty easy to work on, but remember it is not a G2 or an Encore. These guns are similar but are not the same.

There are even a few differences in the original (having been manufactured over a number of years) that you should be aware of. We will get to those in due time. Start by making sure your gun is empty with the hammer down. There is a safety lever on the top of

the hammer. It reads "C" (centerfire), "R" (rimfire) and "S" (safe.) Put the safety on "S" and squeeze the trigger guard to break open the gun.

When the safety lever (and selector) is in the Rposition the upper firing pin will be struck by the hammer, in the Cposition the lower firing pin for centerfires will be used. Remove the forearm with an appropriate screwdriver. The short (10-inch) barrels have one screw and the longer barrels have two screws. Open the barrel and remove the hinge pin. Some are tight, some will fall out. Use a brass or nylon punch if necessary so as not to mar the bluing.

This will allow you to remove the barrel.) Notice the larger, stronger receiver on the Encore. It is a heavier pistol and solid as a rock. The front sight may be soldered on or screwed on. If it is soldered, leave it alone unless you intend to repair or change it. The screwed on sight can be easily removed. The rear sight is held on by a large screw in the middle, which also serves as an adjusting screw and a small pin in front of the sight. When they are removed, slide the sight back and out.

Underneath you find a spring and two screws holding the base on the barrel. Although the iron sight base is held by two screws, there are four holes in the barrel to be used if a

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scope base is to be mounted. There is a very small pin holding the windage adjustment screw. Unless there is a good reason, such as a lot of rust or damage where the sight blade needs to be replaced, leave it alone. Otherwise, drive it out and replace what's necessary. If you do decide to remove it be cautioned that it will probably be damaged and be a booger to get back in. The dovetail blocks to hold the forearm screw in will usually be very loose and may just fall out.

I think this is to give a little clearance when I sometimes use this to shoot bigbore rifles that have a lot of recoil as well as pistols I want to test for accuracy. I'm still refining it. I'd like to sink one in concrete but I don't own the range. "C" and "R" stand for center-fire and rimfire, respectively. using different fore ends as this gun was intended to do. The locking block is held in by the lower roll pin.

The locking block is spring loaded and you should put a finger over it when driving out the pin.

Usually it won't fly away. It is in two pieces which can easily be separated, though some guns have a one-piece locking block. A small pin holds them together but can be taken apart by hand. Also, the Some guns only have two. spring can then be removed from the barrel lug. The extractor is held in place by the upper roll pin and is not spring loaded. It will pull right out when the pin is removed. Roll pins can be driven out from either direction.

Use the appropriate roll-pin punches (1/16" for the small extractor pin and a 3/32" for the large lockingblock pin) to drive them out. I recommend using a nylon bench block on a hard surface for this operation. I had to use a

four ounce machinist's hammer to start the large pin. If the pins have never been removed since the gun left the factory they may be a little stiff. I also only drove out the pins far enough to remove the parts.

This allows the pins to be driven back in when reassembling the barrel parts much easier. If you do take the pins out all the way, use a roll-pin holder of the appropriate size when replacing it. To disassemble the receiver, the grip must be removed. Take the grip cap wood screws off and remove the grip cap. The large hex-headed screw holding the one-piece grip in place is easily accessible. A washer is also on the screw.

The gun I was using for this article took a 3/16" hex bit but I can't attest this will be the case for all Contenders. The grip pulls off to the rear and leaves

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us with a bare receiver. Remove the guard-stop screw which holds the guard-stop spring in place and positions the trigger guard so it can be compressed to break open the gun. The spring will stay in place when the screw is removed. Compress the spring with a small screwdriver blade and slide it gently out to the side. Here is where I found some variation on the disassembly of these parts.

Some of the receivers have a pin in the front under the large hinge pin holding the barrel on that when removed will allow the trigger assembly to be pulled out the bottom of the receiver. Instead, my gun (newer model) had a pin going through the trigger itself. When this pin was driven out with a 3/32" punch the trigger assembly came out easily.

I had left the guard-stop spring in place when I took out the guard-stop screw and I'm glad I did because the little spring (shaped like a tiny tornado) slides into its seat in the back of the trigger guard on the small end and would be damaged if removed by just prying it out. I don't know when these changes were made but my gun was purchased sometime in the early 80s. It just goes to show that a gun with this long of a history will have idiosyncrasies.

