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DIGITAL ARCHIVE  
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# PRECISION ARMS WORKSHOP

AND THE AMERICAN GUNSMITH ARCHIVE

A TECHNICAL JOURNAL OF CRAFT, REPAIR & RESTORATION

# 10

ARCHIVE ISSUE NUMBER

INSIDE THE ARCHIVE

# WORKING THE ITHACA MODEL 49

FWS REPORTS: HUNTER NUMBERS ARE UP • BARREL SLEEVING A NEW WAY • FITTING A SEMI-INLETED STOCK • 1911 ...

ORIGINAL METHODS. MODERN ACCESS.

ARCHIVE EDITION 106

DIGITAL ARCHIVE EDITION

# Preserved for the bench.

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# AMERICAN GUNSMITH

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## FROM THE ARCHIVE

# FWS Reports: Hunter Numbers Are Up

BY AMERICAN GUNSMITH EDITORS OCTOBER 2012

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**T**he recently-released 2011 National Survey of Hunting, Fishing, and Wildlife-Associated Recreation, a report issued from the US Fish and Wildlife Service, shows 13.7 million people, or six percent of the US population age 16 and older, went hunting last year.

That marks a nine percent increase over 2006, reversing a previous downward trend, and more people hunting and shooting is good news for conservation. "This is great news for everyone in the hunting and conservation community," said David Allen, Rocky Mountain Elk Foundation president and CEO, "but it's even better news for our conservation efforts to protect and improve habitat for elk and other wildlife. We strongly believe that hunting is conservation.

This is also a reflection of the importance of our hunting legacy of the past and our hunting heritage as we look to the future." US Fish and Wildlife Service data show hunters spent \$34 billion last year on equipment, licenses, trips and other items to support their hunting activities.

If you break down the numbers, sportsmen and women spent \$10.4 billion on trip-related expenditures, \$14 billion on equipment such as guns, camping items and four-wheel drives, and \$9.6 billion on licenses, land

leasing and ownership and stamps. "The more hunters spend on firearms, ammunition, bows, arrows and hunting licenses and permits, the more money is generated to provide the necessary funding for successful science-based wildlife management across the United States," added Allen.

Here are some brief highlights from the FWS report: - 13.7 million hunters in 2011 vs. 12.5 million in 2006 (9 percent increase) - Hunters spent an average of 21 days in the field - 1.8 million 6 to 15 year olds hunted in 2011 - Big game attracted 11.6 million hunters (8 percent increase since 2006) - Hunting-related expense increased 30 percent since 2006 - Overall participation of hunters increased more than 5 percent since 2001 - Total hunter expenditures increased 27 percent since 2001 Expenditures by hunters, anglers and wildlife-recreationists were \$145 billion, accounting for one percent of our country's gross domestic product.

Note that this 2011 FWS report contains preliminary numbers. Final reports, as well as reports containing data from the states, are due out from the FWS before then end of 2012. Read the current report at: [doi.gov/news/pressreleases/upload/FWS-National-Preliminary-Report-2011.pdf](http://doi.gov/news/pressreleases/upload/FWS-National-Preliminary-Report-2011.pdf) or at [scribd.com/doc/103841335](http://scribd.com/doc/103841335)

## HISTORY

# Working The Ithaca Model 49

*This Western-themed rimfire was popular in the 1960s and may be encountered today.*

BY WENDELL DEANER OCTOBER 2012

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Although the Ithaca Gun Company is best known for its production of the iconic Model 37 shotgun, many other guns were produced over its long history dating back to the 1880s. Established in Ithaca, New York (hence the name) the company first produced shotguns. In 1916 the Le Fever Gun Company was incorporated with Ithaca. Some of the company's more famous patrons were Annie Oakley and John Phillip Sousa.

During World War Two, Ithaca made guns for the American military, including the M1911 pistol and M3 "Grease Gun." The Model 37 shotgun was the standard for some police departments, including Los Angeles and New York. The Ithaca Gun company has transferred ownership several times and is still in business at its present site in Upper Sandusky, Ohio. One of the most interesting products from Ithaca is the M49 .22 rimfire rifle.

Produced from 1961 to 1976 (some sources list 1979) this little rifle was plainly aimed at the boy's market. Its lever action was intended to give a Western flavor and indeed its profile is reminiscent of a weapon the Duke might have carried, although, in his big hands it would have looked like a toy since it is much more diminutive than the Model 92 Winchesters he usually favored in the movies. A faux loading tube is attached under the 18-inch barrel in the case of the single-shot version.

A repeater, the Model 49R, was also offered as well as a WMR (Winchester Magnum Rimfire) version, the 49M. Production figures for these guns aren't readily available—at least I can't find any. The company changing hands several times does not help and correspondence with the current Ithaca Company reveals that they are not in possession of such information. Be that as it may, the number produced appears to be substantial since an example may easily be found on many of the Internet gun auctions and at gun shows.

Comments over the Internet lump these guns into a category ranging from "junk that should be trashed" to "the best little rifle I've ever owned." I think this piece falls somewhere in between. Many of them are still in use and one could cross your bench at any time. The receiver is made of a product called anodized aluminum. This process increases the aluminum oxide layer on the surface of the part which in turn becomes aluminum hydrate. The part is hardened and is less subject to wear and corrosion.

This process also allows the aluminum to be dyed and this rifle is colored black to simulate bluing. Use of this material is not necessarily a bad thing as some would portray it, since it does have the strength needed for the receiver's function and aluminum reduces weight substantially, anodized or not. What's wrong with that?

The gun in my shop at the moment seems plenty strong enough to fire many thousands of .22 rimfire rounds and I suspect it already has.

This gun weighs four and threequarter pounds—about standard for a boy's rifle, at least in the sixties—and is only thirty four and three-fourths inches long from muzzle to buttstock end. The trigger pull weighed by my RCBS gauge is a clean 3.75 pounds. Many the so-called youth rifles produced today have horrendous. Notice that the length of pull is practically the same. The Western "flavor" important in the 1960s that Ithaca hoped to capitalize on is evident. triggers that even a grown man has trouble with.

The trigger on this rifle testifies to the differences in the era it was manufactured compared to the current timid reluctance to give the public what it wants. It may be possible to smooth this trigger up a little bit but it is not adjustable per se and I don't think I would fool with it from a liability standpoint. Besides, it is a pretty good trigger as is.

To cock the hammer and ready the rifle to fire does take a little more effort and can be seen as a safety factor proving that Ithaca was not reckless in designing this gun. The only thing I didn't understand was that the rifle has a length of pull

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The small pin from the front of the support on the barrel holds the tube securely. This pin is knurled, as the factory puts it, and must be drifted out left to right. The hammer must be cocked separately to fire the gun. The ejector is spring loaded and will clear the breech when the gun is opened. right at 14 inches. That's designed for an adult, not a child. When I shoulder it my eyes are in line with the sights.

At least I didn't understand until I perused the schematic and noticed that three stocks were available from the factory for the .22 Long, .22 Magnum and a youth model (presumably with an appropriate length of pull.) This is still being done today on some rifles and shotguns with the assumption that as the boy grows the buttstock can be swapped to fit. Personally, I think boy's rifles are usually put down and replaced by a man's gun when the time comes but I don't speak for everyone.

