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AND THE AMERICAN GUNSMITH ARCHIVE

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01

ARCHIVE ISSUE NUMBER

INSIDE THE ARCHIVE

MODIFY THE NEW MODEL BLACKHAWK FOR COWBOY- ACTION SHOOTING

HUNTER PARTICIPATION GREW IN 2002 • DISASSEMBLY/REASSEMBLY OF THE TAURUS MODEL 62 RIFLE • DISASSEMBLI...

ORIGINAL METHODS. MODERN ACCESS.

ARCHIVE EDITION 002

DIGITAL ARCHIVE EDITION

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FROM THE ARCHIVE

Hunter Participation Grew in 2002

BY AMERICAN GUNSMITH EDITORS JANUARY 2004

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In numbers recently released from the U. S. Fish and Wildlife Service, and available on the Hunting section of the NSSF Web site there was an increase in the total value of hunting licenses, permits, and stamps of 2.4 percent over 2001. While the total number of hunters remains near 15 million according to NSSF, hunters spent 2.6-percent more in the latest reporting year—a total of \$658,993,798 in pursuit of their sport.

And, since 1939, in special taxes paid only by hunters and shooters, almost \$4 billion has been contributed toward conservation. Keep those numbers handy when you make that call or write to your Senators. Expanding Hunting and Angling Opportunities Congressional Sportsmen's Caucus members, Senators Kent Conrad (D-ND) and Pat Roberts (R-KS), introduced the Voluntary Public Access and Habitat Incentive Program Act of 2003 to establish funding for state walk-in hunting and fishing programs.

This legislation, called the "Open Fields" bill, would authorize \$50 million annually through 2007 to fund state efforts to develop voluntary, incentive-based programs that expand public access to private lands. The legisla-

tion is being spearheaded by the Theodore Roosevelt Conservation Partnership and is supported by more than 20 sportsmen's organizations, including NSSF.

Jodi Valenta, NSSF's director of recruitment and retention, notes: "With dwindling opportunities to participate in traditional outdoor sports, this legislation creates new access to lands previously unavailable to the public. Just as it did with the financial commitment to state fish and wildlife agencies, through the Hunting Heritage Partnership Grant Program, NSSF supports legislative efforts opening up additional access.

Free Pocket Fact Cards As a sportsman who enjoys hunting, you can change perceptions among the non-hunters or anti-hunters you may encounter when you are armed with the facts. NSSF's Hunter's Pocket Fact Card provides statistics showing that hunters and anglers are among the largest group of contributors to conservation, paying for programs that benefit wildlife and habitat restoration. One pocket card is free, and larger quantities are available for a nominal charge. Visit NSSF's web site for more information.

EDITOR KEITH LAWRENCE TECHNICAL

PEOPLE & COMPANIES

Disassembly/Reassembly of the Taurus Model 62 Rifle

Though faithful to John Browning's original design, Taurus' reproduction is a far safer rifle by present-day standards.

BY CHICK BLOOD JANUARY 2004

ORIGINAL PP. 3-6

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In 1932, Winchester introduced an off-spring of their Model 1890 and named it the Model 62. Between then and 1958, when the highly popular shooting-gallery and sporting rifle was discontinued, over 400,000 were produced. Among them, the most readily identifiable difference was in the slide handle. Serial numbers under 14,300 had a 6-inch handle with eight grooves. Serial numbers over 125,000 wore an 8-1/4-inch handle with 17 grooves.

Taurus' resurrection of this classic has a handle 7 inches in length with 13 grooves. The ominous number 13 should have no negative effect on a purchaser. While similarities between original and the recreation are many, Taurus' improvements have produced a rifle that's better suited for today's shooters. The Winchester 62 was a take-down. And so is the Taurus 62. The Winchester 62 had a half-cock hammer notch as a safety.

As does the Taurus, but Taurus has added a bolt-mounted manual safety lever to block the firing pin plus a patented "Security

System" that locks up the entire action and is activated or deactivated with a supplied key. Owners of the original Model 62 often experienced feeding problems with .22 Short rounds. The elevator had an L-shaped piece call it an "extension" that was supposed to accommodate both Long Rifle and Short cartridges. It never worked reliably. The L-shaped piece is not present in the Taurus rifle.

Also gone is a barrel that's stamped ".22 Long Rifle, .22 Long, .22 Short." The new Model 62 fires .22 Long Rifle exclusively, and does it without a hitch. The gun is currently available in .22 WMR as well as that a Whate arrel is its sole diet, and trying to feed them anything else will end up costing more than the pittance saved on ammunition.

I've always been shy about touch- Its forend with 13 grooves is one of the obvious visual differences from the original Winchester Model 62. ing off .22 Shorts extensively in a Long Rifle chamber, and adamant about avoiding the use of them in

.22 Magnum chambers. The short, being what it is, can fire-erode the longer chambers. When the damage has been done, the brass of the longer case will expand to fill the void. At the least, extraction will be more difficult. At worst, the longer case will blow out.

And that's nothing compared to the more serious consequences of trying to stuff a .22 down a .17-caliber bore. But hey, no one would try that stunt. Would they? To Clean an Empty Rifle Turn the lever to the "S" position. Open the bolt fully. The chamber and bore is cleaned breech to muzzle with a standard, caliber-specific rod, patches, and a quality powder solvent.

The breech to muzzle aspect can be accomplished much easier with a flexible cleaning system such as the one offered by Otis Technology, Inc. (800/ OTIS GUN). After the clean up, wipe down all exposed metal with gun oil.

DISASSEMBLY/REASSEMBLY OF THE TAURUS MODEL 62 RIFLE CONTINUED

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Measuring only .050 inches, the pin must be removed prior to complete disassembly of the rifle. To Take Down for Transport Start with the rifle empty and the lever on "S." Place the hammer at half cock. Unscrew the knurled knob on the left rear of the receiver until it turns freely. Hold onto the barrel and pull the buttstock to the rear. The frame housing the trigger, hammer, and carrier assemblies remains attached to the stock.

If the rifle is going from place to place during very cold weather, condensation will form soon after it arrives in a warm enclosure. All such moisture should be removed, then the internal and external metal should be wiped down with a lightly oiled cloth before the rifle is reassembled. To be positive no spots are missed in the drying and lubricating, the gun should be totally taken down. Here's the way to do it.

Detailed Disassembly The safety is still on "S." Near the threaded end of the assembly screw (#21) is its stop pin (#22). The pin, a mere .050 inches in diameter, is pushed out

easily in either direction before the screw can be removed completely. You could separate the receiver from the stock at this time.

