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AND THE AMERICAN GUNSMITH ARCHIVE

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INSIDE THE ARCHIVE

LATHES, MILLS, DRILLS

WEB SITE NAMED ACCESSORY OF THE YEAR • MORE THAN YOU THOUGHT YOU NEEDED TO KNOW ABOUT THE MODEL 1...

ORIGINAL METHODS. MODERN ACCESS.

ARCHIVE EDITION 081

DIGITAL ARCHIVE EDITION

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PEOPLE & COMPANIES

Web Site Named Accessory of the Year

BY AMERICAN GUNSMITH EDITORS SEPTEMBER 2010

ORIGINAL PP. 2

At the recent Shooting Industry Masters award ceremony, Brownells won the award for “Accessory of the Year.” This isn’t so surprising, except it wasn’t for anything available in their colossal catalog. Instead, Suzi Huntington of FMG Publications presented the award for the company’s new web site.

AR15builder.com, which combines images of almost 1000 AR-15 components to let the user build a customized rifle, see what it will look like, and then order it.

Customers can create builds and save them for future purchase, or share them with their gunsmith who can order the components and assemble the gun for them. “We were thrilled just see our name on the list of nominees,” said company CEO, Frank Brownell, “Our web group spent most of a year creating this incredible tool and it’s good to see that hard work recognized.” The Builder helps choose, view and order accessories.

The application is based on Ironbox, a Java Script-based front-end platform that enables a desktop-style Graphical User Interface (GUI) from a Brownells-hosted Web application and is entirely contained within and run by a standard browser (Firefox, Safari, Internet Explorer, etc.) Thus, the user need not install any software. The site also links to over fifty short instructional videos on AR-15 building know-how. Following the drop-down menus, users start with Lower Receiver options.

Everything from stripped lowers to pre-assembled units are available. Hovering the mouse over any item will display a box with item number, price, stock status, etc.

To select apart for the build, drag and drop it to the build area and a picture of the part is automatically indexed to the proper location. Every other component is selected in the same manner. Navigate through the remaining categories, selecting the parts until the gun is complete.

This allows the user to see how the components will look when assembled. The Builder maintains a running price display showing the total cost of all selected parts. Once finished, all the selected parts can be sent to a Brownells.com shopping cart for immediate order. The user is notified of any out-of-stock items, which can be placed on back order or another part selected, and what parts require an FFL. A build can also be saved for later purchase or printed off.

As if the “Obama Bubble” hasn’t caused enough post-election interest in the AR-15 platform, Brownells makes ordering a complete, unique “rifle erector set” as easy as dragging some pictures and a few mouse clicks! In all seriousness, this is a well-made, useful application. It’s even fun for a few minutes of what-iffing a dream rifle. Of course, someone will have to assemble all those parts and that is where a good gunsmith comes in.

Perhaps the AR-15 doesn’t have the same elegance of classic steel and wood rifles but they are popular for a reason. Kudos to Brownells for taking their customer service to anew level.

PEOPLE & COMPANIES

More Than You Thought You Needed to Know about the Model 1885

There were High Wall and Low Wall models but both were mechanically identical to this fine Uberti reproduction.

BY CHICK BLOOD SEPTEMBER 2010

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The Model 1885, Winchester's first single shot lever action, was originally designed by John Browning. No big surprise there. The most obvious differences between the Browning production of an estimated 600 guns and the larger, much longer Winchester run were an integral lower tang on the Browning builds and a detachable one on the Winchesters. In addition, Browning receivers met the stock straight on while the Winchester stock followed a curve.

Choosing to differentiate further, Winchester chose to play These included Scheutzens, muskets, shotguns and carbines, in addition to special order rifles. down to near invisibility the Model 1885 designation and offered the rifle simply as "The Single Shot," a marked departure for a company having grown famous for its lever action repeating rifles.

Confirmed buyers of the gun could order it in pretty much anyway they wanted: With or without set triggers, shotgun-style butt plates, Schuetzen or Swiss

butts and their choice of receiver and stock finishes. Accommodations went so far as to offer matching the contour and finish of an existing stock on another rifle the customer was accustomed to and loved. In these cases, Winchester would marry a duplicate of the pet piece of wood to a Single Shot.

All these special services were performed for a mere pittance in additional charges when compared to the bucks required for similar factory customizing these days, if they're available at all. The initial 5000 or so Single Shots were made with high wall receivers. After that, low wall receivers showed up. This High Wall/Low Wall distinction deserves a few more words of clarification. As I said previously, there is no mechanical difference between the two.

As I am about to say, the High Wall receiver isn't higher than the Low Wall receiver either but

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The marks must meet up again in reassembly to avoid headspacing problems. "there can be a difference in receiver thickness and how it joins up with the fore end wood. Collectors refer to 1885 receivers as "thick sides" and "thin sides." The thin ones have a flare where they meet the fore end.

The thick ones have no flare and are also known as "flat sides." No other Winchester has outdone the Single Shot for choice of chamberings, ranging from .22BB Cap up to .50-110 Express, with all of them propelled through six-groove rifling. Land widths and twists varied of course. Smaller caliber grooves were twice the land width with one turn every eighteen inches. Large caliber grooves were three times land width with a 1-in-60 twist. Reserved for high velocity rounds was a 1-in-9 twist.

No other Winchester has outdone the Single Shot in the sheer number of ways it was offered, either. Not including the hundreds (thousands?) of special order variations, Schuetzen double-set triggers became available as early as 1886. A "Special Sporting Rifle" featuring a thirty-inch barrel, target sights and Schuetzen butt plate was the immediate predecessor of a Single Shot Schuetzen showing up in catalogs.

Add to all mentioned so far that the Model 1885 was also produced as a musket, a shotgun and still undetermined numbers of Single Shot actions were shipped off to rifle builders including the legendary Harry

Pope. This leaves little doubt and zero questions in my mind regarding why Uberti chose to continue the Model 1885 legacy.

Who can say how many members of today's Custom Gunmakers Guild will select a Single Shot action as the platform for their craftsmanship or how many graduates from one of our resident gunsmithing schools will do the same to prove their acquired abilities? All new grads amongst our readers can consider that a post-graduate assignment from me to them. Go for it. Now down to the screws, pins, springs and one "no-no." Field Stripping Folks, this is so simple you'll probably think I'm kidding.

Having properly checked and cleared the action, remove the tang screw (63), the fore end screw (183), the large, slotted head wood screw attaching the lower tang to the stock (62), pull the stock to the rear and pull off the fore end. This is all that's really necessary to basically strip a Single Shot. Cocking the hammer readies the barrel for a breech to muzzle cleaning, which, in .22LR, will be likely needed sooner than later. The .22 is known to be inherently dirty.

Only top-of-the-line rimfires lessen the tendency. Since this "cleaner" ammunition isn't generally considered for other than serious target competition due to its cost, the casual shooter leans, make that lunges, toward the cheapest brick of .22LR to be found on or off the shelf. Unless there is an

enlarged chamber or headspace problem present, however, the Single Shot isn't subject to excessive fouling of its firing mechanism.

Any residue present can normally be blown or flushed away down through the hammer slot in the receiver. When basic cleanups have been long neglected though, as was the case with an 1885 brought in to me a few months ago, there is a need to go beyond basic. Detailed Disassembly. There are two trigger guard screws (167). One is on the right side of the receiver and the other on the left. Back out both. Slide the trigger assembly straight back. It comes out as a unit.

Next, relieve tension on the right lever spring (92) by removing the lever spring screw (124). On the bottom of the trigger group is a small lever screw (101) that needs taking out. Do so. Open the action and punch out the lever pin (107) in either direction. Hold on to the lever and reach under the upper tang of the action and press the tail of the sear (174) down a little to clear a path for the hammer. Pull the lever assembly downward allowing the breech block (97) and extractor (79) to come with it.