The manufacturers never stop trying to improve their products and each year may bring changes. To remove the striker, pull the trigger and allow the striker to move. This is because it has an internal safety and a clever way of off setting its firing pin for rimfires. Very simple. forward and up.

The pin holding it and the accompanying spring is held in place by another 3/32" roll pin. Hold your finger over the spring and striker when removing it—it probably won't have much tension, though some will – as it might fly out the back. The spring and striker can then be removed as a unit and slid out the back of the trigger guard. Remember the relationship of how this unit is in the gun.

The trigger, plunger and its spring are then removed by driving out a 3/32" twin roll pin while holding your finger over it to capture any parts that might want to fly off. The trigger is slid down and out the bottom of the trigger guard, and the plunger and spring comes

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Both are in .223 Remington and both have a Leupold 12X scope mounted. The Remington weighs 9-1/4 pounds and the Contender comes in at 6-3/4 pounds ready to go. out the top. Some guns have a separate trigger spring that fits in a hole in front of the guard. Mine did not, another variation. Also, there was no Allen screw in the bottom of the plunger hole, but there is on some guns. Mine appeared to be staked in and not removable.

The last tiny Allen screw is in the rear of the trigger guard and serves as a trigger stop. There is no need to remove it unless you want to. Moving on to the receiver, use a 1/8" inch punch to remove the bottom pin holding the sear and plunger and plunger spring. This

pin may come out very easily or require a slight nudge. Hold you finger over the sear, but it is usually not under a great deal of tension. A 5/32" punch fits the top pin which holds the hammer and hammer spring.

This spring will fly off if not contained so be careful. I went from right to left in removing these pins, but I think either way would be fine. The little butterfly-shaped locking-block safety is accessed by a small screw from the top of the receiver. It has a small spring. Before removing it, take a punch and push it down so the hammer-block safety and spring can be removed. The only thing holding the hammer-block safety in place is the locking-block safety. It can be easily removed.

After removing the lockingblock safety, take out the small screw in the back of the firing pin bushing and remove it out by insert- You may find this pin in front of the receiver instead. Note the small tornado spring. ing a punch in that hole and gently pushing. Try to keep the bushing straight. It should come out easily and the two firing pins can be removed.

The two pins are identical in size but one is rounded (centerfire) and the other has a square end (rimfire.) The only part left to disassemble is the hammer. For the old-style hammer, the manual safety comes out be removing a screw in the rear but there is a spring with a ball bearing on either side going through it.

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Other guns have the pin located at the very front of the receiver. One pin holds the striker and spring in position. Be careful they don't get lost when you push out the safety from back to front. The only thing left is the safety block which is held in place by a small plunger and spring. Pull out on the plunger with a pair of needle nose pliers and push the safety block to the side. Then, push the plunger out from the front of the hammer to the back while holding to capture the plunger.

The new style hammer has no provisions for disassembly and should be left alone. If needed, contact T/C for a replacement.

Reassembly Start on the frame. The firing pins and their springs (flat in top hole, round in bottom) and its screw can be reinserted in the receiver and The springs are identical but the firing pins are not. All these parts are relatively simple to remove and put back together. tightened snugly, not wrist breaking.

Make sure the firing pins are free and protruding out of the plate at the same height. They should appear to be straight up and down. If the screw goes in easily, they should be in the correct position. If you have removed the trigger guard alignment set screw (the little Allen screw in the back of the receiver) replace it, but do not tighten. Replace

the hammer and tap the retaining pin in just enough to go through the first leg of the hammer to hold it in place.

Replace the hammer spring with the little loop towards the hammer. Use a small punch on the other side to position the spring in the hammer and push the retaining pin through. That's all there is to it. The little locking block safety (72) is next. On some of these the screw is just held by a slot in the front and can fall out. Others have it captured in a hole. Insert the safety into position with its small spring and screw. The spring will have to be moved slightly

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to clear a shelf in the receiver so it can go in its retaining hole. Screw it tight, and you're done. The hammer block safety (8) is inserted with its spring towards the front of the receiver. Pull the hammer back just a tad and move the locking block safety so the hammer block safety can fall into position. Insert the sear spring and plunger in its recess and drop the sear on top. Use your finger to position the sear so its pin can be pushed through and make sure it is free and the plunger is doing its job.