I suggest you don't, and instead suggest you open the bolt completely by moving the forend (#57) to the rear. (The explanation will come in the next couple of paragraphs.) On the left side of the receiver, there's a small sideplate (#19) held on by its screw (#20). Back out the screw and slide the sideplate out toward the muzzle. Locate the rear magazinering pin (#5) and drift it out left to right. Explanation follows immediately as promised. Note: There is a groove for pin #5 in the magazine tube.

Be sure it is positioned properly when reinstalling the pin. At this point, you could pull out the magazine assembly and remove the forend. As I discovered, this is not the time. The forend arm (#62) wears a lug (#63) on its end. The lug engages an angled lug on the left side of the bolt (see photo). Unless you "sneak" the forend toward the muzzle just

enough to lift its lug out of engagement with the bolt lug, you won't be able to remove the bolt.

Having accomplished exactly what I just mentioned, the magazine assembly and forend can now be removed to the front and the bolt lifted from the receiver. To disassemble the bolt, an extractor pin (#29), located atop the bolt and ahead of the safety lever, is drifted downward and the extractor taken out to the right. The firing-pin stop (#28) comes out to the left by drifting the #29 pin next to the safety lever and pin #33 to the rear of the bolt downward.

The firing pin (#35) and spring (#34) are taken out to the rear of the bolt. The firing pin bushing (#25) and its retaining pin (#26) remain in the bolt. On reassembly, the firing pin assembly must be pushed forward prior to reinstalling the firing-pin stop. This ensures that To allow removal of the bolt from the receiver, the stud must be disengaged as described in the text.

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Taurus Model 62 Pump-Action Rifle (Specifications subject to change without notice) 1 Barrel 2 Front Sight 3 Front Magazine Ring 4 Rear Magazine Ring 5 Rear Magazine Ring Pin 6 Rear Sight Assembly 7 Rear Sight Support 8 Rear Sight Blade 9 Rear Sight Rivet 10 Rear Sight Elevator 11 Magazine Tube Liner 12 Magazine Tube the tab on the firing pin will engage the stop and aid in aligning the stoppin/bolt holes. Position the bolt with the safety lever on top facing you. The "F" should be exposed.

Under and slightly ahead of the lever tab, on the bolt's right side, is the safety pin (#18). Drift it left to right, then turn and lift out the safety lever (#30).

Be careful not to lose the 13 Magazine Plug Pin 14 Magazine Spring 15 Magazine Follower 16 Magazine Plug 17 Receiver 18 Safety Pin 19 Side Plate 20 Sided Plate Screw 21 Assembly Screw 22 Assembly Screw Stop Pin 23 Breech Bolt Assembly 24 Breech Bolt 25 Firing Pin Bushing 26 Firing Pin Bushing Pin 27 Extractor 28 Firing Pin Stop safety spring (#31) and detent ball (#32). Nothing else remains to be taken out of the receiver. This leaves the frame. There may be one or two guard screws holding it to the stock.

The rifle I worked with had two because an optional tang sight was provided. With the screw or screws gone, pull the frame from the wood.

Use a 1/4- 29 Extractor Pin 30 Safety 31 Safety Spring 32 Safety Spring Ball 33 Hammer Spring Support Pin 34 Firing Pin Spring 35 Firing Pin 36 Carrier 37 Carrier Lever 38 Carrier Lever Pin 39 Carrier Lever Spring 40 Carrier Lever Spring Screw 41 Hammer Assembly 42 Key Lock 43 Key Lock Spring 44 Key Lock Ball 45 Frame 46 Assembly Screw Bushing 47 Trigger 48 Trigger Spring 49 Trigger Pin 50 Stock Guard Screw 51 Hammer Spring Guide 52 Hammer Spring 53 Hammer Spring Support 54 Stock 55 Buttplate 56 Buttplate Screw 57 Forend 58 Forend Screw 59 Pressure Washer 60 Forend Bushing 61 Action Slide 62 Action Lever 63 Action Lever Pin 64 Action Lever Tube inch-diameter drift to push the assembly-screw bushing (#46) out from right to left.

Don't try to move the bushing to the right. It has a 360degree rim around its left side and cannot be driven through the frame without serious damage to both. Hold up on the drifting for a few seconds. Before the bushing has been removed, capture the hammer-spring

DISASSEMBLY/REASSEMBLY OF THE TAURUS MODEL 62 RIFLE CONTINUED

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(#52) assembly first. Straighten out a paper clip, move the hammer to half cock, insert one end of the clip into the hole you just caused to appear in the end of the hammer-spring guide (#51), and release the hammer. Now push the bushing through and pull out the carrier followed by the hammer assembly (#41), which includes the key lock (#42), spring (#43), and ball (#44). There they will remain untouched.

On the other hand, the carrier assembly can be further stripped down for purposes of damaged-part replacement by removing the lever-spring screw (#40), the spring (#39), and the carrier. Just under and ahead of the tab to the right of the letter "F" is the safety-retaining pin. lever, by drifting its pins (#38) left to right. The trigger pin (#49) is drifted in the same direction to free the trigger (#47) and trigger spring (#48). The latter is endowed with an urge to escape.

Guard it well, then pick up what remains of the frame assembly. The hammer-spring guide (#51) is held in by a pin (#33). Why it is the same number as the bolt pin (#33)

we can't say. Perhaps someone lost track and didn't want to start from the beginning the day the schematic was drawn up. Whatever. Frame pin #33 it is. Drift it out left to right. Quite quickly, the hammer spring (#52) and support (#53) will be readily available, and then you can retrieve the paper clip.

Reassembly Tips The Taurus Model 62 doesn't go back together as easily as it comes apart. Preassemble the hammer spring to the hammer-spring guide. Install the trigger pin and trigger. Position the carrier assembly in the frame, insert the hammer between the rear lugs of the carrier, align all bushing holes, insert a 1/4-inch-diameter slave pin (the smooth end of a 1/4-inch drill will work) in from the right side of the frame and take two aspirin. You're about to experience a headache.

The hammer-spring support is the guts of the frame assembly. Position it and push its pin through. You have to insert the spring guide through the support, compress the spring, and swing the opposite end of guide

into its groove in the rear of the hammer. To do this you must compress the spring. I did it with the aid of a flat piece of scrap metal 5 inches long. In one end, I machined a U-shaped recess wide enough to fit over the guide and narrow enough to prevent the spring from passing through.

Using the extra leverage thus provided, I was able to put enough pressure on the spring while maneuvering the guide to its seat. This was not easy and was not accomplished on the first or second try, but it can be and did get done. If you don't have machining capability, you could probably file a notch in the end of a husky screwdriver blade and do every bit as well as I did. Maybe better. It would depend on the overall length of the screwdriver.