The extractor will likely drop free. A warning here. The extractor may give you a minor problem down the

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The author's solution is included in the text. pike. If you've been observant you'll notice its upper end fits in the barrel cut out while the extractor "rides" outside the breech block. Get the extractor trapped between the block and the barrel and you will never be able to install the lever assembly back into the receiver.

This trapping isn't easily accomplished for the extractor and block are retained by the same pin (107) as the lever, but it usually requires a fair amount of applying the old "wobble-wobble" technique to get all the parts into their respective receiver slots and the extractor head into its barrel breech cut.

A slow insertion is recommended with a dental tool or small punch guiding the extractor to assure it seats in the breech cut after its trip upward into the receiver and doesn't get entangled with the block along the way. Look at the schematic. Locate part #294 near the front end of the lower tang just forward of the trigger spring (19). What's a "knock off" you ask? It's apart akin to the "fly" you can come across in double set trigger guns, among others, that prevents the hammer from falling off half cock.

Very curious. While double set triggers can be had, and were, with Single Shots there's none on the one being studied here. You're invited to join me in puzzlement as to why, or what #294 does in the absence of a double set trigger. At present, the answer appears to be nada. Perhaps it's there in case a modern day Uberti is ordered in with double sets and having the part already in the frame would make filling the request easier in terms of production line time required.

That's only a guess but, for now, I reckon it will have to do as an explanation. Meanwhile, more about the block. It houses the firing pin (98) and spring (95) which are held in by the firing pin bearing (129) in turn secured by bearing screws (661). The rifle headspaces off this bearing. Before removing it, draw a line across the bearing to and including where it intersects with the block. The marks you make must intersect again during reassembly.

But the only reason you'd have to separate the firing pin from the block would be in the presence of fouling so severe the pin and spring have failed to work. Another point: The block pin (177) is pressed in to the lever, not the block, and will slide from the latter. Now for the "no-no." Pin #178 in the lever/hammer assembly has to be squeezed on one end.

It isn't your ordinary drift pin and getting the mainspring back into the hammer approaches brain surgery while manipulating two punches and a few associated components. The parts aren't tough to get apart but in getting them back together even Tom Loy couldn't exactly explain. Tom's the top tech at Taylor's & Company who handles all servicing of the guns they import.

One of the things he has to do more often than others is reassemble the hammer (2), hammer pin (178), bushing (245) and mainspring (20) to the lever assembly for Single Shot owners — and gunsmiths — who thought they could put them back together. Usually, he does this at no charge beyond those involved with shipping. Nice guy, Tom. I only mention his services in case you're handed a really dirty Single Shot and you're so backed up you haven't the time to waste tearing it all down for a detailed cleaning.

Well, once the wood is removed you can do an efficient clean-up without removing another part from the gun. You need a bucket, a funnel, a paper towel, a rubber or plastic squeeze bulb, about a gallon of mineral spirits and a quart of alcohol from the hardware store. Pour enough spirits into the bucket so you can immerse the C

action in it after the barrel has been taken care of. Let soak overnight. Fill the bulb with the fluid and flush out the mechanism a few times allowing the liquid to return to the bucket. Do not place the action back in the liquid, which has now been fouled with suspended residue.

Using the paper towel fitted in the funnel as a filter, return 1 Frame 2 Hammer 3 Barrel* 10 Trigger 15 Sight 19 Trigger Spring 20 Main Spring 26 Trigger Guard 35 Trigger Spring Screw 55 Rear Sight 57 Butt Stock 58 Butt Plate the contents of the bucket to its original container for possible future use. Fill the bulb with alcohol. Holding it over the same bucket, flush the action a few times to degrease it. Allow the alcohol to evaporate off the action or encourage it with a hand-held hair blower.

Lightly spray lubricate the assembly and when replacing the trigger 61 Rear Sight Windage 62 Butt Plate Screw 63 Tang Screw 68 Fore End 79 Extractor 89 Lever 92 Lever Spring 95 Firing Pin Spring 97 Breech Block 98 Firing Pin 99 Trigger Pin 101 Lever Pin Screw 107 Lever Pin 119 Rear Sight Screw 124 Lever Spring Screw 129 Firing Pin Bearing 167 Trigger Guard Screw 172 Fore End Cap 174 Sear 175 Sear Spring 177 Breech Block Pin 178 Hammer Pin 179 Sear Pin 182 Fore End Tenon housing to the frame don't forget to depress the knock off (294) so it can fit under the sear.

I believe I've mentioned this timesaver in the past. A further advantage of it is that it works with any rifle, shotgun or handgun action in need of detailed clean-up including an action you've never seen before.

AG Uberti Model 1885 Single Shot (Specifications subject to change without notice) (30-inch rifle barrels: .30-30, .45 LC, .44-40, .22 LR, .32-20, .22 HMR, .22 WMR) (28-inch carbine barrels: .30-30, .45 LC, .44-40, .40-65, .45-70.) 183 Fore End Screw 217 Butt Plate Gate 230 Butt Plate Gate Pin 231 Butt Plate Gate Spring 232 Butt Plate Gate Screw 245 Bushing 294 Knock Off 363 Sear Spring Screw 449 Link Pin 617 Like 661 Firing Pin Bearing Screw 662 Lever Spring Tenon

RIFLES

A Closer Look At Screw Torque In Gunsmithing Applications

Proper screw thread torque is an often overlooked and misused area of gun care. This is particularly true of the do-it-yourself gun owner with limited experience.

BY NORMAN E. JOHNSON SEPTEMBER 2010

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Screw application can have an untoward effect on the mechanical function of a gun including accuracy and annoying bullet impact changes. Damaged screw heads detract significantly from the appearance and value of a firearm as well. If you are like most devoted riflemen and hunters you may be into at least some moderate gun work involving removing and tightening screws and mounting scopes.

Scopes are often changed from one rifle to another in search of that perfect optical combination or a rifle action may be taken from its stock and replaced for one reason or another. Frequent use will leave screws vulnerable to damage. Most gunsmiths, as well as the experienced handyman, have at least a working knowledge of proper gunscrew application but for many there is much to be understood about proper screw torque.

Webster's Collegiate Dictionary defines torque as, "A turning or twisting force." Of course this basic definition is somewhat over simplified when it comes to real

applications. For example, a calibrated torque wrench is used to measure the force used to tighten a threaded nut, screw or bolt.

Each size and type of bolt or screw is designed to withstand a workable torque depending on the type and hardness of the screw, the pitch or number of threads, the size of the screw and the hardness of the threaded mate. From the screw enters. Here we will discuss screw torque as it applies to firearms in general.

Some of the issues associated with proper screw thread is attributable to their many different sizes and shapes, the hardness and quality of the steel used in screw construction, the hardness of the metal where the attachment screws are threaded, and the quality of the tools being used. In scope mounting alone there are at least three different screw head configurations. Those most

A CLOSER LOOK AT SCREW TORQUE IN GUNSMITHING APPLICATIONS CONTINUED

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Wrench comes with the necessary bits and adapter for most screw applications. This wrench will likely show that you have been using incorrect torque on many gun and scope screws. From left, Torx head, common slotted screw (Fillister) head, Socket (Allen) head screw. Proper screwdriver bits area must in working with these screws along with properly applied torque. commonly used include the slotted Fillister head, Allen or socket head and the more recent addition of the Torx head.

The socket and Torx head screws are also available in metric sizes. Common screw heads vary widely in slot shape and size to further compound the problem of proper torque as the screw is tightened or removed. Not all gunsmith shops, to say nothing of average gun owners, are fully equipped with the many screwdriver sizes needed to precisely fit the screws used in gunsmithing or gun care either. This adds a problematic dimension to it all.

We often see damage done as a result of screw torque applied by those who possess extraordinary strength and sometimes little touch. Hand strength varies among individuals and some don't seem to know their

own. Excessive torque will really mess up screws by mutilating the heads, stripping threads, or possibly breaking the screw. Too much torque on scope ring screws can actually compress and permanently distort scope tubes or even bend the top half of a scope ring.