Next, assemble the trigger guard. If you have taken out the two small Allen screws (the trigger stop and trigger positioning screws) put them back in now. Obviously the trigger guard must be fully assembled before making final adjustments of these screws. Put the small spring and plunger in place in the top of the guard and insert the trigger from underneath. The front of the trigger should cover the plunger when the trigger pin is reinserted.

By the way, the trigger pin and the striker pin were not exactly the same size on my gun. I thought they were, but when I put the striker pin in the trigger it was too tight and the plunger could not move the trigger. Maybe your gun will be different. Reinsert the striker. This bar will spring up and meet the sear releasing the hammer when the trigger is pulled. Mount the striker in the upright position so there is not a lot of tension on the spring and reinsert the roll pin through the spring and the striker.

Test it for function. Remember, the striker should only go up so high. Some guns have a trigger positioning Allen screw on the top of the trigger guard. Mine has the screw on the bottom of the trigger itself so it can be adjusted without disassembling the gun. This screw will allow for a larger or smaller contact of the trigger and the striker. This should not be set too light, especially on a hunting gun. If the gun is to be used in competition, trial and error at the range is the best way to go.

Just remember too light can be extremely dangerous if the shooter doesn't follow rigid safety practices. Overtravel of the trigger can also be adjusted now, if preferred, by turning the Allen screw in back of the trigger guard. Remember that too much of a good thing can be too much. A hunting gun needs a little overtravel to account for the rigors of the field. This screw can also be adjusted any time without disassembly.

When you put the trigger guard back in the frame the hammer must be pulled back a little and the hammer block safety out of the way before the trigger guard will fit back in. Use the trigger guard alignment screw on top of the large spring in the back of the receiver to pull the trigger guard almost, but not quite, flush with the bottom of the receiver. If you take it too far you will have lockup problems. The barrel goes back together pretty easily in the reverse order you took it apart.

One of the most common problems you might encounter while working a Contender are misfires, especially when

changing to anew barrel. This could be caused by broken firing pins or a weak hammer spring. By far the usual cause of misfires in the Contender is when the customer wants to use a barrel chambered for a bottleneck cartridge and doesn't full-length size his brass.

When I bought my first Contender many years ago I read an article by a supposed expert who advocated sizing the case just enough so as to require some pressure when closing the action as one might for a bolt action. This man did not understand how a Contender operates as there are several safety features that will not allow the gun to fire if the action is not completely closed. The Contender, being a break open firearm, allows the cartridge case to stretch a little when fired.

If the shoulder of a bottle neck case is not bumped back the lockup will be faulty and the gun will not fire, even though it may cock and seem to work correctly. This is how it should be. If your customer brings in a gun with misfire problems and is using handloads, immediately question him or her about resizing their brass. This is easy, especially if factory loads fire with no problem but the handloads won't.

There are other causes, but Thompson Center (now owned by Smith & Wesson) will fix anything that is out of factory spec. Shipping costs being what they are I recommend reviewing the handloader's practices first. AG



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54 Adjusting Screw Snap Ring 13 Bolt 65 Bolt spring 67
Bolt stop screw 16 Bushing screw 50 Dovetail lock 12
Extractor 69 Extractor stop pin 14 Firing pin bushing
15A Firing pin, center fire 15 Firing pin, rimfire 26
Firing pin springs (2) 44 Fore-end 57 Fore-end catch 61
Fore-end catch pin 55 Fore-end catch plunger 43 Fore-
end catch screws (2) 53 Fore-end catch spring 9 Fore-
end lug 45 Grip 47 Grip cap 42 Grip cap screws (2) 35
Grip screw 34 Grip screw washer 19 Guard pin 38
Guard stop screw 29 Guard stop spring 4 Hammer 50
Hammer nose 52 Hammer nose detents (2) 53
Hammer nose snap ring 51 Hammer nose spring 59

Hammer pin 24 Hammer spring 18 Hinge pin 58 Roller
8 Safety 64 Safety spring 46 Sear 20 Sear pin 25 Sear
spring 56 Sear plunger Thompson Center Arms
Contender (Specifications subject to change without
notice) 5 Front sight 7 Rear sight blade 33 Rear sight
elevating spring 40 Rear sight elevation adjusting screw
5 Rear sight housing 41 Rear sight screws (2) 39 Rear
sight windage adjusting screw 17 Striker 23 Striker pin
25 Striker spring 3 Trigger 36 Trigger adjusting screw 2
Trigger guard 22 Trigger pin 68 Trigger return plunger
27 Trigger spring 71 Safety screw 72 Interlock safety 73
Safety screw 70 Barrel

MEASUREMENT & INSPECTION

Headspacing Pre- Cut Long Chambers

A how-to on headspacing rimless cartridge chambers cut long.

