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INSIDE THE ARCHIVE

CLOSE ENCOUNTER WITH THE TAURUS RAGING BULL

CHILD SAFETY IN SCHOOL • CHOOSING AND FITTING CUSTOM GRIP PANELS • CONTRACTS AND PARTS • A SHOP-MADE ...

ORIGINAL METHODS. MODERN ACCESS.

ARCHIVE EDITION 110

DIGITAL ARCHIVE EDITION

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IN THIS ISSUE

Contents

A complete guide to the searchable editorial work preserved from February 2013.

-
- | | |
|--|---|
| 2 Child Safety In School
AMERICAN GUNSMITH EDITORS • ORIGINAL PAGES 2 | 3 Close Encounter With The Taurus Raging Bull
CHICK BLOOD • ORIGINAL PAGES 3-7 |
|--|---|
-
- | | |
|---|---|
| 8 Choosing And Fitting Custom Grip Panels
ROBERT K. CAMPBELL • ORIGINAL PAGES 8-12 | 13 Contracts And Parts
ARTHUR HUNT SR. • ORIGINAL PAGES 13 |
|---|---|
-
- | | |
|---|---|
| 14 A Shop-made Trigger Shoe
JOHN BAXTER • ORIGINAL PAGES 14-16 | 17 Installing Sling Swivels On A Hunting Rifle
WENDELL DEANER • ORIGINAL PAGES 17-20 |
|---|---|
-
- | | |
|---|---|
| 21 A Unique Method of Custom Scope Base Fitting
NORMAN E. JOHNSON • ORIGINAL PAGES 21-22 | 23 Reader Forum
AMERICAN GUNSMITH EDITORS • ORIGINAL PAGES 23-24 |
|---|---|
-

SAFETY & COMPLIANCE

Child Safety In School

BY AMERICAN GUNSMITH EDITORS FEBRUARY 2013

ORIGINAL PP. 2

Tragedy garners media attention. The masses like to rubber neck and media outlets are happy to oblige them. Unfortunately, knee jerk, irrational “solutions” come more quickly and are voiced more loudly than true causation and an understanding of real problems and statistics. Emotion is easier than math. Monitored over a ten year period, an average of twenty nine children are killed in school bus-related pedestrian accidents every year, that is, struck while getting on or off a school bus.

An additional six children per year are killed as school bus passengers. Source: School Bus Information Clearinghouse (sbi.elitedecision.com) That’s an average of 35 children killed every year traveling via school bus. Statistically, school buses remain the safest mode of transportation for children as it only accounts for two percent of all children killed traveling to and from school. Each year, approximately 800 school-age children are killed in motor vehicle crashes during normal school travel hours.

About 2% of these deaths occur on school buses, while 74% occur in private passenger vehicles. Approximately 22% are bicycle or pedestrian accidents. Source: Safe Routes to School National Partnership, National Statistics on School Transportation (saferoutespartnership.org) Contrast this to the number of kids killed in to school shootings. Despite the high amount of media attention these incidents receive the number is incredibly low.

Jessie Klein, author of *The Bully Society: School Shootings and the Crisis of Bullying in America’s Schools*, compiled data on school shootings. The results

published in her book and a Slate.com article by Chris Kirk found that since 1980 a total of 297 people have been killed in school shootings. On average, that is less than ten per year. A child is three times more likely to be killed traveling to and from school while using the safest form of transportation available than in a school shooting.

During this same time period the overall crime rate has continued to fall. According to the US Department of Justice Bureau of Justice Statistics (bjs.ojp.usdoj.gov), overall, firearm-related crime has plummeted since 1993. All this while firearm sales continue to increase and every state except Illinois has enacted concealed carry provisions. Never mind all that. We need to do something! Fair enough. Let’s do something that might actually work. Lt. Col.

Dave Grossman, a Pulitzer Prize nominated author and West Point psychology professor, compares the problem of school shootings to fire drills, noting that not one kid has been killed at school due to a fire. The reason is we have a better education system in place. Fire making materials have not been banned. Instead, a better reaction to the problem was implemented. Teachers and students conduct fire drills and know what to do in the event of one.

We don’t currently have an equivalent drill for teachers and students in the event of an active shooter. The real enemy is denial and giving in to emotion rather than looking at the facts.

FROM THE ARCHIVE

Close Encounter With The Taurus Raging Bull

I wouldn't consider this hand cannon for concealed carry but, for versatility, it's tough to beat.

BY CHICK BLOOD FEBRUARY 2013

ORIGINAL PP. 3-7

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Hopefully, the ghost of Elmer Keith (1899-1984) won't haunt me or that anyone still living who knew him will think I mention his name here merely to gain added interest in these words. This legend's first contribution to hand cannons appeared in 1935 with the .357 Magnum and his second, the .44 Magnum, was commercially released in 1956. Both rounds were the culmination of his experiments in pushing heavier bullets out of revolver barrels at higher velocity.

Almost instantly, the .357 surpassed the .38 Special in popularity with law enforcement and the .44, propelling a 250 grain bullet out the muzzle at 1200 feet per second, became a formidable favorite amongst handgun hunters. His development of new bullet designs for his boomers is not to be overlooked either. Keith subsequently leaned somewhat on Smith and Wesson and Remington to manufacture a revolver able to withstand his .44 Magnum load.