The same goes for the over tightening of guard screws, particularly on wood stocks, where action support varies from one gunstock to another. In carefully controlled tests involving variance of guard screw torque on rifle actions I learned that accuracy was clearly affected. This was particularly true where a third center action screw was present. The quality of action bedding has a significant bearing on this.

For example, a well supported, pillar-bedded stock is less subject to action springing under heavy or uneven guard screw torque than a poorly bedded stock. But few, if any, are totally immune to accuracy changes as guard screws are over worked in the center of a poorly supported action.

In controlled tests with benchrest and varmint rifles capable of extremely fine accuracy, even those rifles pillar bedded in the stocks would show some change in group-

ing as well as point of impact changes as the guard screws were unevenly or excessively torqued or manipulated while firing a group. It was not uncommon for bullet point of impact to undergo a gradual change for a period of time after an action was removed from the stock and replaced.

This came to be a real problem in long range shooting where a rifle was sighted-in one day, only to be off the next time it was used. Early on in my career I acquired a few sets of screw drivers then available to the handyman and gunsmith. Both the earlier Chapman and Bonanza brands come to mind here. The Bonanza set consisted of seven screw drivers with square-ground ends and grooved, round handles for better grasp.

The Bonanza line has been discontinued while the Chapman line is carried by Brownells in a much more expanded selection. My original set consisted of quarter-inch hex driven shafts with a good selection of bits for Fillister and American Phillips type of screws. There were no metric Allen wrenches in this set. In 2004, Wheeler Engineering introduced an 89-piece Professional

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Gunsmith Screwdriver Set, a product made by Battenfeld Technologies, Inc. (www.battenfeldtechnologies.com, Columbia MO 65203, This Deluxe set consists of fifty-four hollow ground flat bits, eight Allen bits, four Phillips and the Torx, along with fifteen specialty bits. Two major driving handles come with the set with the necessary fittings to handle all the bits and specialty tools. Screw Torque Wrenches I recognized the need for accurate measurement in my work and made a torque wrench back in the late 1960s.

It was fashioned after a standard automotive torque wrench but in miniature size. I calibrated it in inch-pounds and used it primarily to apply uniform torque to the guard screws on some of my rifles. My wrench proved useful with scope mount screws once I learned the amount of torque needed on the base screws. As it turned out, I found myself using the torque wrench on a regular basis, particularly after discovering a difference in each of the four scope base screws used on a rifle.

It had been very difficult to get each screw tightened with the same torque. Thankfully, gunsmiths today are no longer forced to cobble together their own solution

because the much welcomed and needed Wheeler FAT wrench has entered the scene. FAT is an acronym, Firearms Accurizing Torque, and is perhaps the closest assist to correctly tightened screws the average handyman or gunsmith. There are 15 specialty bits and accessory tools for many different guns like Colt, Ruger, S&W, Glock, Remington, Mauser and more.

This is one of the more complete screwdriver sets you will find geared to the gunsmith.. Just select the proper torque and turn the handle until it releases at correct setting. A torque of fifty-inch pounds or more may require the use of both hands. will ever hold in his hands. The FAT wrench comes equipped with a square drive adapter bit, T10, T15, and T20 Torx bits, numbers 10, 11, and 32 flat blade bits, numbers 3/32" and 5/32" Allen bits, and a Leupold/ Buehler windage bit.

This is a perfect compliment to any professional gunsmithing screwdriver set. The square drive directly off the wrench will handle those small 1/4" drive socket wrenches most shops and homeowners have. This torque wrench removes the guesswork in tightening scope ring screws, scope base screws, rifle guard screws, even the windage screws on Redfield-style

A CLOSER LOOK AT SCREW TORQUE IN GUNSMITHING APPLICATIONS CONTINUED

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scope mounts. Wheeler Engineering communicated with manufacturers of rifles and scope mounting accessories to get their input and then tested these data on their rifles and others. The results are very informative and interesting. One must continue to use good common sense in working with gun screws. A good technician develops feel for what is being done.

At the least this should alert the gunsmith to the degree of torque being applied and help provide a correlation between hand torque and the calibrated torque wrench. For example, you might tighten a scope base screw by hand and follow up with a torque wrench to verify your findings. In some cases I have used screw bonding cement, such as Loctite, but I don't use this as a routine, especially where scope swapping from gun-to-gun may be the case. Such screw bonding cements can really make screw removal difficult.

Where screws thread into aluminum scope rings, or even aluminum receivers, care must be taken to not over-torque such screws. The same applies where thread depth is shallow. A rule of thumb for any bolt or screw is to have a thread depth at least equal to the diameter. As an example, a 1/4-28 screw should have a minimum of seven threads holding. Cheap screwdrivers or those with soft bits should be avoided. Most name-brand sets can be relied on for dependability.

The slotted screw in general is the weakest screw head and the easiest to ruin. The Phillipstype socket head screw is good but must have a well-fitted wrench and not be mistaken for a metric size. Always be sure of the differences between Unified Thread Standard (Ameri-

can) socket head screws or ISO metric sizes. A mistake here may cost you a mutilated or stripped screwhead. The Torx head is ideally strong for scope bases and rings and resists cam-out.

In fact, it holds so well to the wrench that it's easy to apply too much torque. The possibility of breaking the screw or stripping a thread is more likely with the Torx head. The Fillister head (square slot) screw provided a sort of safety gap here as screwheads would give way before too much torque could be applied. Conclusions As with all elements of gunsmithing, understand your problem and use the best tool for the job.

It may pay off to learn more about screw threads and the necessary torque for various screw threads in a variety of applications. The chart provided below will get you started. The use of a torque wrench can be an education in itself. AG Screw Application and Torque Recommendations Screw Type or Screw size/thread Comments Position on Gun Recommended Torque Fillister or socket 1/4-28 40 inch lbs. No pillar bedding, wood stock head guard screws at receiver ring. 1/4-28 40-45 inch lbs.

With pillar bedding or synthetic stocks reduce rear tang screw torque by 10 inch pounds on wood stocks. 1/4-28 50-60 inch lbs. Fiberglass stock with bedding block 10-32 20-25 inch lbs. Unless center guard screw is well supported. Only light torque is recommended. Scope ring screws 6-size 10-12 inch lbs. Reduce by 10% for aluminum rings Scope base screws 6-48 18-24 inch lbs. Screw size and threaded metal (all head shapes) 8-40 25-30 inch lbs. varies widely here.

FROM THE ARCHIVE

Tech Topics

In this feature we examine tools, tooling, tips, techniques and news of interest to the gunsmithing community.

BY AMERICAN GUNSMITH EDITORS SEPTEMBER 2010

ORIGINAL PP. 11-13

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The firearms industry is always producing new items of interest. Here we'll take a look at a few interesting developments of interest to gunsmiths. Sub-Caliber Solution By the time this is read we hope empty retail shelves and low distributor inventories will be things of the past. According to a conversation with pertinent people at The National Shooting Sports Foundation, ammunition manufacturers are adding shifts and working 24/7 to increase production. But why did it happen in the first place?

Was there some super secret, DC-type deal behind closed doors dominated by the anti-gun groupies? Apparently not. Primarily, shortages have been caused by the need to fill military contracts. Secondly, the period from October, 2008 through 2009 accounted for history's largest surge in firearms sales.

Combine these factors with hoarding due to uncertainties or fears of anew administration and Congress and you begin to understand why prices have soared, orders remain unfilled or arrive short if they arrive at all. This has been particularly true of 9mm, .38, .380 and .223. The handgun calibers suffer because the same machinery is used in making all three and the .223 be-

cause it's the steady diet for the US military standard issue M16/M4-series along with the M249 Light Machine Gun.