BY NORMAN E. JOHNSON SEPTEMBER 2014

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This treatise will cover headspacing a rimless cartridge chamber reamed longer than the 0.030 inches required for normal chambering of a "Go" headspace gauge or new cartridge case. Here the barrel shoulder must be moved forward to achieve proper headspace. This is essentially opposite of working with a short chamber where a reamer is used in attaining proper headspace leaving the shoulder unaltered.

Normally, a pre-threaded, longchambered barrel will be approximately 0.015 to 0.030 inches over length for the "Go" headspace

gauge, so we must accurately pre-determine the actual amount of barrel shoulder to be removed.

Here I used shims placed between the bolt face and the headspace gauge to test for bolt closure with the receiver screwed. From left, unfired .22-250 case, .22-250 "Go" headspace gauge, Remington Model 700 bolt, recoil lug and several of the shims used between the bolt face and headspace gauge as a means of determining the amount of shoulder metal to be removed. A live tailstock center is used in addition to the steady rest to assure perfect center. onto the barrel.

The ejector and cocking mechanism should be removed for this phase of the work. To begin, I cut several shims of varying thickness to fit inside the bolt face and place the needed number of shims on the bolt face, held in place with grease. Two shims at 0.010" and the remaining at 0.002" is ideal. I then remove shims until the bolt closes with some feel and carefully record the thickness of the shims. Then the barrel is set in a lathe with chamber end centered in the steady rest.

AT THIS STAGE, I PLACE A WELL-SHARP-

HEADSPACING PRE- CUT LONG CHAMBERS CONTINUED

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ened lathe bit in the crossfeed in preparation for cutting the barrel shoulder and bring the lathe carriage stop, set at zero, against the carriage. The first lathe cut at the barrel shoulder is just a shaving of metal with the carriage stop at zero. Then, remove a few thousandths of shoulder metal and check to see how many pre-measured shims can be removed for final bolt closure. Getting down to the last couple shims, it's very close to arriving at desired headspace.

The final lathe cut is made with the last shim removed, which is controlled by carefully advancing the carriage-stop the thickness of the last shim removed. This should result in a light feel of the Go gauge as the bolt is closed on the torqueddown barrel. Remember, the total thickness of the stacked shims is the ex-

act amount needed to move the lathe carriage stop, allowing the tool bit to reduce barrel shoulder metal.

It is necessary to actually screw the receiver hand-tight onto the barrel to try things as this gets close because there is no second chance if too much shoulder metal is removed. If you do, a chambering reamer would be required to successfully complete the job. Maximum headspace is normally considered about 0.003 to 0.004 inches over a minimum Go gauge, but I've never gone this far.

Regardless of the type of cartridge being chambered, 22-250 Remington chamber, as described in the text, show the result of correct headspace as determined with a properly used Go gauge. Note the precise flush fit of the fired primer with the plane of the case

head. This is the result of correct use of a headspace gauge regardless of the methods used in headspacing.

Cartridge headspace, correctly defined, still means the space between the case head and bolt face of a fully chambered cartridge. rimmed, rimless or belted, headspace is the allowed space from the base of the cartridge to the closed bolt face. This term is sometimes confused by talking about shoulders and datum lines and case head belts, which do have control over headspace, however, the final measurement is bolt face to case head.

So remember in working with an over-length chamber, we are reducing the space between the bolt face and the headspace gauge as the shoulder metal is removed and not increasing such space as advancing a reamer into a chamber would

HEADSPACING PRE- CUT LONG CHAMBERS CONTINUED

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At this stage the amount of carriage travel is predetermined to arrive at the proper amount to reduce shoulder depth. 22-250 Remington long chamber using the "Go" gauge to proper specifications. The gauge is seen beside the fired cartridge case. be. The end result is the same: Proper headspace. Conclusions Given a choice, I

would much prefer working with a short chamber in arriving at correct cartridge headspace. It's faster and there is less likelihood for mistakes.