If I had it to do again, my homemade tool will be remade as a 7-incher or longer. That spring is no pushover. Once the guide is in place, the hammer and carrier will be held in. You can then push out the slave pin with the bushing and continue the reassembly in reverse order. I

FROM THE ARCHIVE

Disassembling Fine Old Guns: The Right Way, Part 2

Antiques require some tools and techniques' as well as careful attention't hat might not be needed for disassembling newer firearms.

BY DAVID R. CHICOINE JANUARY 2004

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Original caption: Right top: A fine Austrian-made percussion pistol from the 1840s will require your careful examination before disassembly, along with a delicate touch and the correct tools. Muzzleloading guns often used steel pins that passed through the stock to hold trigger guards, triggers, and barrels, and these are sometimes hard to spot.

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Original caption: Right bottom: A factory engraved 1866 Winchester is a gun you won't want to take any chances with during disassembly. Perfect fitting screwdrivers and cup-tipped pin punches are the only tools you would want to use. from left to right, just as if it were a dovetailed sight blade. Most gun-makers have been pretty good about following this rule over the years. Pins are driven into place with punches and hammers. But you should never think of hitting a pin directly with a hammer. Why?

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In the last issue, we discussed various options for removing stuck-in-place screws without damaging the screw heads. Here, in the second half of this two-part series, I'll cover the removal of balky pins, wood that has become frozen to metal parts, and how deal with tricky operations that require more than two hands. Dealing with Stuck Pins Solid steel pins are another common method

of holding parts together in firearms, and, just as with screws, their safe and neat removal is our goal.

Most gun pins, especially in older production firearms, are straight and can be removed from either side. For the record, if a pin is tapered, the correct way to remove it is to drive it

Because if you mash the pin with a hammer the chances are great that you will mushroom the end of the pin, and if you do mushroom it, the end of the pin will no longer fit into the hole you are trying to drive it through. And if you do this to both ends, you've made the pin into a rivet! That's like shooting yourself in the foot before starting off on along walk. Always put the punch into contact with the pin and hit the punch with the hammer. Punches used for pins

DISASSEMBLING FINE OLD GUNS: THE RIGHT WAY, PART 2 CONTINUED

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Figure 2. have straight shanks to allow them to pass clear through the hole, therefore, they are called “pin punches.” Pins can get stuck, just like screws get stuck, and for the same reasons’ rust and old lubricants. Usually, once you get a stuck pin moving for the first time, chances are good that it can be kept moving with far less effort than was required to break it loose.

Pins that have flat ends are best started by using a short so-called “starter punch.” Starter punches are shorter than normal pin punches and offer a stiffer shank, which helps to prevent break- One of these is a 4-ounce ball-peen hammer; the other is a graver’s hammer sold by Brownells. always to keep that nice, rounded shape intact, so no one would be aware the pin was ever removed and replaced.

Special punches for this task are available from Brownells that are called “cup-tipped punches.” Cuptipped punches look like their name sounds; they’re straight pin punches but their tips are ground out hollow to allow them to fit nicely over the rounded heads of the domed pins used in so many 19th and early 20th-century guns. Separating Wood from Metal Removing the wood from the metal, or removing small metal parts from tightly in-letted recesses in the wood can be a tricky job.

Older weapons, even military guns, had very close wood-to-metal fits when they were made. Over the years, the wood may age. So, we use the starter punch to initially get the pin moving, and once it is driven down below the surface of the gun, we can switch to a normal pin punch to finish driving out the pin. (See Figure 2.) Domed or round-headed pins are another matter.

The gunsmith’s desire is have swelled into the metal or the wood may have retained moisture after being carried in the rain, allowing rust to form in the seams. This rust can have the same effect as glue, effectively sticking the metal to the wood, so when the metal is removed it pulls divots out of the edges of the wood. The problem is sometimes caused by the fact that the oxidation has penetrated the metal (in the form of pitting) and the pores of the wood, thus forming a really firm bond.

This is especially true with antique guns, where the wood-to-metal fit is usually very close, and they may have had 100 years or more to bond with rust and dried oils. With very old guns, the wood may also be very dry and brittle, increasing the chances of the wood splintering when the metal is pulled off. On older guns, I like to scrub these areas clean with a light solvent such as kerosene, and then flow a little gun oil around all the seams where wood fits to steel.

Then I leave the whole thing sitting for 24 hours or so before trying to disassemble the gun. This often has the effect of loosening surface rust, and reduces the chances of the wood splintering. Wherever wood and metal are tightly fitted, they should always be eased away from each other deliberately, but slowly, moving just a little at a time. In this way, you will be able to see the places where wood starts to pull out as the result of internal rust.

If you see evidence of wood pulling out, before going any further, these areas should be treated by flowing on a bit more gun oil. After allowing the oil to sit a few moments, try scraping the sides (not the surface) of the metal with the blade of a sharp modeling knife to slice any wood fibers that might be adhered to the tangs of the metal below the surfaces. Keep the blade at a 90 degree angle to the metal and use great care to only cut fibers that are below the surface of the wood.

Once you have the bond of rust cutaway and you are sure the wood is free, slowly ease the wood the rest of the way off the metal. Obviously, both the wood and metal from such spots should be cleaned of all traces of rust and treated with a rust preventive before reassembling. Holding the Gun in Place Whatever method you use to turn screws or to drive the pins in and out, the gun itself should be supported on

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your bench so that it can't move around. For handguns, this usually means first removing any protrusions, such as the grips and the cylinder on revolvers, so the gun can be laid more or less flat on the bench top. When driving pins out of handguns, I like to lay the gun on its side on a soft pine board I keep on the bench especially for this purpose. Then, as the pins are driven out, they start to embed themselves in the pine.

This not only provides great support for the weapon, it insures that you won't lose the pin. Sometimes you need both hands to operate the screwdriver, and the force required to turn a screw would move the gun around if it were left laying without assistance on the bench. For times like this, a third hand is a great help, but there often isn't anyone around to offer one. Try laying the gun on the workbench top near the edge, with a small soft pine board placed over some portion of the gun that's not in your way.

Then clamp the handgun in between the wooden bench top and the board using a C-clamp. This gives you the use of both hands, and you don't have to worry about

the gun moving around. Look at the nice fit of the lock to the stock on this 1860s English pinfire shotgun. Note the extremely narrow screw slot on the hammer. Some Final Thoughts A word to the wise: Be thoughtful and keep your workbench top work area clean.

Just because you are about to disassemble a dirty old gun for cleaning does not mean your area should not be clean to start with. Wouldn't it be awful if you laid a nice old S&W with perfect blue down on the bench, and it landed right on top of a sharp steel filing from some previous job and then you clamped it in place? The padded plastic bench covers available from many gun makers and even automotive stores make great benchtop surfaces to work on, and they are very easy to keep clean.