Added to this is the booming popularity of the semi-automatic civilian AR15 and various clones. We predict if it hasn't happened already it won't be long before there will be more add-ons, upgrades and "drop- 22LR conversion kit for the AR15 consists of instructions, a substitute bolt assembly and a 26 round rimfire magazine solidly integrated with a polymer housing that fits the existing magazine well.

When installing the bolt the spring side is positioned upwards. ins" for the AR than there are for the Model 1911A1. Well lookie here, there are more than a couple AR15 style rifles coming out from reliable and large gun makers chambered for the .22 LR. Of course, that means a whole new gun has to come out of the household budget. Instead, why not a real, honest-togoodness drop-in conversion for the .223 caliber? We mean a .22 conversion so simple one of Geico's cavemen could install it and it would still work.

We found exactly that on Brownells site (Brownells.com) before we saw it in person at this years' SHOT Show. The gang from

Montezuma is on the web every month with intriguing new stuff, discontinued item specials and a section called "Gun Tech" that can help satisfy a gunsmith's thirst for more know-how. The kit we received (#100-003-921) consisted of complete installation directions, a bolt assembly and a magazine to fit an AR with a 26 round .22LR mag permanently built into it (#080- 000-548).

It is simplicity personified. So is making the conversion. It happens in seconds. The rifle is completely unloaded, made safe and the.223 magazine removed. With the bolt in its forward position, push the rear take-down pin to the right and open the gun. Pull the charging handle back 3 or 4 inches. Remove the bolt assembly from the receiver. Install the conversion unit (bolt) with its cylindrical guide and spring at the top. Push the assembly forward until it stops flush with the rear of the receiver.

After that, finger pressure alone seats the conversion. Close the rifle, push the take-down pin back in, lock the upper to the lower and you have what was a gas operated rifle readied for blow-back operation. Once it has been charged, the .22LR magazine snaps into the rifle as would any standard AR15 magazine.

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The conversion functions flawlessly with high velocity .22LR, with copper-clad or coated round nose bullets preferred for cleanliness. Standard and hypervelocity shells aren't as reliable. Rimfires are prone to producing residue so the action and conversion should be scrubbed and lubricated every 300 to 500 rounds. Perhaps more often if naked or lubedup lead is the bullet material.

In conversation with Brownell techs they bragged not about this conversion transforming a reasonably accurate, out-of-the box, semi-automatic centerfire AR into a semi-automatic .22LR tackdriver. At best, it will become a real fun plinker for adults and a fine learning tool for young or new shooters. Still, look at the math. We checked in with some local dealers. A twenty round box of the cheapest domestic-made 55 grain FMJ .223 is priced at \$9.95 but better quality ammo goes up to \$29.95 in a hurry these days.

Two bricks (1000 rounds) of good-to-very good quality, domes tically manufactured .22LR High Velocity can be had for \$19.95.

On closer examination anyone can readily see the economic advantages of this conversion but what may happen to the inherent accuracy of a 223 caliber case (A) through which the rimfire slug travels before contacting the bore. This extension fills the regular.223 chamber to make firing much smaller rimfire rounds possible. well-built AR, once converted, merits further discussion.

The small, straight case cartridge is inserted in a breech totally integrated with an extension that is, in reality, a steel .223 caliber empty bottleneck case. The conversion's spring-driven firing mechanism strikes the rim of the smaller case igniting the primer compound contained there-in. The 40 grain bullet has to travel inside the bottleneck case for about 1 7/8 inches before exiting the throat of the extension to make contact with the bore. That's all lede, folks.

During its freeflight through a .22 may bump against the inside of the extension shoulder and "ride" it up into the throat. Finally, the AR-15 bore measures .224. All

.22LR bullets do not. We have miked some cheap stuff to be only .221 diameter. That makes for a lot of rattle banging on the way out of a .224 bore. Strong Medicine There are general practice physicians and those who specialize.

Looking ahead to the day you will be handed a gun bore or chamber so choked with carbon or copper fouling it's gagging instead of hitting what it's aimed at, call in one or both of these two specialists by Bore Tech, Inc. The C4 Carbon Remover quickly loosens and isolates powder fouling other cleaning chemicals leave behind on rifling, muzzle brakes, compensators and revolver cylinders. How quickly? From fouled to clean in 5 to 10 minutes with no scrubbing required.

Cu+2 Copper Remover attacks the worst kind of copper fouling without ammonia or any other barrel damaging chemical agent. The time required is three to five minutes from first wet patch to the final dry one.

TECH TOPICS CONTINUED

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JOFRE Cleaner Friedheim Tool Company (ftcsteamers.com) manufactures a number of water-based, high-pressure steam cleaning systems and their Jofre Cleaner 7500 is specifically designed for large volume firearm cleaning in the shop. The Jofre blasts pressurized steam through a variety of nozzles and wands available in all calibers and sizes propelling pressurized steam and rust inhibitor through a brush that eats through fouling and gunk.

This works as well as harsh solvents but the active ingredient is distilled or filtered water. To use, fill the unit with water and power it up with a standard electrical outlet. Arma-Sol Rust Inhibitor is a recommended treatment as it leaves protection on cleaned metal sur-

faces but plain water will clean just as well. Attach the desired accessory cleaning nozzle or wand to the coupling on the hose.

Once water has cycled into the unit and the operating temperature is reached, as indicated by a light on the side of the unit, point the nozzle at the gunk and step on the foot switch in short blasts. Nozzles can clean inside receivers and other machined parts and caliber-specific wands with brushes scrub inside barrels. The water evaporates immediately, leaving the metal dry. While the nozzle heats up and gloves should be worn. The control box plugs into a standard outlet and is controlled by a footswitch.

The clear hose on the back of the unit draws water in from a jug. A variety of caliber-specific accessory nozzles are available. worn

while handling gun parts, the blast of steam is safely cooled inches away. When finished, relubricate the moving parts and you're done. If you run a shop handling a sizable number of firearms this unit is a great addition.

While it is out of the price range for most hobbyists it is well worth the speed and convenience. This pistol barrel wand has a bore brush on top and two nozzles for blasting gunk. Convenience for a professional. Nozzles and wands can be swapped in a few seconds and the foot switch allows both hands to work. This unit eliminates the need for most cleaners and degreasers, saving money in the long run and eliminates health and environmental concerns by replacing chemicals with water. AG

FROM THE ARCHIVE

Lathes, Mills, Drills

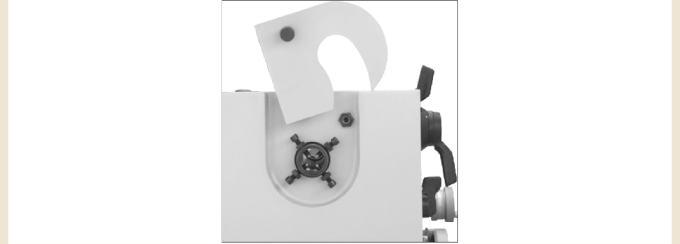
BY RICHARD MACLEAN SEPTEMBER 2010

ORIGINAL PP. 14-18



Below left: The author purchased a new combination lathe/mill unit because of insufficient space for separate units. This Model G0492 Grizzly 12" × 36" has the size and capacity to do the range of projects envisioned.

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Below right: Grizzly offers two different lathes specifically designed for gunsmithing with unusually large spindle bores and outboard spindle spider supports (pictured). The modestly priced Grizzly G4003G gunsmith lathe plus a table mill was an alternative, if space were available, but the size and flexibility of the X & Y power feed on the combination unit was the deciding factor.

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Part Two: Picking the right size and the import machinery market. by Richard Mac Lean There are gunsmiths in the faroff Land of Oz who have access to unlimited floor space, three-phase power, high bay entrances, and money to buy new Bridgeport vertical mills, South Bend lathes, and Dayton floor drill presses. For the rest of us living in the real world the pitfalls of buying metal working machinery are as numerous as the options.