Well, at least now I can fathom the vagaries of this gun manufacture's mindset and can commend them for offering the shooting public a choice. I checked Numrich and all of the replacement buttstocks for the Model 49 are sold out. A custom stock maker may be the only way to go since this gun has been out of production for quite sometime and available factory parts will eventually be depleted.

Cutting the factory stock to give a shorter length of pull is an option but the original buttplate would have to be ground to fit. I don't believe it's worth it but that's a choice each owner will have to make. My example sports a nine-digit serial number on the bottom left side of the receiver indicating it was produced after 1969 as The Gun Control Act of 1968 mandated serial numbers.

The sights are much the same as seen on the Model 94 Winchester, a kind of Vnotch rear with a sliding ramp underneath to raise or lower for elevation. This affair is set in a dovetail and can be drifted slightly for windage. The front is a triangular ramp serrated at the bottom and topped with an all black bead which must be drifted left or right in a dovetail for windage. This one has been moved very far to the right to get the rifle sighted in.

I might suggest to the owner to drift both front and rear in a regulated manner to improve aesthetics it works as is and the front sight is still solid in its mount. Recoil of the .22 rimfire being almost nonexistent, I don't think he will have any problems keeping the sight on the barrel. That's good, since the gun has no provision to mount a scope, such as a grooved receiver top, and is not drilled and tapped for a receiver sight.

Apparently, the boys of that generation could hit what they were aiming at using open sights. As well as the receiver being anodized aluminum, the lever is of similar material. A magnet revealed the trigger, hammer and falling block are all made of steel. The barrel band appears to be some kind of plastic. A hardwood—some report it as elm, but it certainly isn't walnut—is used for the buttstock and forend. The buttstock sports functional pressed checkering on both sides of the grip. The forend is plain.

In operation the lever is pulled down and the block in the receiver drops, allowing access to the chamber and loading. The block locks the rifle in battery when the lever is pulled up. A rebounding firing pin system is employed as a safety. There is no transfer bar. The hammer must be cocked manually to fire and has no half-cock position. Of course, there are none of the buttons that grace our modern lever actions to operate hammer-blocking safeties.

Amazingly, the engineers that designed this rifle must have thought that if one cocked the hammer and didn't fire the next step would be to

## WORKING THE ITHACA MODEL 49 CONTINUED

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decock it and let the rebounding part do its job. All in all, this is a pretty good system for a youth rifle. This mechanism has been compared to the famous Martini action. Anyway, it's a solid lockup and plenty strong enough for any rimfire including the magnum variety. I haven't heard of any of these guns being rechambered for say the .22 Hornet, but I wonder. I have seen little break-open boy's rifles manufactured in the early part of the last century so rechambered even though I can't recommend this practice.

The Hornet operates at a nominal 43,000 CUP and the .22 WMR at a nominal 24,000 PSI. While one can't compare apples to oranges in the case of CUP and PSI, I would hesitate to use a rifle so chambered with full-power Hornet loads. Among other things, the receiver is the weak link here being made of aluminum. Also, a system to change from rimfire to centerfire would have to be devised.

I don't think it would be worth the trouble, since the Hornet is currently enjoying resurgence with the American public and new rifles are readily available. When the lever is pulled down the fired cartridge is ejected, even on the single shot. One of the problems that are commonly encountered on this gun is the ejector not working, causing the fired case to remain in the chamber. The usual cause of this is a part called the ejector trip (#17) being broken.

The ejector trip holds the spring-loaded ejector in place until the lowering of the breech block pushes down on it and it then releases the ejector to pop out the case. This is a pretty strong process as my gun will eject a loaded round with authority. Replacing this part means a lot of disassembly, so don't be afraid to charge accordingly. Most of the parts that might be needed for this gun are readily available from Numrich Gun Parts Corporation ([gunpartscorp.com](http://gunpartscorp.com)).

Last I checked, the ejector trip was listed as available for \$5.90. Takedown Instructions Before beginning, note that all pins are knurled on one end and should be

removed and reassembled from the knurled side of the hole. This can be identified by close inspection, looking for three equidistant marks on outside diameter of the pin's head. All current production has the knurled end on right hand side of receiver. Drive out from left to right and drive in from right to left.

Early production guns may have some pins with the knurled end on the right side of receiver with some on left side. Double check visually before driving out. Take out the two butt screws (#43) and remove the butt plate (#44). With an eight point 3/8" socket wrench or long screwdriver, remove the stock bolt (#40) in the bottom of the hole bored in the stock. The stock can then be pulled off.

With the hammer (#7) in the rebound safety position, remove the stock stud (#10), hammer spring (#9) and external lock washer (#42). Next, with the bolt (#3) closed, drive out the knurled ejector lock pin (#25). Carefully and slowly open the bolt fully, allowing the ejector trip (#17) to disengage the ejector (#11). The ejector can then be removed. Holding the gun muzzle end up with the bolt held fully open, the ejector spring (#12) can be removed.

It may be necessary to lightly jar the back of the receiver to dislodge the spring from the hole. The ejector can be removed without removing the stock if so desired. To remove the lever assembly (#29), close the bolt (#3), drive out the knurled lever pin (#28) and lift out the lever assembly. Hold the gun in a normal right-side-up position to dislodge the bolt plunger (#21), spring (#20) and pivot lock (#19) from the hole underneath the bolt.

It may be necessary to gently tap the top of the bolt to help dislodge these three pieces. Remove the bolt assembly by pushing out the bolt pivot pin and tip the receiver until the bolt protrudes enough to be withdrawn with the fingers, remove the firing pin spring (#5)

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Ithaca Model 49 (Specifications subject to change without notice) 1 \*45050 Barrel .22 Long (must return complete gun) 1A \*45070 Barrel .22 Magnum (must return complete gun) 2 46200 Receiver (Must return complete gun) 3 45150 Bolt 4 45850 Pin, Firing 5 46500 Spring, Firing pin 6 45600 Lock, Firing Pin 7 30490 Hammer 7A 45520 Hammer (gold plated) 8 46970 Rebound cam  
asy.

9 46550 Spring, hammer 10 46750 Stud, stock 11 45350 Ejector .22 Long 11A 45360 Ejector .22 Magnum 12 46450 Spring, ejector 13 45800 Pin, ejector trip 14 45300 Cup, ejector trip 15 46450 Spring, ejector trip 16 46250 Screw, ejector trip 17 46850 Trip, ejector 18 45700 Pin, bolt pivot 19 45750 Pin, bolt pivot lock 20 46450 Spring, bolt plunger 21 46100 Plunger, bolt 22 46800 Trigger 22A 46820 Trigger (gold plated) 23

46050 Pin, trigger 24 45900 Pin, hammer 25 45900 Pin, barrel and ejector lock .22 Long 25A 45910 Pin, barrel and ejector lock .22 Magnum 26 46600 Spring, trigger 27 46150 Plunger, trigger 28 45950 Pin, lever 29 47000 Lever, assembly 30 46000 Pin, forearm wood retainer Schematic Key for Model 49 Ithaca (Key, Part Number, Description) 31 46300 Screw, forearm band 32 45000 Band, forend 33 46900 Tube, forend 34 45280 Cap, forend tube 35 46760 Support, forend tube 36 46000 Pin, magazine support 37 46430 Sight, front 38 53870 Sight, rear 39 51870 Step, rear sight ramp #3 40 350 Bolt, stock 41 2060 Washer, stock bolt (plain) 42 2050 Washer, stock bolt (lock) 43 1460 Screw, butt plate 44 1170 Plate, butt 45 32900 Stock (with butt plat) .22 Long 45A 47480 Stock (with butt plate) .22 Magnum 45D 47500 Stock Youth (with butt plate) 45 45410 Wood, forend .22 Long

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and lock pin (#6). Set the assembly aside. Drive out the knurled hammer pin (#24) and trigger pin (#23) to remove hammer, trigger and rebound cam assembly. To remove the ejector trip (#17), first remove the ejector trip screw (#16), spring (#15) and cup (#14). Drive out the knurled ejector trip pin (#13) and the ejector trip can then be removed. After perusing Internet chat shops and forums it became evident that there was some confusion about how to remove the forearm from this rifle.