For really expensive old guns, I made a special padded bench cover from a piece of 1/4-inch plywood about 2 feet by 3 feet with a piece of soft, suede leather glued to its top with contact cement. Long guns require a different kind of support, and for this I recommend a gun cradle, sometimes called a rifle vise. Gun cradles are specially made

fixtures that are intended to sit on the bench top and allow a rifle or shotgun to be securely clamped in place.

The cradle frees up both your hands, while providing a stable and safe support. Cradles are a great idea for holding guns, whether you're a work-at-home tinkerer or a full-time gunsmith. Most cradles are designed so along gun can be clamped either right-side up or upside down, so all sorts of different kinds of work can be performed, from cleaning to installing sling swivels to disassembly or reassembly. Make a habit of padding any areas of the stock that will be clamped with a piece of soft leather.

Even if the stock is removed, the barreled actions of many rifles and shotguns are long enough that they can still be clamped in the cradle, making disassembly of the major components that much easier. Finally, think about this: When you take apart or assemble a customer's gun, you could very well be the last person who will turn those screws for the next 100 years. If you take the time to be cautious and careful, you're signing your work for posterity as a craftsman. I

RIFLES

Scoping the Hi-Point Model 99 9mm x 19 Semi-Automatic Rifle

Some rifles are more adaptable to scope sights than others, but most can be scoped with the help of a little creative imagination.

BY NORMAN E. JOHNSON JANUARY 2004

ORIGINAL PP. 10-13

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Original caption: Right top: The scoped Hi-Point Model 995 rifle represents a functional and attractive package. Here, the mounted scope is shown from the right side of the rifle. Right bottom: This group was fired from 50 yards with the scoped Model 995 using CCI ammunition.

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When a fellow brought in his Hi-Point Model 995 9mm x 19 semi-auto for a scope installation, I told him I would look it over. The gun is equipped with a fully adjustable rear peep sight and a protected post-blade front sight. The rear sight is attached to a narrow flat-top receiver with three in-line mounting screws. Beneath the receiver shell there are two internally posi-

tioned screw plates, each with two threaded 4-40 screw holes to receive the three base and one sight-adjusting screws.

On removal of the sight screws, these unattached screw plates fell loosely inside the rifle and were removable via the open bolt port. The plates were quite thin for use in threading. Removal of the Hi-Point's rear sight housing left ample flat surface for a one-piece scope base. This workable surface

was over 5 inches in length and just over 1/2-inch wide. But to provide adequate eye relief, a twoplane scope base would have to be mounted on the forward half of the flat receiver surface.

This would leave the front half of the scope base and front scope ring extending over the barrel. A scope base that would span the entire flat receiver surface would

SCOPING THE HI-POINT MODEL 99 9MM X 19 SEMI-AUTOMATIC RIFLE CONTINUED

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The sight housing spans the entire top of the receiver. Four screw holes were used for a sturdy mounting of the base. place the scope too far aft for proper eye relief. After a good deal of thought, I selected a dual-plane, Weaver-style scope base for mounting the scope. The base required milling to fit the flat surface of the receiver. After milling, the raised base would extend forward of the receiver, leaving one ring extended over the barrel approximately 2 inches in a forward-projecting, cantilever fashion.

I chose to drill and tap four new holes in the receiver housing for the two holes in the scope base plus the two additional holes

which I added. The 9mm x 19 cartridge has very light recoil and I reasoned that the receiver would provide more than adequate screw purchase for the base. There was plenty internal clearance through the Far underside of the receiver shell for the screws to extend a bit beyond. It was not necessary to take the gun apart to accomplish the base mounting.

I really didn't want to disassemble the complicated looking mechanism anyway, not knowing what lay beneath. As I milled the radiused surface from the scope base, I left an overhanging lip, extending downward along each side. This fit nicely over the slightly

rounded edges of the top of the receiver, producing a self-aligning base. The scope base had three ring-screw slots, leaving a 4-inch center-to-center scope-ring spacing with ample room to slide the scope forward within the rings for proper eye relief.

The attached base appeared to be in perfect alignment with the bore, and the low scope rings provided perfect clearance for both the front and rear scope-lens housings, leaving the scope at an ideal height for easy sighting. The mounting job came off without a hitch, using the tools and equipment I had at hand, and the black scope and rings looked quite nice (continued on page 21)

SCOPING THE HI-POINT MODEL 99 9MM X 19 SEMI-AUTOMATIC RIFLE

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Original caption: Above top: The finished stepped scope base with four mounting holes is shown here from the under side. Above bottom: This is the Tasco scope mounted on the Hi-Point rifle receiver using a Weaver-style base and rings.

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atop the all-black rifle. I didn't even boresight the gun, and just fired around at a fairly large 25-yard target. The point of impact was within 2 inches of the 1-inch aim point, leaving lots of adjustment for reticle centering. I always feel lucky if a newly mounted scope provides ample scope adjustment in all directions in arriving at reticle center on target. Gun receivers are not always in true alignment with the bore, which can create some real problems in scope/bore alignment.

I usually lay along, straightedge across the top of the gun receiver to check parallel alignment before mounting a scope. This is particularly true of odd or unusual scope applications. Sometimes a scope base must be milled at a slight angle to accomplish parallel alignment. The front sight is a full 2 inches high, but I left it in place. There was no obstructive visual problem and the sight housing also served to retain the barrel heat shield.

The hooded sight blade could be removed from its base but it looked better the way it was, so I left it.

Conclusions The newly mounted scope made the Hi-Point rifle look pretty classy over its darkly blued receiver. Scope eye relief was perfect for easy aiming, and accuracy at 50 yards was surprisingly good. One five-shot group was under

Note how the base is mounted on the front half of the receiver with the stepped base extending in cantilever fashion beyond the receiver bridge. 2 inches, using CCI FMC bullets. The owner had planned to use the gun for shooting raccoons and squirrels and general target use. He disliked the peep-sight setup and was very happy with the newly mounted scope.

It's always nice to please a customer, and it's extremely satisfying (not to mention more profitable) if the gunsmith is able to accomplish an unusual job without complications or surprises.

FROM THE ARCHIVE

On Slides and Tightening

Opinions differ on the importance of slide-to-frame-rail fit, but it can improve accuracy without compromising reliability.

BY ROBERT K. CAMPBELL JANUARY 2004

ORIGINAL PP. 14-15

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To read some of the articles in the popular press, slide tightening is not particularly important for maximum accuracy. Instead, barrel-to-slide fit and barrel and bushing fit are more frequently stressed. With some of the quick packages that the gunsmith offers, barrel and bushing fit are good enough for carry purposes, or perhaps even for IDPA-competition pistols. But when a shooter demands top-notch accuracy, his pistol should have a good tight slide and frame-rail fit.