In Part One of this series we discussed key considerations in buying industrial-sized machinery and, specifically, cautions when buying used equipment. In this second and final part we offer some guidelines on sizing equipment for gunsmithing, examine the import market and consider "three-in-one" combination units that can be a practical choice to those who need to perform lathe, milling and drilling operations but are on a budget and have limited space. What Size Is Right?

In terms of lathe size, the key break point is related to the need to do rifle barrel work. Walter Howe in *Professional Gunsmithing: A Textbook on the Repair and Alteration of Firearms* states, "An ideal size for the gunsmith would seem to be one that can accommodate at least 36 inches between centers and having an 9-inch swing. It should be equipped for thread cutting and have automatic cross feed.

Also, where it is anticipated that much barrel work (chambering) is to be done, the headstock spindle should have a hole in it that is at least 1 1/2 inches in diameter, so that a 'rough' barrel blank can be held close to the chuck face for chambering and the like." Charles Edward Chapel in the *Complete Guide to Gunsmithing* recommends, "...a swing of 10 inches. This Model G0492 Grizzly 12" X 36" has the size and capacity to do the range of projects envisioned.

The modestly priced Grizzly G4003G gunsmith lathe plus a table mill was an alternative, if space were available, but the size and flexibility of the X & Y power feed on the combination unit was the deciding factor. It is 37 inches between centers... The headstock has a 3/4-inch spindle." Roy F.

Dunlap in *Gunsmithing* states, "The gun shop lathe should be large enough to handle a bolt-action rifle — receiver with a 26-inch barrel — and should have a 1 1/4-inch hole through the head, so any barrel or blank can be put through for cutting off and crowning. Bed should be not less than 36 inches, although swing does not need to be large." W. F.

Vickery in *Advanced Gunsmithing* states, "A lathe of large swing is not required for the gunsmith's work but it should have length enough between centers to handle the longest barrel ordinarily used. Another thing in a lathe that is of great advantage is a

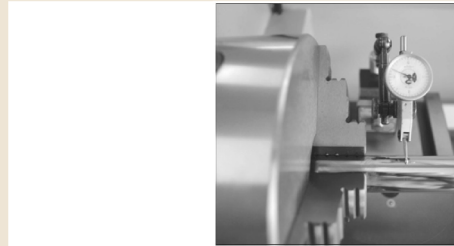
LATHES, MILLS, DRILLS CONTINUED

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Above left and right: Chinese mills and lathes have improved dramatically over the past decade and well-known brands such as Grizzly, Jet, Shopmaster, and Smithy have their own on-site quality inspectors. Pictured is runout being measured on the headstock (left) and mill spindle (right) on a Grizzly combination unit.

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Above left and right: Chinese mills and lathes have improved dramatically over the past decade and well-known brands such as Grizzly, Jet, Shopmaster, and Smithy have their own on-site quality inspectors. Pictured is runout being measured on the headstock (left) and mill spindle (right) on a Grizzly combination unit.

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Below left and right: .45 auto barrel is being machined (left) for an Arizona police department crime lab as a visual aid explaining rifling to jurists. Gun cutaways are useful for training or sales. When making machinery purchases opt for maximum flexibility because you never know what unusual projects might come up.

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Below left and right: .45 auto barrel is being machined (left) for an Arizona police department crime lab as a visual aid explaining rifling to jurists. Gun cutaways are useful for training or sales. When making machinery purchases opt for maximum flexibility because you never know what unusual projects might come up.

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Above left and Pictured is runout being measured on the headstock (left) and mill spindle (right) on a Grizzly combination unit. hole through the head spindle large enough to take the largest diameter barrel, which is about 1¼" usually." Visit the specification pages on the website of any barrel maker such as Douglas Barrels, Inc. of Charleston, West Virginia and it becomes very clear why these authors chose these overall dimensions for rifle work. In terms of mills for gunsmithing, there is more flexibility.

Walter Howe in Professional Gunsmithing believed that, "The best type of miller for the gunsmith who needs such a machine in order to do his specialty work, is one of the table models equipped with power longitudinal feed.

There is very little milling work that the gunsmith will be called upon to do that cannot be done on one of these small machines." Patrick Sweeney in Gunsmithing Pistols & Revolvers states, "When considering the purchase of [a mill or a lathe], you should look carefully at what you plan to do, how much it will Below left and 45 auto barrel is being

machined (left) for an Arizona police department crime lab as a visual aid explaining rifling to jurists. Gun cutaways are useful for training or sales.

When making machinery purchases opt for maximum flexibility because you never know what unusual projects might come up. cost, and how often you plan to do it. The two competing temptations when buying either a mill or a lathe is to get one that is either too small, or get one that is too large." Yes, size really matters and it is worthy of well thought-out consider

LATHES, MILLS, DRILLS CONTINUED

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Above right: Machine equipment is just the price of entry to gunsmithing. You can buy entire sets of items such as end mill holders, collets, etc., on web-based auctions such as eBay. On rare occasions at garage or estate sales you can find entire sets of precision tools and gauges complete with a mechanic's chest.

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For new units there can be a wide variety included in the base cost. Items such as live centers, vices, and lathe dogs are universally available but attachments such as face plates, steady and moving rests, threading gears, and chucks can be specific to the unit and expensive or difficult to locate for used equipment. You can buy entire sets of items such as end mill holders, collets, etc., on web-based auctions such as eBay.

On rare occasions at garage or estate sales you can find entire sets of precision tools and gauges complete with a mechanic's chest. In addition, especially when it comes to your budget. Even with all of the preceding comments by authors of classic gunsmithing books, the final choice will depend on what you anticipate doing now and in the future, along with recognizing that occasional non-gunsmithing projects may come up. Once done with the size question you will next need to consider whether to buy new or used.

In Part 1 of this series we discussed the care that needs to be exercised when buying used equipment. Used equipment can offer the greatest value for your money but only if you are cautious and buy right. Next we examine the new equipment market.

Import Market For those of you that need something sooner (like last week) and without the associated risks of used equipment, new equipment is the way to go.

As stated in Part One, there are obvious choices if you have an unlimited budget and prefer to purchase American or European equipment. Korean and Taiwanese imports were first on the scene to offer units at a fraction of the cost and machinery from mainland China started to appear soon thereafter. For example, advertisements for Jet and Grizzly Industrial machinery frequently appear in gun magazines.

The former distributes lathes made in China and mills produced in Taiwan and the latter distributes both lathes and mills manufactured in mainland China. When I was a kid in the 1950s, "Made in Japan" was synonymous with poor quality. We all recognize today that Japan successfully moved up the product chain from cheap toys to the finest quality automobiles, electronics, and optics.

I attended a series of meetings in China in 2008 and listened to business managers discuss their strategies to make the same



Above left: Total up the basic accessories that will be needed for gunsmithing. For new units there can be a wide variety included in the base cost. Items such as live centers, vices, and lathe dogs are universally available but attachments such as face plates, steady and moving rests, threading gears, and chucks can be specific to the unit and expensive or difficult to locate for used equipment.

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progression. Judging by my tour of an automotive assembly plant in Xiangtan, China they are far along in the process. The point is that one cannot judge the quality of Asian imports today by evaluations and judgments made as few as five years ago. Keep this in mind when conducting Internet searches looking for customer evaluations.

I have seen equipment reviews as old as a decade still up on the Internet. A good starting point for more current information is the online forums at www.machinetools.com/us/forums. Many gunsmiths agree that the quality of Chinese imports has improved and should not be a barrier any longer. For example, well-known writer and retired gunsmith Reid Coffield states, "In general, I am pleased with the imported machine tools I have purchased."

I think that for the money, I have gotten pretty good value, and the machines have served me well." That is not to say that there cannot be problems as issues can arise with any brand anywhere in the world. The products of each manufacturer need to be individually evaluated. The major brand-name distributors such as Grizzly have their own quality control

LATHES, MILLS, DRILLS CONTINUED

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(QC) inspectors on their payroll who are at the factory during the assembly process and use a detailed checklist of tests to run on every machine on the line. They also inspect subcomponents before they are even installed. Both Smithy and Shopmaster (more about these combination units later) have similar QC procedures, including detailed specifications for alignment and runout tolerance limits for key areas.