This is understandable as removing the Philips screw holding the barrel band in place does not release the forearm. On the single-shot version the faux loading tube (#33) is pinned (#34) into the support (#35). The small pin runs through a channel cut in the top of the tube (not the middle) and can be seen in the illustration but it will hold the tube securely if not taken out. It is best removed with a small 1/16" starter punch.

One end of the pin has the three equidistant markings and should be driven out and reinstalled accordingly. Mine was taken out from left to right as most pins are on this firearm. The support for the forend tube (#35) is dovetailed into the bottom of the barrel and does not need to be removed to take out the tube.

The loading tube is wider and belled at the forend side, fitting into a dowel-like affair that is milled into A The forearm can be easily pulled away from these when the loading tube and forearm retaining band are removed. The rear sight can also be adjusted by drifting but in this case the front sight is tight in its dovetail and no harm will result. the end of the forearm. It may be a slightly tight after all these years but a little twisting and pulling will loosen it.

Be careful not to crush it as it is just a weak piece of hollow metal. Don't use pliers here. Hand pressure is quite enough. When reinstalling it, a slight tap with a plastic or rubber hammer will seat it enough to get it into position to accept the pin in the end. Just don't pound the tube in place. The front of the receiver has two pins protruding to mate with two small holes in the back of the forearm. They can probably be removed but I caution against it unless you want to end up making a replacement.

Just make sure you don't bend them. This is how Ithaca made sure the forearm would not rattle around or twist sideways. It actually is a pretty solid lockup with the front support, barrel band, the loading tube bearing against it and the pins in the receiver. One could say this is overkill but, hey, if it makes the gun stronger, what the heck.

Unless replacement of parts or the barrel is necessary it should never have to be dismantled.

As for the repeating version, the feed tube will extend all the way through the forearm and will function just like any other .22 rimfire feeding device, however, the action on the repeater is a completely different animal. The falling block is absent and a lifter and other parts make up the mechanism to move the cartridges from feed tube to chamber. Buttstock and forearm removal is comparable to the single shot. The Ithaca M49 is a pretty simple design to work on.

Not a whole lot can go wrong with this gun provided it is not abused. Most repairs will be in the nature of parts replacement. In this regard we are fortunate that Numrich Arms carries and has in stock almost everything we might need. Another resource is Diamond Gunsmithing ([diamondgunsmithing.com](http://diamondgunsmithing.com)). George Roghaar is a nice gentleman who used a portion of his time to send me some of the information he has on Ithaca guns.

He is the source for the schematic in this article that was taken from an old out-of-print service manual when the company was located in Ithaca, New York. He can be contacted at G

## RIFLES

# Barrel Sleeving A New Way

*This in-shop method of barrel sleeving offers real advantages for the shooter and the job fits right in for the gunsmith looking for a unique, cost-effective way to get a quality target/varmint barrel.*

BY NORMAN E. JOHNSON    OCTOBER 2012

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**B**arrel sleeving is performed for different reasons. The leading reason is the cost saved in converting a lighter weight barrel to a quality target weight barrel. Accuracy potential is thereby improved. As a rifle is fired the barrel undergoes a series of vibrations which can have an untoward effect on accuracy. The resultant shock waves cause a barrel to oscillate causing bullets to deviate from the group. Lighter barrels tend to vibrate more.

Adding stiffness to the barrel has a tendency to change the moment about a barrel's axis point, with a reduction of vibration or harmonics. This has been precisely proven by mounting an accelerometer at the barrel muzzle. Another reason for sleeving barrels is improved heat dissipation. An improvement in heat distribution and dissipation appears to be present in those barrels I have sleeved.

However, the leading advantage of sleeving a barrel has been conclusively borne out, in those I have sleeved, as improved accuracy

in all cases. Barrel Sleeving Materials Barrel sleeving is a gunsmithing procedure involving machining and application of special sleeve/barrel bonding material. The steel material used for this method of barrel sleeving can vary in diameter as well as tube wall thickness. This will be determined by the size of the barrel being sleeved and the overall finished barrel outside diameter.

All barrels I have sleeved were standard weight or lightweight barrels 22 to 24 inches in length. Barrels had finished outside diameter at just under an inch without taper. Sleeve wall thickness can vary as determined by availability of steel pipe or tubing and is easily controlled by lathe turning. The material I chose to bond the sleeve to the barrel is J-B Industro Weld, chosen for its extremely high steel-like strength and adhesive bonding qualities, as well as viscosity controllability in its application.

The material has an impressive tensile strength of 3,960 PSI, shear strength of 15, compression resistance to 10,733 PSI and temperature tolerance to 600 degrees F. Barrel Sleeving Work In this treatise I will describe my most recent barrel sleeving project on a 24 inch standard weight Model 700 Remington barrel in caliber .300 WSM. As a sleeve, I started with a 1.050 inch diameter seamless steel pipe with 0.115 inch wall thickness and 0.820 inch inside diameter.

The pipe was later turned to 0.990 inch finished diameter, quite similar to a Remington Model 40X barrel. The original barrel weighed 2 pounds 13 ounces, resulting in a sleeved barrel weight of 4 pounds 8 ounces, closely matching a heavy target barrel of same length. In fitting the sleeve to the barrel, it must be measured and marked where

## BARREL SLEEVING A NEW WAY CONTINUED

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From top, one of the two Model 40X Remington actions used to test the Model 700 standard weight 7mm Magnum barrel prepared for sleeve, barrel sleeve and muzzle centering disk. the juncture of the barrel and sleeve diameters coincide. At this point the two parts will join evenly to eliminate a jog. The barrel shank is then turned so the sleeve will fit over the turned surface where barrel and sleeve diameters come together.

However, to avoid turning an excessive amount off the barrel I bored the sleeve out to a wall thickness of 0.070 inch to match the turned barrel surface. The sleeve is tried for fit over the newly turned surface until it slips freely over the barrel shank, allowing for

bonding material between surfaces. The over-all barrel is roughened for better metal-to-metal adhesion.

Barrel/Muzzle Centering Disk Having fitted the barrel at the breech end, it can be cut to length in preparation for making the barrel muzzle centering disk. The barrel is cut about an eighth of an inch short of the sleeve mouth, leaving a space for the recessed disk to center it. While it serves as a barrel muzzle centering disk, the sides of the disk interface the space between the inner sides of the sleeve and the outer diameter of the barrel. Be sure to leave some space all around for the J-B bonding material.