However, following proper procedure will produce a precision result ei- Complete your American Gunsmith collection. Or read up on a special subject! A limited number of the following

METALWORKING

1911 Firing Pin Stops And Safeties

BY ROBERT K. CAMPBELL SEPTEMBER 2014

ORIGINAL PP. 20-22

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Recently I ran across a problem that hadn't come into the shop in some time. A customer brought in a Philippine-produced 1911 with a firing pin stop that had fallen, ditching the firing pin and spring. This was a problem that must have come up pretty often with GI 1911 handguns. From Cooper on Handguns, Jeff Cooper noted that it was standard operating procedure to peen the firing pin stop of the 1911 before trusting the piece for service.

He saw many more worn GI .45s than most of us ever will and the advice was well taken, though today such problems aren't common. An easy check isn't always easy. The firing pin stop may be a bit wobbly and still work fine, just as an extractor can clock a bit and still work fine. This check is done by coming beneath the firing pin stop and attempting to move the stop just where the hammer moves against it. The extractor should also have some spring but not too much.

If the parts were solidly in place it would be the devil to remove them for routine cleaning. A tight fit is generally best. The firing pin doesn't always launch when the firing

pin stop drops, it simply is blocked by the firing pin stop and the stop doesn't always fall completely out. Much depends on which part of the cycle the pistol is in when the firing pin stop falls away.

A weak firing pin spring allows the dreaded bounce, the firing pin doesn't return to its tunnel in the firing pin stop and the bounce in the slide allows a loose fitting stop to take flight. I believe debris such as brass or lead shavings working into the firing pin channel can also affect the firing pin's travel and lead to the firing pin stop taking flight. A solid recommendation is to always maintain a strong firing pin spring. Firing pin blocks make the loss of the firing pin less likely.

A neat trick is the Evolution Gun Works firing pin stop. They are relatively simple to fit and with a bit of effort you have a good fitting firing pin stop that is nice and tight. Use a file at least as wide as the stop and just slightly break the edges in fitting. Radius or bevel? Radius is perhaps the most traditional but either works. The EGW firing pin stop works to reduce recoil and it has to be experienced to be believed.

It is the manner in which the hammer and slide operate and the means with which the firing pin stop mitigates felt recoil. Mechanical advantage is shifted from the slide to the mainspring, resulting in reduced felt recoil. Occasionally, a 1911 will swipe at the primer and leave a drag mark instead of a nice round strike. The EGW firing pin stop also mitigates this problem by its transfer of mechanical advantage.

The firing pin stop is oversized for width, not thickness, for a true custom fit and a few passes with the file are all that is needed. The firing pin stop holds the extractor and if the pistol is experiencing erratic or wide ejection, it may be the extractor or firing pin stop. The firing pin stop may have something to do with the problem of an extractor clocking. The firing pin block makes the likelihood of losing the firing pin less likely as the block butts into the firing pin when the trigger is released.

These devices are controversial but should be understood. The bottom line is that the makers must incorporate a firing Far This is the Wilson Combat bullet proof firing pin stop.

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pin block into the design or abrogate any chance of police and agency sales. There are a number of types. The most prevalent seems to be the Colt Series 80, as used by Colt, SIG and others. The firing pin block fits into a notch in the firing pin body and prevents the firing pin from taking a run forward if the pistol is dropped on its muzzle. The trigger moves to the rear and the levers connected to the trigger move the block from the firing pin and allow the firing pin to move forward unimpeded.

Many claim that loose motion is added to the Series 80 trigger but a good trigger action can still be had with the Series 80, although would not recommend a particularly light action job on this one. Back to the nuts and bolts of firing pins and firing pin stops. When you order anew firing pin be certain that you order the correct unit. We know that the Series 70 Colt differs from the Series 80 because the newer firing pin has a notch for the drop safety cut into it. There are other considerations as well.

For example, in 1918 at about serial number 240000, the radius at the bottom of the firing pin stop was increased from 0.078 to 7/32"

to facilitate easier cocking during recoil. A more recent example, the original firing pin has a firing pin diameter of about 0.090 at the tip. Most Springfield 1911s use a lightweight .38 Super-type firing pin in all calibers. The lightweight firing pin coupled with an extra power firing pin spring is Springfield's answer to the problem of a drop safety.