I became a believer in this type of work after an experience with a Browning Hi-Power. While we usually think of slide tightening in terms of the Colt 1911, Bob Cogan of Accurate Plating & Weaponry performed this work for me on an old and well-worn Browning. There was a combination of other work, but the slide-to-frame-rail tightening resulted in a handgun that grouped inside of 1.25 inches at 25 yards. Not bad for a Hi-Power, and well above the norm for any 9mm Luger pistol.

Despite the claims that rail tightening is not necessary, I have enjoyed much the same improved results with the 1911 pistol. Always being one to make up my own mind, I decided to do some testing. After examining most of the 1911 pistols on the market, I can say none are perfect, far from

it. The exceptional production guns I found and these are "semi-production" products were the Les Baer and the Wilson Combat, and I wouldn't attempt to improve upon these pistols.

The rest of the crop ranged from pretty good for a factory gun to "I wonder how it shoots at all." A couple of the foreign produced guns gave good results as shooters, and seemed reliable enough, but I would not attempt to tighten their slide fit, since they were too sloppy overall. The interesting thing is that the Baer and Wilson pistols have a nearly perfect slide and frame-rail fit. To check the 1911, we can use a depth micrometer or the simpler rail gauge.

The rail gauge aids in deciding how bad or rough the rails are, and the correct spacer bar for peening the slide rails. The micrometer measures a certain point, while the gauge slips into the slide itself and measures the entire slide rail. To use a rail gauge, remove the firing-pin stop, firing pin, and extractor from the slide. This allows proper use of the slide rail. When using a rail gauge, the beveled corners of the long gauge are forward.

A 7/32-inch rod is supplied with the Alpha Precision gauge. The Alpha Precision, Com-With the rail gauge, the correct spacer bar

is determined for peening the frame rails. A 6-32 x 1/8 and two 6-32 x 3/4 screws are in the gauge. All of the screw heads remain out of the way of other tools and files when working with the 1911 slide. This allows the rearward screw in the gauge to play against it.

The 6-32 x 3/8-inch screw that bears against the 7/32 rod is first, then with the gauge firmly in place, lightly tighten the screws until the gauge rises a bit in the channel for proper measurement. Each point of the slide that contacts the frame should be uniform. Alpha Precision calls for all points to be within .0005 inch of the other. A file or India stone is used to true these points up. The actual slide tightening is a straightforward process requiring a bit of finesse in order to achieve the proper results.

The proper use of slidetightening blocks requires a heavy vise. The vise is opened to allow the tightening blocks to ride inside the vise, with the slide between them. With the Alpha Precision blocks, around block or fulcrum is included to keep the lower part of the tightening blocks from bowing. The slide-tightening stop is used at this time. The stop fits inside the

ON SLIDES AND TIGHTENING CONTINUED

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When used with the Alpha slide-tightening stop, slides are quickly and accurately fitted to the frame with no danger of damaging the slide. slide and has an adjustment which is used as the slide is tightened. The stop is inserted into the slide, and the slide placed between the aluminum tightening blocks. The vise is then tightened and the slide is forced against the slide-tightening stop. Pressure is applied until the slide-tightening stop cannot be moved.

Then, vise pressure is released and the slidetightening stop can be moved an inch at a time in the slide and the process repeated. At no time does the vise and slide come into contact. This is all there is to the slidetightening process. After it's done, there is little if any discernible difference in the slide's dimensions. However, the slide stop, which is adjustable, can then be cranked down to a

The stop is positioned over the entire contact area of the slide-to-frame contact when locked in battery.

Pressure is applied with a vise using the heat-treated aluminum blocks. Pressure is applied until the stop cannot be moved, then pressure is released, the stop moved one inch, the slide repositioned on the blocks, and pressure applied with the vise. This procedure is repeated until the slide/frame contact area has been covered. smaller adjustment and the process repeated. At this point, you need to begin checking the movement of the slide at .0001 intervals and checking the fit to the frame.

Then we will lap the slide with aluminum oxide, sometimes oiling the slide first, to make fitting easier. Keep in mind that you cannot expect good results quickly. Often, this process will have to be repeated several times

for best results. Some writers have stated that they feel the gun is less reliable with such a tight slide-to-frame fit, even if it is more accurate. Frankly, my experience has been the opposite.

Wilson guns are quite tight in this regard, but are as reliable as any 1911 I have ever used extensively. Likewise, the Accurate Plating Hi-Power has surpassed all expectations. The original factory slide-to-frame fit does not include the time and effort needed for a true, tight fit. There may be bumps and burrs in the gun. When using the rail gauge and polishing properly, the slide rails will be properly polished. There is a minimum fit, but also, ideally, no rough spots or burrs.

In the long run, this gives greater reliability along with better accuracy. With less slop in fit, there is less (continued on page 20)

FROM THE ORIGINAL PAGE

[NO RECOVERABLE EDITORIAL TEXT ON THIS SOURCE PAGE.]

THIS DIGITAL ARCHIVE PRESERVES THE RECOVERABLE SOURCE TEXT.

PEOPLE & COMPANIES

Modify the New Model Blackhawk For Cowboy-Action Shooting

Here's how to give the Blackhawk a sweeter trigger and speed up reloading with a cylinder that rotates in either direction.

BY CHICK BLOOD JANUARY 2004

ORIGINAL PP. 16-21

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For those of you who weren't among our readers back in October of 1993, or may have lost that particular issue, I'm going to start out here with an instant replay of disassembly instructions for a New Model Ruger Blackhawk Revolver. The New Model, as you may recall, has a transfer block attached to the trigger unless it's an Old Model Blackhawk on which Ruger has performed a conversion. In both cases, disassembly follows the same path.

Disassembly Open the loading gate (#17), place the hammer (#28) at half cock, and make certain all cylinder chambers are empty. Depress the base-pin latch (#4) on the left side of the frame forward of the cylinder and move the pin assembly (#2) toward the muzzle until it bumps into the ejector rod (#12). The cylinder (#6) is taken from the frame to the right and the loading gate is then closed. Remove the grips (#24), cock the hammer, and have a small pin or punch nearby.

You'll insert it into the hole in the bottom of the hammer strut (#33) to capture the mainspring (#34). Take the pressure off the hammer by pulling the trigger (#49) and easing the hammer forward. Using a screwdriver that fits the slots extremely well, back out both upper gripframe screws (#21) and the front screw (#20) just forward of the trigger guard. Once they're out, move to the rear of the guard and remove the bottom gripframe screws (#22 and #23). Keep in mind that #23 engages a groove in the hammer pivot.