This is also the best time to polish the front surfaces of the disk. Bonding Sleeve And Barrel Prior to the bonding process, filler

holes are drilled along the bottom Shown in the center is the special recessed muzzle centering disk used to precisely align the barrel and sleeve together. A series of filler holes and a syringe were used to administer the liquid material while totally preventing any voids or stresses within the system. of the sleeve.

These 1/4 inch holes are spaced about 2.5 inches apart beginning about six inches forward of the barrel/sleeve joint. A plastic two-ounce (60 cc) syringe with a 1/4 inch tip is used to inject the bonding material into the sleeve. Be sure to place a muzzle seal in the bore before working with bonding material. Applying the bonding material is uncomplicated following these

## BARREL SLEEVING A NEW WAY CONTINUED

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directions. Mix up about four ounces of J-B Industro Weld in a small vessel that you can pour from and that can be warmed. I used a cutdown aluminum soda can. As the J-B bonding material is being mixed, keep it quite warm so that it can actually be poured. Working time of this liquid material is about 25 minutes, somewhat less at warmer temperatures. Coat the turned area of the barrel and about six inches of the bottom of the sleeve and slip the coated parts carefully together.

Be sure the holes are at the bottom of the barrel, which must be pre-determined. At this point I place the chamber vertically in a padded vise with the muzzle up, then temporarily place the muzzle centering disk in position so the barrel will be perfectly centered. Fill the two-ounce syringe about half full and, from the bottom hole upwards, force

bonding material into each hole until it oozes from the hole above it. Remove the syringe tip and place tape over each filled hole as you work your way upward.

Re-fill the syringe as needed until barrel sleeve is full. Remove the barrel centering disk, coat the contact sides of the disk and inside the remaining sleeve with bonding material, and press disk firmly into position. Thoroughly clean all excess bonding material from around the barrel centering disk and muzzle crown. Take a deep breath and step back to admire your work. Keep the barrel upright and warm for at least 24 hours. I don't shoot a sleeved barrels for at least 48 hours.

Barrel is at perfect center with centering disks also serving as a protective muzzle crown. From left, .300 WSM and 7mm Rem.

Mag. bores. 300 WSM target barrel made from a standard weight Model 700 Remington barrel. The barrel closely resembles and equals performance of a barrel costing more than \$500. Conclusions Converting a good quality, standard-weight barrel into a target or varmint barrel is likely to improve rifle accuracy and will save money in the process. Always select as good a barrel as you can find.

The sleeving process, outlined herein, has improved accuracy in each of the four standard weight barrels I have converted. Two of these barrels easily parallel the performance of premium target barrels that would have cost upwards of \$500 to install for much less.

AG

## MAINTENANCE &amp; REPAIR

# Fitting A Semi-Inletted Stock

*Despite the availability of drop-in stocks for most of the popular guns, there is still plenty of work for the gunsmith.*

BY PAUL MAZAN OCTOBER 2012

ORIGINAL PP. 11-14

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When your customer walks through the door with a broken stock on his Remington 870, 700, or 1100, finding a replacement that will bolt on is no problem. The same is true with most Winchesters, Savages, Rugers, Mausers, and Brownings. However, the customer that walks in with an old, long out of production gun is going to present you with some challenges.

Not too long ago, your only option would have been to buy a blank and spend more time and effort than the gun was worth, and I know of several old guns that were junked for nothing more than the lack of a stock. Today, there are several sources for semiinletted walnut stocks for these old guns. They won't drop right in but, with some fitting, can get that old gun back out in the field.

Even if, in your mind, the gun is not worth the cost of the fitting of a replacement stock, that is really your customer's decision and I suggest you let him make that call. A good example is an old American

Gun Company hammer gun in 16 gauge that came in recently. This was one of the many "hardware store" guns made by the Crescent Arms Company and the original stock was not just broken but entirely gone. The gun had been owned by the customer's grandfather and he wanted it repaired.

Now, I could have used the old line that it would cost more to repair than the gun was worth and I would have been right. I would also have been wrong as this gun's value to its owner was not determined by the Blue Book or the collector market. This gun's value was its sentimental value, having been used by the man's grandfather, and he didn't care that it was going to take \$200-300 to restock a gun worth \$100. The owner wanted it fixed and that is my job. I gave him the details and allowed him to decide.

Once he was willing to pay what I needed to restock the gun, the Blue Book no longer mattered. I went to Boyds' Gunstocks ([boydsgunstocks.com](http://boydsgunstocks.com)) and ordered their semi-inletted stock for the In this case there is a lot of wood to remove. American

Gun/Crescent Double barrel hammer gun. This stock is designed to be fitted to a rather large number of guns manufactured by Crescent and will fit models with the older, flat mainspring locks as well as those with the later coil springs.

A quick check showed that it could be fitted to this large assortment of models by only having the inletting cuts made that were common to them all. That leaves plenty of wood to remove but the hard layout work and major cavities are already done. The first step in inletting the action to the stock is to determine where to start. In the case of a double barrel shotgun the obvious starting point is to inlet the receiver face and top tang.

As you can see from the pictures, the back of the receiver was not in contact with the wood except in one place at the bottom. I used a cabinet rasp to bring these into closer proximity and then proceeded to paint the back of the receiver and

## FITTING A SEMI-INLETTED STOCK CONTINUED

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Holes will be filled with dowel rod glued in place and redrilled. It is messy, nasty to work with and totally indispensable. the bottom of the tang with inletting black. After painting the stripped receiver back, the wood and receiver are carefully brought together and the receiver is tapped lightly with a mallet. Inletting black is a messy substance to work with and before the stock is ready to finish you will have learned to hate it. However, it does leave a clear black mark where the metal touches the wood.

This blackened area is then scraped from the wood and the process repeated until a flush fit between metal and wood is achieved. That sounds simple enough, but the process is slow and the parts come together only after hundreds of repetitions. It's sort of like being

beaten to death by butterflies. It's pretty but takes forever. In the case of this stock, there were screw holes pre-drilled for the tang screws. They were the proper size and distance apart.

Unfortunately, when the inletting had them perfectly aligned with the tang the receiver was still far short of the wood. In a case like this you must simply ignore the holes and continue to inlet until the stock and the receiver fit flush. Then you can plug the original holes with dowel rod, mark the new locations and drill the stock. Once the back of the receiver and the top tang are in place you are past the hardest part of the job. The next step is to inlet the trigger plate.

Like all the parts, it must be disassembled, painted with inletting black and fit Here the lock inlet had to be cut on the bottom for the lock to align, leaving a gap on the top. This gap can be filled in with slivers of wood glued in place. one small step at a time. With this part in, the hole for the tang screw can be drilled. Mark the spot on the bottom of the stock where you want the screw to exit in the middle of the trigger plate and use a punch to mark the exact center.

Do the same on the top of the stock in the center of the hole in the top tang. Put a nail in a drill press vise and line the point of the drill up with the point of the nail. Make sure the vise is secured so it won't move and recheck that when the drill is lowered, (Continued on page 14)

## FITTING A SEMI-INLETTED STOCK CONTINUED

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The center of the hole in the trigger guard will be located on the nail and the drill will start on the center of the hole in the upper tang. This insures that the hole will start and end exactly where it belongs. Once the sandpaper scuffs the tape finish sanding is done with the metal removed from the stock. the point of the bit contacts the point of the nail. Place the stock with the punch mark made on the bottom of the stock in the center of the trigger plate hole on the point of the nail.