A lightweight firing pin has less inertia than a standard weight firing pin. Coupled with the extra power firing pin spring the Springfield lightweight This Springfield has nearly twenty thousand rounds on it with the original firing pin stop and extractor. Both are tight and well fitted. Far Never remove the drop safety from a pistol. It will bite you sooner or later. The Swartz block does not connect to the trigger and is used on the Kimber II series and Smith and Wesson 1911 handguns.

This one is activated by the grip safety and was invented prior to World War Two but used in very few Colt pistols. Kimber uses this firing pin block and has sold quite a few of their 1911 handguns to police agencies and the Marine Corps. The firing pin block is

required in many circulars and invitations to bid so Kimber had to have some type to have an eligible design. A downside with this design is depressing the grip safety prevents removing the slide.

With the grip safety depressed the firing pin block pin contacts the firing pin. Use too much force against the slide while holding the handle and you will shear this pin and the pistol won't fire. I personally own two Kimbers with nearly ten thousand rounds through each with no problems of any type but there have been issues with grip safety timing and the Swartz block. Theoretically, and in practice, the hammer would fall but the pistol would not fire.

With the Series 80 block, if the trigger is pressed to the rear the firing pin block drops. With the Swartz a situation could exist where the hammer would fall and the firing pin remains locked. This is a doubtful situation but one that must be thoroughly considered when you do a trigger job or work with the grip safety on a pistol with this type of safety. Far

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Top Bottom The Series 70 has no cut out for the firing pin block. firing pin is a good answer to the problem of the 1911 possibly firing if the pistol is dropped on the muzzle. The lightweight pin is less likely to run forward, particularly when the extra strong firing pin spring is considered. This lighter firing pin is available as the Ed Brown 825 for a perfect fit and this firing pin is also used in quite a few custom slides such as the Caspian. The hole in the slide is smaller as well, of course.

Not every Springfield pistol uses the smaller 0.069 inch diameter firing pin so be certain which pin you need. On a very serious subject, I investigated a rather odd accidental discharge that was apparently caused by a loose firing pin stop and firing pin, and may well have been a combination of the two. The firing pin stop apparently moved up rather than down and the firing pin was stuck up and in a bind, unable to return to the hole in the firing pin stop.

As a result, the firing pin protruded from the firing pin channel. The shooter is experienced and understood muzzle discipline so no one was hurt when he experienced an accidental discharge upon dropping the slide on a loaded chamber. This is among a very few true accidental discharges I have seen, with the majority of such incidents being negligent discharges. The shooter loaded a magazine in the pistol and racked the slide. The firing pin was protruding and contacting the primer caused the pistol to fire.

If simply stuck forward from a too tight firing pin spring the firing pin probably would have been forced to the rear. Fortunately the bullet was launched into the ground when the pistol fired. This incident underscores the need for good tight firing pin stop fit and proper firing pin fit as well. A final word on the firing pin stop. For those wishing the ultimate expression in reliability there is a special firing pin stop that cures every possible problem.

In Browning's original design, the firing pin stop not only holds the firing pin but the extractor, yet is sometimes held in place only by the firing pin head and spring pressure. The fit in the slide can be secondary. During the thousandths of a second when the hammer strikes the firing pin forward against spring pressure and as the hammer is cocked, there is a chance that the slide will release its grip on the firing pin stop.

The firing pin stop may drop against the cocked hammer and the firing pin cannot return to its proper position. Dave Lauck has designed a firing pin stop with a set screw. It is sometimes misunderstood as a tunnel isn't drilled into the slide. A small dimple is placed in the slide and the set screw in the Lauck firing pin stop is then tightened, introducing pressure into the slide stop and slide relationship.

With the small indented seat in the slide and the set screw in the fitted, oversize firing pin stop, the end result is a good tight fit and every problem here is solved, period. Back to

the firing pin block. Check the firing pin block to be certain the firing pin is locked when necessary and releasing when it should.

The first step is to remove the magazine and to be certain the pistol is unloaded by racking the slide, clearing the chamber, locking the slide to the rear then placing a finger tip in the chamber to be certain the chamber is empty. Lower the slide and leave the hammer cocked. Take a pen or punch and press on the firing pin to be certain that it is locked in place as it should be. Be certain the pin or punch is solidly in contact with the firing pin, not the firing pin stop.