In checking the runout on the new Grizzly unit I bought I found it to be within a few one ten-thousandth of an inch from specification and the slight difference was probably due to my own measuring technique. Aside from the QC inspections and warranty agreements on new equipment, some companies will run Internet or advertised specials which might include free shipping or the addition of useful accessories at no extra charge.

Units can be bought with single-phase 240-volt motors so the power issue discussed earlier in Part One is not an issue. If you have made the decision to buy you should also get out the tape measure and make sure that you have room in the shop. Having both a full-sized mill and a lathe capable of doing rifle barrel work requires a surprisingly large amount of floor space considering the access room necessary around the units. Distributors can supply these dimensions.

Making A Choice Deciding which new unit to buy can be influenced by a host of different factors that are really a matter of personal preference. As stated, the major brands generally have detailed QC procedures. The ones that have been around for years advertise in national magazines and have a QC staff that is more likely to be there when you need technical support or warranty work.

There are new, inexpensive “no-name brands” that can be found on the Internet through sources such as e Bay but you get what you pay for and, for my money, I’d rather go with a known entity. As large as my shop is I did not want to take up the remaining space with sepa-

rate units. Budget was also a consideration since I needed the flexibility of having both units but could not afford two full-sized machines. I found that a combination unit is, at least for my requirements, a viable choice.

These are attractive since they can be obtained new with a guarantee from reputable distributors, are reasonably priced and are large enough to do barrel work as the headstock bore ID is greater than one inch and bed length is a minimum of 32 inches. Grizzly, Shopmaster, and Smithy sell units that meet these requirements and also have a wide range of accessories.

Smaller combination units such as the Prazi Powerturn and Central Machinery’s “multipurpose” units are also available but they have relatively short beds, small spindle bores, 120-volt motors and do not include as many options and accessories. They may be fine for handgun work but I wanted something approaching an industrial-sized unit since I envisioned doing other types of machining besides gunsmithing. As the comparison table of these three units indicates, each machine has strengths and weaknesses.

For example, two of the units, especially the Shopmaster Patriot with its three-axis power feed, state that it is possible to add computer numerical controlled (CNC) automation. In today’s commercial machining environment, CNC has become almost mandatory and as hardware and software prices continue to drop they are within the reach of gunsmiths and even home hobbyists. If this option is in your future plans consider that separate machines will require buying two systems.

Likewise with digital readout systems, flood coolants, benches, and so on. In this field, the 3-in-1 machine offers considerable advantages since a single option can be configured to function on both the lathe and mill. I chose a combination unit knowing full well that dedicated, separate units are generally the best option.

LATHES, MILLS, DRILLS CONTINUED

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Internet chat rooms are littered with posts droning on this point endlessly. I was particularly interested in the lathes Grizzly offers that are made specifically for gunsmithing such as the G4003G and G0709 models that have unusually large spindle bore diameters and outboard spindle spider supports. I also wanted a mill and was limited in both floor and tabletop space. As you get further into doing your homework on making these purchases you will soon realize that numerous individual preferences are involved.

No single unit can necessarily satisfy every need. I purchased a Grizzly combination unit, specifically the G0492, because the mill is mounted in the center of the bed instead of directly over the headstock, it has a large bore diameter and a good bed length. This unit included a table with cabinets, splash shield and other accessories such as a 4-jaw chuck, faceplate, steady and moving rests, and free shipping.

For all of these distributors there are Internet specials to be had at any time and shipping and accessories promotions can change. I happened to catch Grizzly at a particularly good time. While I chose the Grizzly, I cannot strongly recommend one of these three units over the other as they are all good machines. Again, you have to consider your long-term needs.

For example, Patrick Sweeney in the previously mentioned Gunsmithing Pistols & Revolvers states, "[The Smithy 1220 XL with a 20" distance between centers] is large enough to handle any handgun milling need. It is also a lathe. The mill head can be used as a drill press. Three

tools on one, for less cost and less floor space than three separate tools." In essence, I was using the same logic but applying it to rifle work.

What I can say with certainty about new equipment is that when problems arise it is really nice to be dealing with reputable companies such as these. For example, there was some minor shipping damage on my unit and Grizzly immediately took care of it for free. They were also there to answer my questions during start-up. Yes, you can save money by taking chances with the no-name warehouse brands, but when problems arise you may be muttering to yourself instead of talking to a technician to correct the problem.

One of the reasons for including such a detailed listing of specifications is to provide readers with a shopping list of factors to consider no matter what type of unit is being bought — new or used, mill or lathe. Speaking of shopping lists, one should also consider the cost of basic accessories such as chucks, rests and tool holders.

It is important to estimate and total up the costs of all of these in order to do a fair comparison since both new and used equipment can come with a range of various accessories and tooling included in the base cost. The need to investigate the availability and cost of accessories is critical when buying used equipment no longer manufactured because compatible accessories might be expensive or difficult to find.

In general, one can find repair parts and accessories for major brands such as Bridgeport and South Bend, but buying a

fifty-year-old obscure brand of machine can present some real difficulties. For example, if you frequently need to center oddshaped parts on your lathe and it is impossible to buy a compatible, independent 4-jaw chuck, you are out of luck. That bargain used lathe is now a liability. The occasional need for specialized tooling is always a factor no matter which type of unit(s) you own.

Tooling is readily available through distributors such as Brownells (500+ page catalog, including specialized gunsmithing tooling), Enco (1,100+ page master catalog), Grizzly Industrial (600+ page catalog), and MSC Industrial Supply (2,000+ page metalworking and 4370+ page master catalogs). If you are patient and lucky sometimes you can find entire new and used sets of tooling at bargain basement prices on the Internet.

If you are particularly lucky you can find mechanic tool chests loaded with top quality tools and gauges at estate or garage sales.

Vendor contact information Combination Units Grizzly Industrial Bellingham, WA 98229 grizzly.com Shopmaster Las Vegas, NV 89131 shoptask.com Smithy Ann Arbor, MI 48106 smithy.com Phase Converters American Rotary (Gentec) Port Washington, WI 53074 americanrotary.com Equipment Rebuilding Gallery of Machines Marathon, NY 13803 galleryof-machines.com Tooling MSC Industrial Supply Melville, NY 11747 mscdirect.com (Master Catalog) mscmetalworking.com Enco Fernley, NV 89408 use-enco.com G

PEOPLE & COMPANIES

Marlin .38 Standard 1878 Pocket Revolvers

The famed long gun company began life building revolvers. The 1878 was Marlin's first centerfire model.

BY DAVID R. CHICOINE SEPTEMBER 2010

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Did I hear you right, Marlin revolvers? Yes, in fact the company we know so well today as being famous for making hunting rifles started during the Civil War and their first products were handguns. Gunmaker John Mahlon Marlin began his distinguished career in 1863 by manufacturing .22 single shot pistols at his New Haven, CT factory.

During this time, the Rollin White patent, covering the manufacture of revolvers with cylinders bored through to accept a rimmed, metallic cartridge, stood and the rights were assigned solely to Smith & Wesson. Thus, S&W and Rollin White himself were the only parties who could legally manufacture and sell metallic cartridge revolvers until this patent expired. The S&W Model-One .22 rimfire (a design using a barrel that tipped-up) was the first successful metallic cartridge revolver.

After the S&W/Rollin White patent expired in 1869 Marlin, like many other gun makers, expanded his small line to include single-action, metallic cartridge revolvers. Most of these early Marlin single-action revolvers were patterned after Smith & Wesson's very successful, spur-trigger, rimfire revolvers. In this tip-up design the barrel was latched to the frame at the bottom

in front of the cylinder and was hinged to allow the cylinder to be removed for loading and unloading.