Drill the hole, lining the drill bit up with the punch mark made in the center of the top tang hole. This is a trick taught to me by an old gunsmith to get the hole to come out exactly where you want it. If you are fitting a hammerless gun without side plates, all that is left to do is reassemble the action one part

at a time and mark and inlet the inside of the stock to accept that part. Once the action is fitted together do the same with the triggers and you should be ready to sand, stain, and finish.

Should you be working on a sidelock or hammer gun, as is the case here, the locks have to be completely stripped. They are inletted using the same method of painting the bottom of the lock plate with inletting black and putting it in place, scraping away the black marks left behind and putting it back in place. This is usually where you come to the conclusion that the stock is ruined.

If the pre-cut areas of the stock are too small it's not a problem, but if things don't line up or the cut is too big the voids have to be

filled with thin walnut pieces glued in place. Using a stock blank avoids this problem but the trade off is that there is much more fitting to be done. This is not the easiest job in the shop and it takes a lot of time and patience, a big reason why few people are willing to pay what the job is worth and many gunsmiths won't take it on.

If you are a hobbyist, this is a valuable skill to learn. As a working gunsmith you have to decide how much you want to please your customer. My advice is to estimate the job high. This weeds out the customer that isn't willing to pay you for the time invested. Besides, nobody ever complains if the job comes in under estimate. AG

## METALWORKING

# 1911 Extractors Up Close

*Humble but essential, extractors are vital to proper 1911 function. Here's how to make sure they work.*

BY ROBERT K. CAMPBELL OCTOBER 2012

ORIGINAL PP. 15-18

**A**n often misunderstood but essential part of the 1911 pistol is the cartridge extractor. This humble tool steel part can give the gunsmith quite a run around if he is not completely familiar with its purpose and operation. As an example, recently a customer brought a 1911 into the shop that he had subjected extractor testing. Although the pistol passed the test program he was not happy.

The customer felt the extractor was too tight because he shook the piece violently and the cartridge case did not slip from under the extractor. He also noted the bottom of the cartridge case didn't seem to be flush with the extractor. To make things worse, this was a factory-fitted external extractor that the factory claims cannot be adjusted. Just the same, I removed the extractor with the proper punches and very carefully cut a slight angle on the bottom of the extractor hook.

A jeweler's file is used for this operation. Next, this small cut was carefully polished out, resulting in greater smoothness in operation and slicker function. The cartridge case rim, the shooter observed, now fit more completely into the extractor as the shooter liked. But the pistol had no malfunctions before! This was simply insurance and respect for a very demanding shooter. I have done quite a bit of research on the external extractor and there isn't a lot of detailed information, but there seem to be trends.

For most types, extractor tension of eight to ten pounds is standard. Standard deflection is 0.010. The gear needed to test the external extractor is specific, expensive, and usually available only from the factory. If you are lucky enough to own a factory

gauge or have rigged up your own, remember, tension is usually checked during the first 0.010 of extractor movement. I have carefully examined a number of extractors of the pertinent types, including internal and external, and for the 9mm and .38 Super.

It is interesting that newer types from the better makers including Ed Brown and Wilson Combat have well defined, sharp extractor hooks. When you figure that the depth of the average extractor hook is 0.465 and the .45 ACP case extractor groove is only 0.040 deep, we confirm that the extractor hook doesn't ride on the groove but is designed to hook the rim.

As for reliability among the two types, after some study it seems the amount of foreign material the external extractor may tolerate in the hook in a worst case scenario may be more than the older, internal types. Dirt in either extractor hook with either design means less tension. So, the first thing I look to in a search for a malfunction is how clean the 1911 pistol was when the problem occurred. I also like to know what type of ammunition was used. The part we are concerned with must be of spring steel.

Cast parts should be discarded in a quality handgun. MIM remains questionable and as long as I am able to secure tool steel extractors I will do so. The internal 1911 extractor forces makers to adhere to original specifications and fitting, which isn't a bad thing. The several variations on the external extractor are interesting. Let's look at a neat fix for one particular external extractor that will occasionally give trouble.

Kimber External Extractor Fix Kimber made a run of external extractor pistols that sometimes ran well and sometimes not. I do not have an opinion on the engineering. After all, Kimber is one of our most respected makers but there was a problem. I have developed a fix for these pistols that has worked in a limited number of handguns. In one problem Kimber, the extractor hook evidently was not taking a large enough bite out of the cartridge case rim, despite trying a half dozen different factory loadings.

Some fed and functioned well, others were problematical, but none were perfectly reliable in this handgun. Without going into detail, it is obvious the 1911 is designed to run with brass cartridge cases, not aluminum or steel. Just the same, most run with all three types of cartridge case material. Despite the advantages of brass, sometimes brass case cartridge rims are not consistent. In any case, the Kimber sometimes malfunctioned.

As a cure for this problem, the Kimber extractor was cut in the area behind the hook. This relieved the area and moved the extractor hook toward the other side of the slide. After the cut and polish the hook was closer to the cartridge case rim, however, the red loaded chamber indicator was no longer visible when the cartridge case was in the chamber and the extractor properly aligned, but this trade off was deemed acceptable. I also added a Wolff Gunsprings extra power extractor spring.

The Kimber ran like it was supposed to after this. The part number from WC Wolff is 33261 for \$3.49. This is apart I would add to any Kimber with the external extractor.

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(courtesy SIGARMS.) Standard 1911 Extractor Testing Most of the time we will be concerned with the original spring steel internal extractor. My advice is to replace and fit the extractor but there are times when we may be able to repair an extractor with minimal hand work. It is easy to check the extractor hook and determine that it is not sharp enough. Measuring extractor tension is another matter. The extractor hook must be good and sharp and may be recut if it is not. Tension is another matter.

To check tension, take the slide off of the frame. The cartridge—not a cartridge case but a complete round of ammunition with

bullet—is positioned under the extractor hook. The hook should be gripping the case at the center line of the cartridge case and the cartridge primer is positioned over the firing pin channel. When checking function remember that when the slide is racked the cartridge case will drop down a bit and the firing pin is no longer centered on the primer.

Also, if spent cases are sooty then perhaps all of the powder is not burning and there is excess pressure. Be alert to these warnings. Back to the standard check. With the slide stripped and cartridge case under the extractor hook you should be able to move and shake the slide in every direction without los-

ing the The extractor cannot be of inferior quality. It must be of tool steel. The Series 80 and the Series 70 are different types. cartridge case.

If the cartridge case falls out of the extractor hook, there is a problem with tension. While there are excellent tools available for testing and setting extractor tension, it is possible to set the tension with just the extractor and the slide as a tool. To correct extractor spring tension, remove the extractor and place one half inch of the tip of the extractor—the end with the hook—in the extractor channel in the slide. Apply just enough pres-

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Be certain the magazine is feeding properly before looking at the extractor when feed issues arise. It worked just fine but this isn't a nice flush fit. sure to bend the extractor. Replace and check. With the extractor properly tensioned, the next step is to position or clock the extractor. We now test the other dimension of tension. In this procedure we use an empty cartridge case rim. A cartridge case is slipped into the extractor hook at the center line. Pull the case downwards about 0.075 inch.