There is movement but not enough to allow the firing pin to protrude from the firing pin channel. To check for proper unlock when the trigger is pressed, retain the hammer in the full cock position and press the trigger while depressing the grip safety. Once the trigger is pressed to the rear, release the grip safety but not the hammer. Press the firing pin forward. The firing pin should move freely and protrude from the firing pin channel.

If the firing pin does not move or there is a click or binding as it goes over the drop safety something is wrong. There is always a chance that the adjustable trigger or a trigger stop has retarded trigger travel to the point that the firing pin block will not release. The firing pin may even strike the firing pin block but still fire every time. Obviously this is a problematic situation. The obvious cure is to reset the over travel stop. AG

FINISHING

Reader Forum

BY AMERICAN GUNSMITH EDITORS SEPTEMBER 2014

ORIGINAL PP. 23-24

Renovating Sporterized M98 Mausers I just finished reading your fine article on restoring Mausers. In 1960 I renovated my Springfield 1903A3 that was sporterized when I bought it. I glass bedded the action, free floated the barrel, and rechambered it in .30-06 Ackley Improved and the rifle shot like a dream. I now find myself with anew laminated wood stock for the rifle.

Of course, I will glass bed it and free float the barrel, however, I did notice that the picture of your parts included pillar bedding sleeves which I did not do the first time. How do you use these? Are they available in a size suitable for the 03A3 A1 stock? I think this would be an improvement on what I originally did the first time. From Paul Mazan. I am delighted that you enjoyed my article.

The pillar bedding sleeves you saw in the picture were purchased from Brownells and I would refer you to their excellent technical staff regarding a size suitable for your 1903A3 stock. Each set of sleeves comes with a complete set of instructions. Rather than try to explain the process, I suggest you get a set of illustrated instructions from them. The instructions are free and they will help you select the correct size and answer questions about installing them.

Mossberg Shotgun What is the proper way to remove the magazine tube from a Mossberg 590A1 pump shotgun? Are any special tools required? Unless there has been an engineering change we've not heard about or encountered, the mag tube of a Mossberg 590 isn't pinned to the receiver. It screws in like the tube on a Model 500. That still being true, the tooling necessary would be a magazine cap wrench and a blade screwdriver to assist in the removal of the magazine spring retainer.

Note, once the retainer is removed the spring will attempt to escape. Often, freed magazine springs assume all the attributes and behavior of a snake slithering off in fear of losing the ability to slither in the future. Absolutely necessary items area bench vise, padded jaws for the vise, a closefitting hardwood dowel to prevent crushing the tube when it is secured in the vise, and a rectangular insert.

This insert has to fit snugly within the receiver after the trigger mechanism is removed and extend two to three inches below it. Brownells may still offer a block of ABS plastic made specifically for undoing Model 500 mag tubes. Hopefully, they still do. If not, check industrial supply houses as a source for your very own length of ABS 3/4 inches thick. It's strong. It's tough. It's non-marring and easy to work with.

Richard Stuber OK, you've got the ABS insert in the receiver, the dowel is in the tube and the tube secured between padded vise jaws. Grasp the ABS firmly and use it as a lever to turn off the mag tube. When you install the new tube, follow the same procedure in reverse. Do not over tighten and smear a dab of good gun grease on both the tube and receiver threads. Dicropan IM Bluing Process Many thanks to Paul Mazan for his article way back in October 2011 on how to perform bluing with Brownells Dicropan IM.

I recently purchased a .45 ACP conversion cylinder that came from a Ruger Blackhawk. Unfortunately, the cylinder had been stored in the red felt bag they used to come in and was pitted from rust. I didn't want to cold blue the entire cylinder but I remember reading Paul's article and dug out my back issue to refresh my memory. A quick order to Brownells, plenty of elbow grease to polish out most of the pits, and 14 applications of Dicropan IM had the cylinder looking al- Rick De Marinis most factory new.

I couldn't get all of the deepest pits out because I didn't want to remove too much metal, but I was very pleased with the results. I can't wait to try it on the receiver of a 1947 Marlin 39A I recently acquired that had surface rust all over it. Roy Seifert From Paul Mazan. I simply cannot tell you how delighted I am that my article was able to help you restore that cylinder to almost like-new condition.