Come reassembly time, it has to go back into the same hole from which it was taken. It's possible now to separate the upper (cylinder) frame from the lower (grip) frame, but take care you don't lose the pawl spring and plunger (#38) which are seated in the rear of the cylinder frame. The hammer will be retained by a pin (#29). Drift it out left to right, and remove the hammer from the cylinder frame. Set the hammer

and pawl (#37) aside or put them in your spare-parts bin. They won't be going back into the gun.

The cylinder-latch spring (#7), plunger (#8), and latch (#9) are in the upper grip frame. Lift them out. Unhook the rear legs of the trigger spring (#51) from its pin (#52), push out the pin left to right, and lift out the spring. Depress the lower arm of the loadinggate spring (#18) with a small tool, and push out the trigger pin (#50) left to right. In the following order, remove the loading-gate spring, the trigger, and detach the transfer bar (#48) from the trigger.

For this overhaul, there's no need to break the gun down further. The Ingredients And the Recipe for Success Ron Power is no stranger to the pages of American Gunsmith. His precision tooling for pistols and revolvers has been featured in several issues. Notable among the items that we've covered were his Series I and Series II stoning jigs for both long guns and

MODIFY THE NEW MODEL BLACKHAWK FOR COWBOY-ACTION SHOOTING

CONTINUED

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Original caption: bottom: This is a New Model Blackhawk. Note the two pins under the cylinder that identify it as a suitable subject for the retrofit described in the text. The work described in the text cannot be performed on this older model, or springs.

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The Free Spin Pawl making this feature possible (arrow) is available separately. handguns. Ron Power was a founding member of The Pistolsmiths Guild and sits on its Board of Directors; he was Pistolsmith of the Year in 1986; he was nominated four times for the Outstanding Handgunner Award; and he's a good friend of the AGA'm eaning you and me.

His complete Power Custom Kit for New Model Blackhawks includes the following: hammer, hammer plunger, hammer-plunger spring, hammer-plunger pin, redesigned trigger for the half-cock-notch hammer, and several Wolff Guaranteed Superi- Opposite page

These are 17-, 18-, and 19pound hammer springs to replace the 23-pounder used by the factory, plus a 30-percent reduced-power trigger spring and an extra power cylinder latch-pin spring. The Power Custom Kit does not include Ron's Free Spin Pawl, which is sold separately and installed after the trigger work is complete. The hammer and trigger are deep-case-hardened RC 56-58 steel manufactured by EDM and CNC methods to produce the same profile as the factory originals.

They have been blue-finished with their flat sides polished bright, then hand finished with polished engagement areas to allow a 2-1/2- to 3-pound pull. Before that thought gets you too excited, lets' review a matter of considerable importance. How the Action Works When the hammer is forward at rest against the frame, the hammer plunger should be behind the rear of the cylinder latch.

When the hammer is drawn to the rear, the plunger cams the rear of the latch upward to disengage the front end of the latch from the cylinder notch, the top step of the pawl engages a ratchet, and the cylinder begins to rotate. The hammer plunger then disengages from the rear of the latch, which is pushed upward by its plunger and spring. The latch will place some drag on the cylinder. This is necessary to prevent cylinder skip. Don't alter the plunger or latch to avoid the small mark caused by the drag.

As the hammer is drawn further to the rear, the job of cylinder rotation is passed from the top of the pawl to its second step. When this step is of the correct height, rotation will continue until the latch engages a cylinder notch and, simultaneously, the sear/trigger

MODIFY THE NEW MODEL BLACKHAWK FOR COWBOY-ACTION SHOOTING CONTINUED

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Spur Hammer Plunger Pin Hammer Plunger In most cases, the hammer is a true drop-in component. Fitting the pawl is addressed in the text with special note to point "E," which has considerable effect on the timing. will enter the single-action hammer notch. When the trigger is pulled, it disengages and releases the hammer, which is pushed forward by the hammer strut/spring assembly. With the trigger to the rear, the transfer bar is raised up. The hammer strikes the bar, and the bar drives the firing pin forward.

Releasing the trigger allows the transfer bar to drop down from the firing pin and the second step of the hammer face. Now that you understand how the action works, we'll get on with how to make it work better. Installation The new hammer and trigger should not be altered in any way. They replace the original factory parts and are intended to drop in. A glitch might occur in the spacing and location of pivot-pin holes in the frame that can negate that intent.

If you come up against this problem, don't do anything about it with Power Custom and review what you aim. Face Half-Cock Notch The solutions will vary with each occurrence and can't be generalized upon here. Weight of pull is largely dependent on the weight of the trigger spring. If you use the supplied 30-percent-reduced-power spring, the pull will be about 2-1/4 pounds. If that's too light for any reason, pull will be about 3-1/2 pounds with the factory spring.

For an even 3-pound pull, bend the factory spring as shown in the accompanying drawing. This can be accomplished with long-nose pliers and with the Blackhawk's action assembled. Bending one or both legs of the spring Bend Here Cylinder Ratchers Lower Edge of Frame Line Where Trigger Guard Fits Frame B Window in Frame for Pawl will lessen tension on the trigger. When the hammer is down, the loading gate of your re-assembled Blackhawk will operate as usual.

When the hammer is at half cock, the gate won't open all the way until an alteration is made to the transfer bar (see drawing). Use a good-quality file and lower the step .075 inch straight across the bar. You don't need the angled lead of the factory bar with this upgrade. After the alteration, the pivot stud of the loading gate will clear the transfer bar at half cock. But don't take too much off. You should only be able to full cock the revolver when the gate is closed.

Adding the Free Spin Pawl The installation of this part, called a "hand" by other manufacturers, allows a shooter to load the cylinder by rotating it clockwise or counterclockwise when the loading gate is open. It's a drop-in operation in some revolvers. In others, it may require minor adjustment for proper timing. To install and check it out, assemble the pawl, hammer, and hammer-

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pivot pin in the frame. Hold the hammer fully forward and make sure of the following (see the drawing on the opposite page): 1. Point "A" contacts the lower rear frame slot. 2. Point "D" should be retracted from the frame window. 3. Point "B" should not stick down below the lower part of the frame. If "B" protrudes, it will bump the triggerguard when the guard is reinstalled. Correct this by removing just enough metal to clear the guard.

If the hammer will not go all the way down toward the firing pin, point "A" is too full and tries to retract point "D," preventing ratchet engagement. When this happens, point "C" hits the rear of the pawl's frame slot. To correct that problem, it's best to remove metal at point "A" with extreme caution—only .002 to .005 inch, and keep the same contour. Now run a check for binding. Holding the hammer down, the pawl should have a little movement fore and aft in its slot. Install the pawl plunger and spring.

Hold the spring flush with the rear of the frame.