The extractor should not let go of the cartridge case even though it is lower than normal. Shake the slide to test tension. If tension is a problem here you need to bring the

extractor pad closer to the firing pin channel. You will move a small amount of metal, carefully filing a little at a time, from the locator pad. Check for tension again. Reassemble and check as you work. If the extractor moves when cycling or firing it should be discarded.

**Firing Pin Stop** For this step I often use an oversized firing pin stop. The firing pin stop has been observed to drop during firing and allow the firing pin to exit the slide in several incidences over the past forty years of my experience. This seems far less common than in the past but a properly fitted firing pin stop is important. It also keeps the extractor in the proper position.

The firing pin stop should not be sloppy but require slight tension So is proper fit of the extractor and a good sharp barrel hook. 45 ACP, right, like all semi automatic cartridges, features an extractor groove in the cartridge case rim. Its function is often misunderstood. to seat. If there is excessive binding, material must be removed from the right hand side of the firing pin stop, the side that maintains tension against the extractor.

The extractor will not properly clock without good tension against the firing pin stop. **Dissenting Opinions** Some feel that the feed sequence of the 1911 is dependent upon the extractor. The cartridge is caught by the loading block and fed into the

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Look also at the case rims. All are not the same and the rims in some cases have dents or nicks. This is hard on an extractor. extractor by the magazine follower. The extractor picks up the cartridge case, the slide moves forward and the bullet nose strikes the feed ramp with its 1/32nd inch gap between the two pieces of the feed ramp. The bullet nose continues into the chamber. This sounds like the proper sequence but there is a check to perform that may change your mind.

If the pistol has feed problems, remove the cartridge extractor and attempt to chamber around from the magazine. The round will

normally feed just fine. When the extractor is in place it extracts the spent case from the firearm. While an advantage of the 1911 is controlled feed, the extractor just extracts and shouldn't control headspace. The extractor maintains tension against the cartridge case by holding it against the side of the slide or breechface.

When you experience a feed problem it is often caused by sharp edges or a burr on the bottom of the extractor. Take a look under magnification at the area in which the cartridge case rim first enters the extractor groove. At this point the presence of a burr

or sharp point will impede the travel of the cartridge case. A small needle file or jeweler's file will solve this problem. 22 caliber conversion units. Now, they are a fixture on quality 1911 pistols. It is proving to be quite reliable.

Work the file into the groove from under the extractor and continue. This will considerably improve the movement of the cartridge case rim into the extractor groove. The extractor isn't a complicated part but the 1911 is a machine of irreducible complexity. When one part goes out the whole machine comes to a grinding halt. Be certain you understand every part and understand them well. AG

## PISTOLS

# X-Ring

*Making better shooters of customers is good business. We found a new tool and share some proven principles for increased profit.*

BY CHICK BLOOD OCTOBER 2012

ORIGINAL PP. 19-22

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Back in the best of my competitive shooting days, now in the rapidly fading past, I stood shoulder to shoulder at least twice with a chap who ended up on the US Olympic team. Don't ask me which year he made it as my memory isn't that good any more. All I remember is he had a sight wobble. So did I. So does everyone who lines up a pistol on a bullseye target 25 or 50 yards downrange. A sight wobble? The loss of alignment between the front and rear sight resulting in missing the point of aim.

Some wobbles are so bad the bullet misses the paper completely. There are 7-ring wobbles, 8-ring wobbles, 9-ring wobbles and my one time wobble, a 10-ringer. The future Olympian had an X-ring wobble. Every round he sent downrange never missed hitting that black circle! No, I can't remember his name either and if I could I wouldn't be overly motivated to enter into a complete historic search of Olympic shooting records to find out how he placed.

All I recall for sure is the .22LR pistol in his hand was built for him by the late Jim Clark, Sr., the only civilian to ever win the National Pistol Championship at Camp Perry (1953). The .45 he used in every NRA match I lost shooting against him was custom built by one of my fellow club members. He was a Master Sergeant who prepared and maintained M1911s for the US Army Marksmanship Team and my first mentor in gunsmithing. That Master Sergeant has now joined Jim Clark.

One of these days, I hope to be there when the two of them get into a good ready-room gabfest about accuracy. Without exaggeration, it was the conviction of all who knew MSG Jack Wallentine that he could accurize anything from a slingshot to a 16-inch Naval Gun. In the future, I may have to seize the opportunity presented by these pages of telling you more of him.

For the present, I'll merely mention he was one of the few Double Distinguished shooters in the entire United States with a military pistol and rifle during the all too brief time I knew him. Returning now to the future Olympian, I asked how I could tighten my 10-ring wobble to the Xring. After all, my grip was correct, firm but no so tight as to cause trembling. I did not allow my front sight to droop. My breathing technique, fully in, 1/3rd out and hold was perfect. Wrist and arm were firm but not tense.

There was no jerking of the trigger left or right, only a straight pull to the rear. My finger contact with the trigger is limited to the tip pad and light enough to predict the sear release point. "So how come I'm stuck in the 10-ring?" "How's your heartbeat," he replied. That was the day I learned the very best in the art of marksmanship "control" their heartbeat.

They time their trigger pull to happen when the heart is at rest and will cause no movement of the body. "Even movement as slight as a pulse," said the Olympian, "is enough to disturb the sight picture and the

round will miss the intended point of impact." This prompted my next question, "How can you hear your heartbeat when there are guns going off up and down a firing line?" "Plug your ears with cotton before putting on your ear muffs," he responded.

Then he went about proving he wasn't. Even without a range, the Laser Lyte training cartridge offers feedback to dry practice and can be done on any target, such as this bullseye target with center X-ring. blowing smoke up my nose by removing the cotton from his ears, slipping his Olympic-quality muffs back on and handing me a loaded M1911 magazine with instructions to empty it rapid fire downrange at nothing in particular while he let loose with three rounds at a fresh target.

After the dust had settled from my seven shots we scoped his target: Two 10-ring hits, one nipped X. I reloaded the magazine, he replaced the cotton under his muffs and we repeated the exercise resulting in three X-ring hits. From that day forward, cotton balls accompanied me to every match I entered. My scores improved, not to the Olympic level but with notably more Xhits than previously achieved. I continued doubling up my ear protection with my Anschutz

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A .380 ACP model is also available. No damage to the laser device or firing pin is assured by the shock absorbing nature of the insert wearing the dimple. 1413 during indoor gallery matches, winning my club's small-bore championship three years running and a Master classification in NRA High Power Sporting Rifle. Will locking out the rest of the world make anyone a better shot? As long as they can still hear the range commands, yes. That and plenty of good old fashioned practice, practice, practice.

Speaking of practice, though not old fashioned, I've come across a little device you might want to add to your inventory of things to use and things for sale. It looks like a 9mm cartridge. It feeds like a 9mm cartridge. Inside the case there is no powder or

primer. Instead of a primer there is something resembling an eraser from a lead pencil. There are also batteries and a laser for them to touch off. When the batteries have run down they can be replaced by turning off the eraser/shock absorber end of the case.

The cartridge is made by Laser Lyte. They call it a training cartridge. It's that for sure but I've found another use for it I thought I'd pass along. I may rightfully expect to get a slew of email protesting me saying the 9mm was never intended to be and never has been a bullseye target round. The thinking behind it for military combat was to wound the opposition. This would require two soldiers to remove the wounded one from the battlefield. Wounding them would require four more soldiers, etc.