It is a time consuming process but is invaluable in allowing a small shop or hobbyist get a truly beautiful and very durable finish without having to go through the expense of a hot dip bluing system. I have successfully used it on old Colts, Rolling Blocks, a Stevens Favorite, and any number of old shotguns and military pieces. I am sure you will be just as pleased with the results you get on the Marlin 39A. Thank you so much for taking the time to write. You've put a smile on this old man's face.

Kahr Refinish I have been interested in doing one of those spray on and bake gun finishes to my Kahr Model K9, having done a rifle and a pistol with the Brownells material, and wouldn't mind getting one of those Dura Coat kits. I tried the Cerama-Coat after reading an article in American Rifleman by Bryce Towsley for refinishing a "barn shotgun" which I believe was a NEF Pardner or similar model. I think the finish gives a classic look and exceptional wear along with lubricity property for moving parts as well.

One of the only things I would say about the Cerama-Coat is that it appears to have a shelf life if you don't plan to use the material in a fairly timely manner as it will come out thick or not at all. Of course I would like to take it down past a basic field strip to get at the individual parts and doing the best job I can the first time. I did get on the Kahr web site to look at their schematic and I have noticed that

READER FORUM CONTINUED

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they list some sort of plug or spacer that appears to help in disassembly of the slide components. Otherwise, I haven't really found anything in regards to complete disassembly/reassembly instructions for this model. After I bought the gun I had mixed emotions about it but now I think it's a great little gun and ended up getting a second one. I really think it would do justice to the look and feel of this interesting little pistol to be able to do a Cerama-Coat finish treatment.

Any articles for the Kahr K9 or similar refinishing jobs you can direct me too? The K9 was covered in our May 1995 issue. No reprints dated that far back are available but we are printing your email address in the event a fellow reader has a copy of that issue and would copy it for you. We have always liked the Kahr. Several law enforcement officers we know adopted it as their back up in .40 S&W caliber after seeing and firing it on their range.

There are no mechanical differences between the K9 and the larger caliber model. It is important, however, that the pistol actually undergoes the 200 round break in recommended in the owner's manual. This would be true of anew gun or one that has been recoated. Your choice of a coating material does concern us. We have not worked with Cerama-Coat as much as Dura Coat and your comment regarding Cerama-Coat coming out thick is worrisome. The Kahr is held to close tolerances.

Dura Coat can be applied thinly enough not to disturb those tolerances while being very strong against wear and is available in a huge choice of colors, even passionate pink! We have used the Dura Coat Parkerized coating and were delighted to see it was indistinguishable from the original GI Parkerized finish in all cases. Charles May Mossberg Model 352 I just received a Mossberg Model 352. I've been told these malfunction often and after firing it I found that the firing pin was causing the problem.

It appears that it was not staked in place and sometimes stays near the chamber when the bolt is trying to go to the rear. Can I stake it myself or would it be better to contact Mossberg and let them do it? If I can do it myself, where is it normally staked? When the bolt is out of the receiver the firing pin drops into my hand. Jim Ham We spotted a parts drawing of the Model 352 in Jack First's Volume Two catalog. There is a retracting spring and retracting spring plunger just aft of the hammer.

Are these present in your rifle? We don't believe the firing pin was staked in. This would interfere with or prevent its free movement forward to impact the primer compound within the .22LR case rim. Also indicated is a pin in the bolt we suspect serves to retain the firing pin in the bolt.

We recommend you check these possibilities with Vic Havlin of the Mossberg Collectors Association His knowledge of old Mossbergs is vast, heavily relied upon by the current manufacturing operation and he usually has parts to correct most problems. 8mm Mauser And Parker-Hale Is there any difference between 8mm ammo and 8x57mm ammo? How do you know if a receiver has been heat treated? I purchased a Parker-Hale barreled receiver in the white, drilled and taped for scope, with a midland barrel slotted for sights.

I am having trouble finding parts for this receiver. Some 98 Mauser and 1903 Springfield parts fit. I can not find a bolt stop/ejector complete assembly. I have contacted several dealers including Numrich without luck. Is there another rifle that will interchange these parts? Donald Burney, Yes, there are differences and you can compare each one in a good reloading manual and/or Cartridges of the World.

You can double or triple check heat treatment with the manufacturer, who should also be able to help you out with a parts source and intelligently respond to your query on interchangeability. AG

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