Still 1 Barrel 2 Base Pin Assembly 3 Base Pin Latch 4 Base Pin Latch Nut 5 Base Pin Latch Spring 6 Cylinder 7 Cylinder Latch Spring 8 Cylinder latch Spring Plunger 9 Cylinder Latch 10 Ejector Housing 11 Ejector Housing Screw 12 Ejector Rod 13 Ejector Rod Spring 14 Firing Pin 15 Firing Pin rebound Spring 16 Front Sight 17 Gate 18 Gate Detent Spring 19 Grip Frame 20 Grip Frame Screw, Front 21 Grip Frame Screw, Top 22 Grip Frame screw, Bottom 23 Grip Frame Screw/Hammer Pivot Lock 24 Grip Panels 25 Grip Panel Dowel 26 Grip Panel Ferrule, Left 27 Grip Panel Screw 28 Hammer Assembly 29 Hammer Pivot 30 Hammer Plunger 31 Hammer Plunger Pin 32 Hammer Plunger Spring 33 Hammer Strut 34 Mainspring 35 Mainspring Seat Ruger New Model Blackhawk Revolver (Specifications subject to change without notice) 36 Medallion 37 Pawl 38 Pawl Spring & Plunger 39 Rear Sight Assembly 40 Rear Sight Blade 41 Rear Sight Elevation Screw 42 Rear Sight Elevation Springs 43 Rear Sight Pivot Pin 44 Rear Sight Windage Screw 45 Rear Sight Windage Spring 46 Recoil Plate 47 Recoil Plate Cross Pin 48 Transfer Bar 49 Trigger 50 Trigger Pivot 51 Trigger Spring 52 Trigger Spring Pin 53 Trigger Spring Retaining Pin 54 Frame

MEASUREMENT & INSPECTION

Reader Forum

BY AMERICAN GUNSMITH EDITORS JANUARY 2004

ORIGINAL PP. 22-24

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Headspace on the M1 Grand Could you supply me with the proper procedure for headspacing an M1 Garand? I have a set of .30-06 go/no-go gauges. If you mean checking the headspace in a caliber .30-06 you already have the means on hand. If the bolt closes on the no-go gauge, headspace is excessive. If you mean adjusting the headspace, it's not that simple. Military armorers used to keep boxes full of bolts near their benches. The bolts carried revision numbers.

A bolt with a higher revision number than the one on the bolt in the suspect rifle could be dropped in to gain about .002 inches, possibly eliminating the excess. They also were well supplied with boxes full of spare barrels. You can't set back the barrel of a Garand as you do bolt-action rifle. It starts a chain reaction.

The gas piston has to be cutoff in a lathe, all parted surfaces faced perfectly flush, and the piston assembly has to be silver-soldered back on at the point that exactly equals the number of inches the barrel has been set back to offset the headspace. The operating rod must be shortened likewise, as must the stock, and the rifle rechambered. If the headspace problem with your rifle is minimal, say .002 inches, have the bolt hard-chrome plated. That will probably make up the difference.

A new barrel should also be considered. An overhaul like the one described here would be far more costly in dollars and time—which is why those GIs kept so many bolts and barrels at hand. Tapping a Savage Receiver I have an earlier Savage Model 99 in .303 Savage. My customer wants to have a receiver sight installed. I have a Williams 99S receiver sight for a Savage. The Williams is drilled for 6-48.

The receiver of the Savage has at one time been drilled and tapped for 8-40, but the hole spacing exceeds that of the Williams sight. Therefore, either the Williams sight must be opened up to accommodate 8-40, or the receiver drilled and tapped for 6-48. If I alter the Williams sight, I'll still have to drill and tap one 8-40 hole. My problem is: How do I drill a hole on the curved receiver that is "normal" (dead perpendicular) to the receiver?

I called Savage Arms, and they understand the problem, but they don't have a factory jig to do the work, nor did they offer a suggestion. I have a Forster jig, but it won't work on this type of problem. I have a bench mill but I'm not sure if I can use it to do the work. I don't want bad holes; I've seen what can happen. I appreciate any advice you can give. Mike Grinnell Haliburton, Ontario Your problem begins with a Williams sight that hasn't been made in about 20 years.

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One reason for ceasing production is that owners of Savage 99s such as the one you mention had no desire to have holes drilled in the receivers. The sight you need is a Williams FP99, but that's out of production as well. Maybe you could turn one up on the internet (e Bay) or by shopping around in the old parts market. Try Gun Parts Corp. Antique Gun Parts or get a free copy of Brownells' "Parts Source List" and let your fingers do the walking.

While you have Brownells on the phone, you might as well order a Palmgren Drill Press Vise, which can be used for rounded stock and will hold it steady during drilling. Hopefully, one of the 6-48 holes in your old 99S sight will match up with one of the 8-40 receiver holes to align the sight with the bore. Drill that hole out to accept an 8-40 screw and fasten the sight to the receiver after you drill out the second sight hole to 8-40.

Secure the receiver in the Palmgren, use the enlarged sight hole as a drill guide to open up another hole in the receiver. Make no change in the vise angle and use a Tru-Tapper (from B-Square) in your quill to tap the hole. But don't charge ahead just yet.

If it appears the process outlined above will not result in a proper, centerbore fit for the sight, please suggest to the rifle owner that he forget about more holes in the receiver and join you in the search for an FP99 sight. (It's either that or paying you for your time plus phone charges in trying to find one for him.) Interarms Stock I need a stock for an Investarms Shotgun. They were distributed by Sile, Inc., of Ossian, Indiana. Fred Sile has passed away, and his place is locked up.

I have searched the net for Investarms, but have had no luck. I would appreciate any help you can provide. We suggest you try Boyds Gunstock or Wenig Custom Fitting Kart Barrel I am experiencing some difficulty with installing a Kart match barrel in a 1911 pistol. Actually the barrel seems to be fit, but is perhaps a little too tight.

The slide will hand-cycle just fine, and with factory loads it also cycles okay; but with target handloads the empty cases do not move the slide far enough to eject, though they do leave the hammer in the cocked position. This 1911 has a red dot scope mounted on the slide, and if the slide is off the gun it will function with the same handloads. I have both of the books by Jerry Kuhnhausen on the 1911, and in the back of one is an article on barrel, link, frame timing, and the ways to test for this.

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The first of the three tests is for slide-barrel clearance, with the slide barrel and bushing (no recoil spring or guide and no slide-stop installed) on the frame, move the slide back and check for slide to barrel clearance with a piece of .015 shim stock. I do not have this much clearance, but I can insert a .010 piece of shim stock. To get the clearance I need where should I remove metal, or is

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READER FORUM CONTINUED

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there another place I should be looking for a solution? I have built several target 1911s without any problems' perhaps just dumb luck'but the more I do the more I learn. Any information you can give me would be appreciated. All top-of-the-line match barrels are made oversize so they can be precisely fit to the pistol's slide and frame. The September 1997 issue carried an article on fitting up Fred Kart's new barrel system.