It's no deep secret that the terminal effectiveness of the 9mm came in way behind that of the .45 Fresh batteries, three extras are included with the device, are installed as shown. ACP during ballistic gelatin tests conducted by the FBI at Quantico a few years ago. The results there failed to surprise me one bit. It is also no secret that the 9mm is increasingly being replaced by the .40 S&Win law enforcement carry weapons all across the country.

Despite these factors, and others I won't bother mentioning here, the 9mm is a favored round in the CCW market. I think it comes in second to the .380 ACP. If I'm right, it's a close second. Prediction: There will come a day when even the sternest and

## X-RING CONTINUED

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The pistol sneaking into the photo as a P-Series Ruger. mentally warped People's Republics remaining among these United States will issue CCW permits to all law abiding citizens desiring one. I'll modify that by adding law abiding trained citizens, which is where the Laser Lyte training cartridge can play a profitable role for you. Not every CCW holder will have easy access to a range or the time to spend at one and they will not have received much formal instruction with a pistol.

If you don't think it is any business of a gunsmith to offer some quality marksmanship instruction you're wrong. You can begin with the seven yards at which most defensive shooting takes place. That's only 21 feet. It might seem impossible to miss a threat coming on strong from only 21 feet away. Again, wrong. All CCW pistols are not equal. Make certain the barrel on the one you're selling or servicing is aligned with the point of aim. Remove the grips. Settle the gun between padded vise jaws.

After sighting it on a one-inch circle drawn on an index card five feet away true the pistol level and tighten the jaws. Insert the

Laser Lyte cartridge in the chamber. Do not close the slide. Press inward on the black "eraser" with a small, rounded tool. A red dot will appear on the index card. As long as you maintain the slight pressure the red dot will remain on. If the dot hits to the right or left of the circle you can adjust the rear sight until it's centered.

If it hits high in the circle, you can file down the front sight in small increments to center it. If it hits low, height will have to be added incrementally. After any and all sight adjustments have been made, let up on the "eraser." The dot will disappear. Control the slide as it is released to its fully forward, in battery position. Cock the hammer. Pull the trigger. When the hammer falls, a red dot will flash on the target. Do it several times.

When all the trigger pulls result in a dot showing inside the circle you can be better than sure the barrel is sitting true to center bore and the sights properly adjusted to take full advantage of it. Prove this to your customer with a quick demo before turning over the pistol. It is now time to step out of character as a wise gunsmith for a few min-

utes and assume the role of a marksmanship instructor. Show the difference between a dead-on and a 6 o'clock sight picture.

Show the advantage of a straight pull to the rear with only the finger pad contacting the trigger and how it prevents jerking the pistol to either side. Show the advantage of breath control despite the pressure of a personal defense situation. Stress the importance of a firm wrist to avoid malfunctions and devote some time to schooling in a proper two-hand grip. After that, set up your customer with serious mention of the need for practicing frequently with the gun.

If the excuse for not doing so is having no place to practice, sell the training cartridge, give them an index card target and maybe a few cotton balls. Oh, you say the customer didn't hand you a 9mm? They brought in a .380? No problem. Laser Lyte has come out with a training cartridge in that caliber, too. I reckon there will be more to come. My wish list includes one for the .22 LR. I'm getting shamefully rusty with my Hamdenmade Hi Standard Victor. AG

## X-RING CONTINUED

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Webley Tips I enjoyed your article "Working The Webley Mk VI .455 Revolver" by David R. Chicoine in the November 2011 issue. However, I cringe any time I read an article about Webleys where the author talks about cutting the cylinder back to use .45 ACP half moon clips. Why would anyone want to ruin a wonderful gun like the .455 Webley? I followed instructions from a 1977 article in American Rifleman written by Frank Marshall, Jr. to be able to reload and have been shooting my Webley for years.

The simple solution is to take .45 Long Colt cases and cut them with a small tubing cutter to the proper length, which is no longer than 0.785" and no shorter than 0.750". These .45 cases for the have a maximum rim thickness of 0.060" compared to 0.040" for the .455 case. If your gun doesn't accept the thicker rim of the .45 Long Colt, you can shave a small amount from the revolver's backplate, carefully trim the case rim, or both. To hold the case for trimming, use the collet from a Foster case trimmer.

The case cannellure is a good place to cut. In his article, Mr. Marshall suggested using Bullseye with a starting load of 3.5 grains. Dies are available from Lee Precision at reasonable prices. I hope this information can keep more Webley revolvers in their original state. Dennis Seitz Seitz Gunsmithing Outstanding tips, Mr. Seitz. Thanks for passing them along. Airgun Scope Mounting The article "Airgun Scope Mounting Revision" by Norman E.

Johnson in your February 2012 issue raised some points I thought might interest our membership. It should be understood that the American standard dovetail measurements are 3/8" at a 45 degree angle. However, in most of the rest of the

world these dovetails are 11mm to 14mm at a 60 degree angle and American rimfire rings will not work on those airguns.

Fortunately, most airgun ring manufacturers use a reversible sideplate to accommodate either and the rings are very inexpensive, especially when compared to a reasonable billing for custom gunsmith work. I noticed that group size was from a sandbag rest. The most accepted method of benchresting a spring piston airgun is to rest the off hand palm up on a sandbag and lightly grasp the forend of the rifle in the palm of the hand so that recoil is absorbed totally by the body of the shooter.

This method is called the "artillery hold" by noted airgun writer, Tom Gaylord, and will routinely cut group size in half. It is not my intention to denigrate your work or knowledge of airguns. I only wanted to point out design and hold differences based on my days as a competitive shooter and now vendor and airgunsmith. The fact that you could make what appears to be a Chinese B-3 rifle shoot at all speaks for itself. Steve Cox [kyhistoricsalvage.com](http://kyhistoricsalvage.com) Author Norman Johnson responds.

I wouldn't hesitate a minute to perform this work again. It resulted in a satisfied customer at very low cost to him. Gunsmiths shouldn't merely be parts replacers. What happened to the innovative technician willing and capable of performing custom work and restoration? I think back to my days as a teenager where I actually resurrected an old 22 rifle that needed a hammer, firing pin and stock to make it a functional squirrel gun.

As an eager, inquisitive teenager, I made a rifle scope from an old brass telescope and mounted it with amount that I made up. An old gunsmith once told me, "It ain't what you got, it's what you do with what you've got that counts." Omro, WI With reference to the sandbag airgun issue, I

have researched and used just about every worthwhile rifle rest and designed several of my own. I have experimented extensively with all the worthwhile bag materials and types of sand and bag filler materials.

I am well aware of the accuracy destroying effects of using the wrong support beneath a forend or buttstock with the airgun as well. I commonly shoot quarter minute of angle groups using dozens of different rifles and types of rests that virtually eliminate all human error in the process. I am ever interested in reading comments by wide awake shooters and readers like Stephen Cox as we all benefit by them. Remington Model 7400 I'm working on Remington 7400 chambered in .270 Winchester with a jam problem.