In 1876, Marlin added the .38 Standard 1878 Pocket Revolver. This became, up to that point, his largest revolver and the first centerfire handgun to be added in his growing line of tip-up barrel revolvers. Marlin 38 was almost a spittin' image of the tip-up Smith & Wesson revolver. Only about 12,000 of these innovative and well built little pocket single actions were ever made. made the .38 Standard 1878 revolvers from 1876-1887 with total quantities manufactured estimated to be roughly 12,000 weapons.

This wellmade and very simple single action was offered only with a 3¼" round, ribbed barrel and its cylinder held five shots chambered for the then brand-new .38 Smith & Wesson caliber. Expelling the empty/fired cases from the cylinder was a slow process that was accomplished at the rate of one-chamber-at-a-time. Ejection occurred by the purely manual process of opening the barrel, removing the cylinder, then sliding each chamber mouth-first over the ejector rod that was screwed to the bottom of the barrel.

Simply put, this was an exact copy of the crude system employed by Smith & Wesson on their first rimfire revolvers. Although Marlin's 38 Standard looked very much like an exact copy of S&W's Tip-Up revolver it really wasn't, at least not quite. While Marlin did follow the basic Smith & Wesson design principles, unlike the S&W which used pivot points on each end of the cylinder to hold the cylinder centered in the frame, Marlin opted to use a separate, screw-on axis (base) pin that threaded into the frame.

The .38 Standard also used an ingenious and somewhat more complex devise to fasten the hammer to the frame. While acting as the hammer pivot, the head of the hammer screw-stud also doubled as the mount for the spiraled, flat-leaf handspring as well as providing a hole for the center side-plate screw to thread into. No, the Marlin's were not built with the exacting machine work and wonderful finishes of the Smith & Wessons but these little revolvers were nevertheless very well-made weapons.

Certainly, I don't think anyone would argue they were several grades above some of the so-called "suicide specials", those poorly built pistols that were being produced in Europe

MARLIN .38 STANDARD 1878 POCKET REVOLVERS CONTINUED

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To eject spent cases, place cylinder chambers over the ejector rod. Look for the little “spud” under the head of the barrel pivot. It locks into a notch in the right frame hinge to keep it from turning. for the mass-markets of the day. This quality handgun was Marlin’s last single action and their second-to-last offering in the field of revolvers.

The 1878 Pocket was followed in 1887 for a brief period by a .38 Double Action Top-Break revolver before the factory decided to devote its attention entirely to the manufacture of long guns in 1899. Disassembly Instructions Before starting any work, let’s follow some basic safety procedures and make certain this weapon is empty. Grasp the revolver by its grip and point the muzzle in a safe direction, keeping your fingers away from the trigger (#28).

Use your thumb to pull the hammer to the rear slightly until you hear one “click.” This places the revolver in the half-cocked or loading position. Reach under the barrel/ frame

and with your other hand pull up on the barrel catch (#6) to unlatch the barrel, then pivot the barrel (#2) all the way up. Reach in and pull the cylinder (#3) forward off the base pin and out of the gun. If any cartridges are in the cylinder chambers, remove them now and place them in an area apart from where you are working.

Barrel removal and disassembly. We can remove the barrel by first unscrewing and removing the barrel pivot screw (#5a). The barrel pivot (#5) may now be carefully tapped out from the left side of the frame hinge using a small, straight pin-punch and hammer. Take note of the small “spud” under the head of the barrel pivot and of how this spud must align with its corresponding notch located inside the hole in the right hinge for correct reassembly.

Once the barrel pivot is out, the barrel can be simply lifted out of its hinge in the frame (#1). The ejector rod (#9) can be removed from the barrel by first unscrewing and re-

moving its screw (#10), then Sometimes they get stuck with rust or hardened grease so we have used a tapered punch as a lever to help with removal. pulling the ejector rod forward out of its seat in the barrel.

The barrel catch (#6) is removed after first loosening and removing its screw (#7), located at the rear of the barrel, once that screw is out the barrel catch (#6) and its spring (#8), which is a small coil spring not shown in the illustration, can be withdrawn out the bottom of the barrel. Be sure to notice the position of the notch in the shaft of the barrel catch as this should face rearward for later assembly.

The front sight (#11) is held in its place in a machined slot in the barrel rib by a short sight pin (#12) which may be driven out in either direction using a small cup-tipped pin punch and hammer. Hint: After

MARLIN .38 STANDARD 1878 POCKET REVOLVERS CONTINUED

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the sight is removed make a mark with a Sharpie marker on its left side on the bottom half for reference so you may put it back exactly as it was removed. Remove the grips and sideplate. Unscrew and remove the grip screw (#13) and carefully lift off the grip panels (#14 and #15). Using a suitably sized hollow-ground screwdriver, unscrew and remove the two sideplate screws (#17 and #18).

Turn the frame over onto its side and hold it by the hinge so that the sideplate is facing up making sure to hold the frame over a padded surface. Using a plastic or wooden mallet, tap the grip frame with a few sharp blows. This tapping action will cause inertia and the sideplate (#16) will jump up and out of its seat in the frame for removal. Don't ever attempt to pry or lever off the sideplate as serious dam-

age to it and the frame that affects the frame fit can result. Remove the mainspring and the hammer.

Use a pair of spreader-type pliers to compress the top of the mainspring (#24) so that the hammer stirrup (#23) can be rotated forward and disengaged from its seat between the ears at the top of the mainspring. Next, loosen the strain screw (#25) located in the bottom-front of the front grip strap on the frame. The mainspring is now loose so it can be withdrawn from the frames side.

With the hammer forward, use a small screwdriver as a lever and carefully pry the handspring (#19a) out of its seat with the hammer stud. Be sure you notice its positioning on both ends for reassembly later. Rotate

the hammer slightly backwards and remove from the rame. The hand is removed by lifting it out of its pivot hole in the hammer. Notice the inset hammer stud/screw to the right of the hammer. Select an appropriately sized screwdriver to unscrew the hammer stud (#20), unscrew and remove it from the frame.

Now, rotate the top of the hand (#19) toward the rear and lift it out of its hole in the hammer. Hold the trigger (#28) to the rear. The hammer (#21) can now be now rotated to a point about half-way rearward, lifted up and out of the frame. Remove the stop cover plate. Unscrew and remove the stop cover screw (#29), this is the small screw located on the frame bottom just forward of the trigger. Hold the frame up

MARLIN .38 STANDARD 1878 POCKET REVOLVERS CONTINUED

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side down by the grip, hold the trigger to the rear and tap the frame just on its side around the trigger area a few short-sharp blows with a plastic or hardwood mallet. This action should cause the stop cover plate (#30) to be shocked up and out of its seat with the frame by inertia. Never try to pry off the stop cover plate as you may permanently damage it and its fit in the frame. When the stop cover plate has jumped loose, remove it along with the stop spring (#31), noting their positions for re-assembly later.

Removing the cylinder stop and the trigger. Use the correct size cup- Marlin .38 Standard 1878 Pocket Revolver (Specifications subject to change without notice) 1 Frame 2 Barrel 3 Cylinder 4 Base pin 5 Barrel pivot 5a Barrel pivot screw 6 Barrel catch 7 Barrel catch screw tipped pin punch and a small hammer to drive out the stop pin (#33), this is the forward-most of the two pins that pass through the frame from side to side.

Removal of the pin frees the stop (#32) which may now be pushed out toward the bottom by using a small punch through its window in the frame. Note how the tail at the rear of the stop fits over the shelf at the top-

front of the trigger for correct reassembly later. Once again, use the same cup-tipped pin punch and hammer to drift out the trigger pin (#27).

The trigger pin is the rear-most of the 8 Barrel catch spring (not shown) 9 Ejector rod 10 Ejector rod screw 11 Front sight 12 Front sight pin 13 Grip screw 14 RH grip 15 LH grip 16 Sideplate 17 Sideplate screw, rear 18 Sideplate screw, center 19 Hand 19a Handspring 20 Hammer stud 21 Hammer 22 Stirrup Pin 23 Stirrup 24 Mainspring two pins that pass through the frame from side-to-side. The trigger (#28) is now free and may be pulled out through the bottom of the frame along with its attached trigger spring (#26).