You probably aren't using the same barrel we used in the text, but all you need to know about how these barrels should be mated to an M1911 is there. And Fred, understandably, knows more about his barrels than anybody else. Magazine Tuning Thanks for the great mag. Will there ever be an article on the repair and adjustment of magazines? I am working on the feeding of some Luger commercial mags in good shape, but they are causing feeding problems.

Also disassembly of Luger mags is a problem for cleaning and replacing parts. I have also had problems with my AMT .22 Magnum semi auto, and others. A generalized article would be a boon. References appreciated. Thanks. Bruce La Londe Philadelphia, Pennsylvania An article appeared in the March 1996 issue on the High Standard .22caliber target pistol. In that article, magazine tuning was addressed. Much of what was said can be applied to other pistol magazines, but check the 9mm ammo being used.

It takes a bit of muscle to motivate the Luger action, and sometimes the standard 115-grain FMJ doesn't have the "oomph"

to do it. Switching to the 124-grain FMJ frequently resolves feeding problems. And by the way, don't bother to disassemble the magazines. Simply toss them into kerosene or mineral spirits for a couple of days, flush them out, dry them with compressed air or a hand-held hair dryer, and lightly lubricate.

Double Trigger Diagrams I am looking for assembly/disassembly diagrams and a book for a Marlin Model 90DT "double trigger" shotgun. I have one in my shop for repair, and I am unable to get repair info. Any help will be appreciated. The Model 90 O/U was made by Marlin at the request of Sears & Roebuck. These guns had the prefix of 103 in their serial numbers, and were not stamped with "Marlin Firearms" until after 1945. They have not been made since 1963.

There are no schematics on the gun, which has a malleable iron receiver and soft-soldered barrels/ribs. Before attempting any repair, contact the Marlin Firearms Historian North Haven, CT 06473) and ask about the shotgun's ability to accept modern loads. Mauser Info? I have three 1894 Brazilian Mauser receivers and would like to get the parts diagrams and assembly/disassembly instructions. GPC does not list these for the 94 Brazilian. Can you give me some advice about where the next best place would be to look?

The 1893 and 1894 were very similar. We are sending a schematic for the '93 that appears in Jack First's Catalog, Volume II. He may also have parts Take down instructions and much more, appear in Jerry

Kuhnhausen's Mausers'A Shop Manual, available from VSM Publishers or Brownells.

Remington Orifices I have a Remington 1100 that insists on being a single-shot. I stove-piped a 3-inch Magnum steel load. That's as close as I've come to having it eject and load from the magazine. All other types of loads, for the most part, won't return far enough to reset the trigger. It's as clean as a whistle and I've tried the dry lubes. Also, can you give me a tip on preventing the top 1 inch or so of an Ithaca Model 37 buttstock from cracking/breaking at the receiver juncture? Thanks.

On the 1100, the gas port size is larger for steel shot. Check the number of gas orifices in your barrel. One is a Magnum and is a number-48 drillsized diameter, but anything other than lead shot will cause problems. A steelshot Magnum barrel has two gas ports. Each is a number-45 drill in diameter. Don't just open the hole in your barrel. Too much gas will cause too much wear and tear. With the Ithaca, try installing a pin in the stock. Bally Browning A customer brought in a Browning B80.

His complaint was that after it was fired a few times with low-brass shells it started to jam. Upon inspection, it appeared to be dirty, so I cleaned it thoroughly, reassembled it, and test-fired it. The first three times it cycled fine. I reloaded, and on the first shot the dan email to Chick Blood, Technical Editor, at

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(continued from previous page) shell was not ejected from the chamber. After ejecting manually, the next shell ejected fine, and the third stayed in the chamber. I called Browning tech support, and was told that they do not service this gun any longer, but suggested loosening the forearm nut so that there was a little play in the forearm. I did this and test fired again with similar results, some would eject and some would not. The ejector appears to be okay, and the gas ports are clean.

Do you have any suggestions? As originally produced, the B80 required a spacer or "ring" that fit between the receiver and the forearm in order to use low-brass ammo. Browning no longer has any of these spacers available. We suggest you investigate the aftermarket for parts. Start by calling Brownells and asking for a free copy of their parts source list for out-of-production firearms, and don't forget Gun Parts Corp. and Jack First, either. Building Mausers I want to build a couple of rifles on Mauser '98 actions.

These are getting scarce and more expensive. I see Model 48s are far less costly. Are these pretty much the same as far as strength, barrel threads, and parts interchangeability? I want to build a 7 x 57mm (for which I have a new barrel) and I want to build a .425 Express'in case an elephant

ever comes walking down my street. Jim Aebersold San Diego, California The Model 48, manufactured in Yugoslavia on Czech machinery, has dimensional differences that will complicate your goals.

The action OAL for a Standard Model '98 is 8.750 inches, while the action OAL for the Model 48 is 8.500. Bolt body length for an Oberndorf '98 is 6.370 inches; for the M48 it's 6.115. Parts, such as firing pins, would not be interchangeable. The M48 was chambered for the 7.9mm cartridge and would probably be suitable for a 7 x 57mm conversion, but we strongly recommend you contact S. A. A. M. I. Newtown, CT 06470) on the subject of chamber pressure before seriously considering a bump up to the .425 Express.

We further recommend you secure two books. The first is Ludwig Olson's Mauser Bolt Actions. The second is Kuhnhausen's Mausers'A Shop Manual. Both are available from Brownells. Going Pro? I am a hobbyist who is thinking about gunsmithing for more than a hobby. What are your suggestions? Where should I start? What should I read? How soon do I need a FFL? Thank you for your attention to my questions. A lists of books you should read on the subject would be far too long to include here.

Actually you never stop reading and learning about this trade because guns change from year to year. For a basic beginning, contact a correspondence school. Their materials will provide the fundamentals. The AGA offers several basic books, and the American Gunsmithing Institute has dozens of video tapes containing information not included in any correspondence course.

In addition, you should purchase a complete set of Gun Digest's Disassembly/Assembly books (there are five or six volumes) and the combined handgun/longarm edition of the NRA Guide to Firearm Assembly. You will need a dealer FFL in hand when you open to the public, and can secure an application by contacting the Atlanta, Georgia, office of the Bureau of Alcohol, Tobacco and Firearms. The nearest BATF office to your location should be able to put you in touch with the Atlanta office.

Marlin Thread Can anyone tell me the size of the screw thread of the lever screw on the Marlin 1894 Cowboy rifle? Someone brought me in a rifle they had buggered up, and I need to clean out the hole and clean up the threads on the lever screw. Thank you. Francis Carlin Greene, New York We believe it is a 12-28 thread, but suggest you confirm this with Marlin

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