A cartridge can be chambered along with four in the magazine and it will shoot the first and second rounds but the third one never gets into the chamber. The bolt close but just snaps. I've tried two different magazines and have cleaned the rifle. I know some people call these "jam-o-matics" but do you have a hint to solve this problem? R. J. Are you reloading or using factory ammo? The old "jammo" is a gas operated beastie and reloads, or even some factory stuff purchased purely on price, can give it fits.

Too light and the bolt won't work to cycle the action. Too hot and the bolt moves back and forth too quickly in the receiver to do its jobs. It's called short cycling. Assuming you're using at least decent factory rounds here are some things to check out. Is the magazine riding too low in the receiver or so loose it is working its way down as the first couple of shots are let go? This results in the bolt overriding the next round due up.

Are the magazine lips bent too far outward at the front or too far downward at the rear? These can

## PEOPLE &amp; COMPANIES

# Reader Forum

BY AMERICAN GUNSMITH EDITORS OCTOBER 2012

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**T**hree Point Jam I shoot a lot of .45 ACP through my duty pistol, a Para Ordnance P14/45 LDA with PXT, and my Colt Gold Cup. Awhile back I bought some Winchester “white box” ammo, mostly to replenish my supply of brass. I began experiencing what Gene Shuey describes as a “three point jam” regardless of which piece I was using. When I reload, I polish, decap and resize each case, then drop it into a full length case gauge. If it goes in easily, I reload it.

If not, I measure its length, trim if necessary, resize and try the gauge again. I shoot modest powder charges, but eventually the cases expand enough near the rim they don’t go into the gauge so they get discarded. I have old brass from a variety of manufacturers which reloads and performs flawlessly but the Winchester continues to pose problems.

I use Rainier Ballistics copper coated bullets which have a slight shoulder about midway between the case mouth when seated and the tip but that doesn’t present a problem with my non-Winchester brass. The breech end of the barrels of both guns is open and polished. The breech faces of the slides are free of scratches and abrasions and the extractors clear the case rims.

The obvious solution is to trash the Winchester brass but I would still like to know why, after careful resizing several times, it continues to pose a problem. Clayton W. Freeark We have been told that the “white box” ammo contains less than the best Winchester components as those are reserved for and used in their premium ammunition. Even a scratch on a case could disqualify it.

Along while back, we learned that Winchester had thickened the walls of its commercial .45 cases to bring them closer to mil spec for internal case volume. This, our own reloading experience told us, would serve to lessen the possibility of creating excessive pressure within the military case when it was loaded with a com-

mercial case charge of powder. Use a micrometer to measure the wall thickness of the cases you’re using against the wall thickness of a military case.

If your commercial brass is thinner, junk it and either start buying military brass exclusively or restricting your purchases to brass meeting mil spec for internal case volume (ICV). Though you are obviously a re-loader far more cautious than most, the measures you are taking to make certain the case conforms are all external in nature. To determine ICV install a spent primer in an empty case, weigh it, fill it with water and weigh it again. The difference between the two weighings provide the internal case volume.

This can and frequently does show a grain or two difference between cases measured even when they are taken from the same batch. This is the most maddening thing about ICV. We can recall our bench rest shooting days when a grain of powder more or less in a charged case could lose a match, so we kept on weighing cases until we had twenty with the identical ICV. We weighed over 250 to get that 20 and considered ourselves lucky. We hope we’ve been of some assistance.

We have not seen Gene Shuey’s AGI video and cannot determine whether the three point jamming he mentions might result from a slide short cycling however slightly. You see, AGI and AGA are entirely separate entities. Friendly, but separate. K-22 Outdoorsman I am working on a K-22 Outdoorsman from the 30s that is like new. The problem is that it misfires with some ammo. Winchester Powerpoint fails almost every time. The insides are clean and oiled and I have determined that the firing pin protrusion is only 0.024".

The headspace, cylinder to recoil shield is 0.0105" and the rim depth is 0.046". That gives a recoil shield to rim depth of 0.0565". Winchester Powerpoint rims are 0.040" Thus, the extended firing pin to depth of rim chamber is 0.0325", leaving a “crush” on the rim of only 0.0075".

## READER FORUM CONTINUED

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I replaced the mainspring but it made no difference. I may order replacement firing pins but don't know if that will help. William O. (Bill) Branch Hold the gun with its barrel down. Open the cylinder while supporting it. Slowly close the cylinder. If it hits the barrel on closing it is a positive indicator end shake is present in any S&W revolver regardless of caliber. As you know, end shake is characterized by an excess in lateral cylinder movement.

When present, the forward position of the cylinder can cause light hits and misfires since the firing pin can no longer make solid contact with the case rim. In some cases, this specific condition can be corrected by installing one or more cylinder end shake washers ahead of the cylinder. An additional check for end shake is to measure between the front of the cylinder and barrel breech and from the rear of the cylinder and firing pin bushing.

All measurements can be taken with automotive-type spark plug gauges or similar with the cylinder closed. Front gauge spec for the K22 is 0.004 - 0.010 and the rear gauge spec is 0.004 - 0.008. A fresh firing pin might overcome the problem, but if end shake is present you'd have to keep on replacing it after wearing down in attempts to fill the gap. Old Scope Repairs Over the years I've had taken off several old 3/4" .22 rifle scopes and replaced them with more modern ones.

Most are Mossberg or Weaver and need things like cross hairs and lenses. I would like to have these scopes repaired but I can't find anyone that repairs old scopes. There are two contacts we know of for sources but note that people who do repair old scopes may not have a lens on hand to replace the damaged one. They are not lens makers and as such must rely on the same providers as your local optician or ophthalmologist for the fabrication and polishing of lenses.

Nor do the repair people maintain a stable of spiders from which they can extract a fresh set of cross hairs. We can not imagine even an estimate on the cost of

making anew lens and enticing a spider out of its silk so you might be better off after all with continuing your practice with replacement scopes. Nevertheless, for Mossberg contact Vic Havlin at and Larry Mahan for Weaver scopes at Both parties will be needing scope model identification dope.

Springfield Trapdoor I am looking for breakdown info, schematics and parts for a Springfield Trapdoor. Willie Hutchinson A schematic and reassembly instructions for the 1873 Trapdoor appear in NRA Guide to Firearms Assembly, hard cover edition. We did an article on the 1873 several years ago that would answer your question regarding assistance with the firing pin. There is a small screw under the rear of the breech block. If you back out that screw the firing pin can be withdrawn.

Numrich Gun Parts Corporation ([gunpartscorp.com](http://gunpartscorp.com)), Jack First ([jackfirstgun.com](http://jackfirstgun.com)) and Dixie Gun Works ([dixiegunworks.com](http://dixiegunworks.com)) are all likely to be able to provide any replacement parts you may need. Gary Bargar You should be alerted to a couple of things about the Springfield you're working with. You did not mention whether it as a rifle or a carbine (cavalry) model. The rifle carried a black powder load of 70 grains pushing a 405 grain bullet. The carbine only packed 55 grains of powder behind the same weight bullet.

Whether rifle or carbine, the Springfield in your hands should not be fed a modern smokeless powder round. This is true in either case and must be observed if the Springfield is an original. Serious damage to both firearm and operator could result due to excessive pressure. If smokeless powder is used, a reduced amount that would generate the black powder equivalent for pressure and no more has to be employed.

Due to the popularity of Cowboy Action shooting, these equivalent loads are available from more than one commercial ammunition manufacturer. AG

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