The trigger spring is fitted tightly into a slot machined into the lower-rear portion of the trigger. The remaining piece on the frame is the base pin (#4). The base pin is threaded into the frame using a lefthand thread and will unscrew in a clock-wise direction, that is, looking at it from the front. Reassemble the revolver by reversing the order of disassembly. AG 25 Strain screw 26 Trigger spring 27 Trigger pin 28 Trigger 29 Stop cover screw 30 Stop cover plate 31 Stop spring 32 Stop 33 Stop pin

MEASUREMENT & INSPECTION

Reader Forum

BY AMERICAN GUNSMITH EDITORS SEPTEMBER 2010

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Winchester 1400 I have an older model Winchester 1400 16 gauge in my shop that is missing the upper half of the magazine throat and I have not found anyone who sells or even lists that part. At one time the 1400 was made with a two-piece throat. Evidently, you have one of them. If Jack First can't provide it call Nu Line Guns Savage 820B I recently worked on a Savage Model 820B 12 gauge shotgun that had a broken slide lock spring.

After replacing the spring and reassembling the gun, the slide lock would engage whether the gun was cocked or not. I did not want to modify the spring to give more tension when the hammer was down as I thought that would loosen tension when the hammer was cocked. The gun functions properly otherwise. This is the first 820B I have worked on and I am wondering if I missed something or does that model lock the bolt all the time?

It looks like the small stud on the left side of the hammer is supposed to depress the end of the slide lock spring to disengage the slide lock when it is in the fired position. Is there an adjusting procedure for this spring? We don't quite understand how increasing tension on a relaxed spring will lessen it on a compressed spring and we have no knowledge of the bolt locking tendencies of the 820B. One person who might specializes in outof-production Savage firearms and sells parts for them.

He runs the Small Arms Shop located in Inverness, FL and is only available Monday to Friday between 5:30 and 9:00 pm. Model 887 I work as a repairman for Remington Arms at the Ilion Firearms Plant & Custom Shop in New York. Obviously, my interest lies mostly with

Remington guns, especially the old and "obsolete" models we no longer have parts for and may not be able to repair. I've been working with a number of Model 887s lately and wanted to pass along a number of points.

John Savely First, the trigger pins are not the same. The front pin is actually a bit longer than the rear by almost 1/8" Second, there has been a change made to the ejection port cover because it was causing binding of the action, mostly to the rear. My last observation is about the sear pin. It goes in the same way from the left as all others, however, this pin seats into the right wall, which is blind, and does not go all the way through.

Patrick Bielanski Thanks for the note and for keeping us up on engineering changes on your classic firearms. Winchester Model 50 I'm looking for information on this shotgun. Has American Gunsmith done an article on it? We have but it was so long ago no reprints are available. The material in the article was based on information provided in Brownells Encyclopedia of Modern Firearms which is still available from that source.

In addition, Google up the shotgun and you'll find a large number of owner comments you'll find very informative. Also, check the link to "Shotgun World" for cleaning/disassembly facts. W. L. Erspamer Winchester 24 Cocking Lever Spring I notice in the schematic for the Winchester 24 shotgun apart called the "cocking lever spring", however, one of my customer's gun does not contain this spring.

The gun is experiencing difficult opening and closing and the cause appears to be related to the forward end of the right and

left cocking levers not remaining upward under spring pressure until the hammers assume the fired position. The spring is available but I have been unable to locate specific instructions on its installation. Don Roberts Shoot The Works, Inc We can only offer limited help on this old timer.

Brownells Encyclopedia of Modern Firearms shows an exploded illustration that indicates the relationships between left and right cocking levers, a cocking lever pin, a dual pronged cocking lever spring and a cocking lever spacer. Buckinghams, a parts provider in Trenton, TN specializes in old Winchesters might be able to provide any parts you are missing and further guidance in assembly.

Mosin Nagant bolt lockup issue I have a Mosin Nagant M91/30 rifle made in the Izhevsk factory in 1944 with a bolt that fails to fully lock about half the time when chambering around. Inspection and comparison with another correctly functioning M-N indicates that the rim of the 7.62x54R cartridge on the problem gun is not consistently positioning itself behind the extractor to contact the bolt face as the round is being chambered.

The problem gun also generally will fail to fully close on an already-chambered round while the other rifle will. That is, on the functioning rifle, the extractor finds away to slip over the rim of a chambered cartridge. Swapping bolts indicates the bolt lockup problem is in the receiver. The extractor tension on both guns is about the same. Dennis Riley Wayne Baughman Annandale, VA We hope it's a wear problem but we fear there may be looseness between the barrel and receiver.

One of the best sources we know of and have often contacted when dealing with

READER FORUM CONTINUED

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imports is Kieth Billado, a practicing gunsmith in Vermont with a Manufacturer's FFL. Contact him at kbillado@riflemag.com Stevens 311 Boxlock ID What does the letter after 311 mean? For example, the 311a, 311c, 311d, 311e, etc. Also, what is the best way to identify when the gun was made? The several books on Stevens firearms I've read never delve into this. You or any other interested collectors should write to the Savage/Stevens Historian: John Callahan, Westfield, MA 01085.

He may charge for his research services, however, the man likely has your answers committed to memory! Bersa Model 23 I have a Bersa model 23 .22LR handgun in need of a hammer spring, but I have been unsuccessful in locating one. I have tried Gun Parts Inc and Jack First to no avail, but not yet been able to contact the manufacturer directly. Are you aware of any place I may be able to find the part? I believe a hammer spring for a Thunder .22 or Firestorm .22 may work also.

Lacking a readily available replacement, can you recommend a custom gunsmith that would be able to fabricate a suitable compression spring? Eagle Imports/Import Sports (Wanna massa, NJ) brings the Bersa to these shores. Call them regarding the part Should they fail you, contact Wolffe Springs in Newtown Square, PA W. Clem Dan Wesson .44 Magnum I received a Dan Wesson .44 Magnum revolver from a customer completely disassembled.

I own a number of Dan Wessons chambered in .357 and .44 that all have side plates, however, my "parts gun" does not. Instead, it features a full frame on both sides. I am not familiar with this particular Dan Wesson variant and am having difficulty finding assembly instructions or a drawing of this version.

It has been quite awhile since Dan Wesson revolvers were made without side plates but we managed to meet up with a current Dan Wesson technician (now associated closely with CZ USA) who recalled enough to help you unravel the riddle. There is a set screw in the lower side of the frame that retains the mainspring guide. Relieve tension on the mainspring, then remove the hammer pin. A latch is attached to the guide. Pull back on the latch to pull out the trigger assembly. Note that this assembly is a tight fit.

Winchester Model 24 Double Barrel Has American Gunsmith ever published an article on the disassembly of the Winchester Model 24 Double Barrel? If not, what is the proper procedure? Dale Lamminen Clarence Funneman We have never done an article on the Model 24 and the only reference we have on it appears in Brownells Encyclopedia of Modern Firearms as an exploded drawing.

Buckingham's, in Trenton, TN, specializes in parts for out of production Winchesters and may be capable of answering your query more completely Shotgun Identification I acquired an old bolt action 12 gauge shotgun with a poly choke that I am refurbishing. The side of the barrel is stamped "American Eagle Model 32C Made in USA." Who is the manufacturer? I am also searching for a parts supplier. Steve Koenig Mark Hill Mark & Angel's Gun Service, LLC We admit to being puzzled.

American Eagle was a product name employed in the past by Hopkins & Allen for some low cost and small handguns. No shotguns, however. Send a photo of the gun, your inquiry and a stamped, self-addressed return envelope to the NRA Museum, Waples Mill Road, Fairfax, VA 22030. AG

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