Though S&W is credited with the first, Harry Callahan's Model 29, Ruger actually beat them to the market with their single

action Blackhawk. Despite not getting involved with the revolver manufacturing, Remington did deliver a more powerful cartridge than the Keith .44 Magnum. It pushed out a 240 grain slug at 1500 ft/s. Dirty Harry warned bad guys he was tagging with, "This is the most powerful handgun in the world. Have I fired five or six rounds?

Do you feel 410, .45 Long Colt and .454 Casull from the same six shot cylinder. The key in the photo belongs to the exclusive Taurus locking system. It is not addressed in the text due to AGA policy that discourages changes other than factory replacement to the safeties of any firearm. lucky, punk?" Harry wasn't kidding. Until the introduction of the .454 Casull, based on the .45 Colt, the .44 Magnum reigned supreme.

What held the Casull back is its recoil, considered excessive by some shooters, and the cost of revolvers to handle it. The cost remained a drawback until Sturm, Ruger and Taurus introduced more economical models in the 1990s. I've never personally fired a .454 Casull but I own a ten inch Blackhawk

in .44 Magnum and have managed several five inch groups at 100 yards with it. What I have experienced, indirectly, was that of a fellow club member. Mr.

Turner, an avid hunter, showed up at our outdoor range with his brand new Casull revolver and 50 rounds of .454. I was at port one checking out some reloads for my target-ready Model 1911A1. Turner, equipped with forearms like a gold-pounder, was clear up at the opposite end of the 40 port range and soon blasted through my ear muffs with noise from four rounds of .454. Admittedly startled, I looked to my right to see him clearing the spent brass from the cylinder and swinging open the shipping box of the gun.

I never found out what became of the revolver. Turner, regrettably, resigned from the club and moved his spray coating business to a small town located northeast of Moosehead Lake in Maine. I figure if he ever lets go with that Casull up there it will scare the trophy moose or bruin he's after to death.

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Closer examination reveals major differences. The black arrow on the Taurus sideplate indicates the tab that must be inserted first in the frame for reassembly. Field Stripping The Raging Bull used in the photos accompanying this article is a pure Model 444 chambered for .44 Magnum. As a result, it could be the best seller amongst its fellow models.

The model that interests me most and supports my earlier versatility claim is the Model 513 as it chambers three inch .410 shotshells, .45 Long Colt and .454 Casull with one, six-round cylinder. Wanna go after varmints? Stuff in the 410. Wanna try out some Cowboy Action loads? Downloaded Long Colt is perfect. Wanna knock out something big or mean? That noisy, barrel-bucking It only appears on Taurus revolvers chambered for the .454 Casull as of now but may show up on future heavy caliber models.

Casull is the can-do round. In addition, the sheer size of the Raging Bull itself can discourage anyone entering your shop or home with harmful intent. And its take down is a mirror image of any other Taurus large frame wheel gun. Be alert, though, as part numbers may vary in the schematics from model to model. To begin, perform all work behind some form of eye protection. A

Depress the take-down latch (10), push the cylinder to the left to swing it open and confirm there are no cartridges present.

Back out the grip screw (52). Get a solid hold on the rubber grip (51). Wobble it back and forth. Keep up the wobbling as you are pulling the grip straight down from the frame. It's on there tight and may release its hold suddenly. With the cylinder open, the gun can receive a basic clean up. I recommend, however, that the side plate be removed as described in the next paragraph. Doing so will enable examination of the revolver's internal parts and allow a flushing away of any accumulated fouling.

This to be followed by a drying with a hair stylist's blow gun and light lubrication. Detailed Disassembly The yoke screw (47), yoke retaining pin (49) and yoke pin spring (48) back out as a unit. Keep them together and separated from the two side plate screws (50). These two come out next. A husky, hard rubber or rawhide mallet is manned for removal of the side plate. The plate is on very snug and has razor sharp edges. Work over a padded bench surface. Hold the gun firmly by its

CLOSE ENCOUNTER WITH THE TAURUS RAGING BULL CONTINUED

ORIGINAL PAGE 5

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barrel and whack on the side of the grip frame opposite from the plate. If it stays put, hold on tighter and whack it harder. Never pry on aside plate. It's ruinous. Still no movement? Whack the thumbpiece (17). That should do it but be very careful in handling the plate. Those edges can cut your fingertips to ribbons. You've already removed the yolk screw. When you did, it loosened the bond between the frame and the lower yolk barrel (See #9). Swing open the cylinder (8) and give it a mild tap toward the muzzle.

Pull out the entire yoke assembly and set it aside. Sooner or later, most revolvers having a coiled mainspring (42), as this one does, will require the services of a paper clip. Straighten it B Aout, then put a short, 90 degree bend in one end. Pull back on the thumbpiece and slowly cock the hammer as-

sembly (24) until you see the hole in the base of the main spring center pin (37). Insert the bent end of the paper clip in that hole to capture the spring.

Move the hammer forward and memorize how the mainspring assembly (40, 41, 42, 43) is installed in the grip frame before removing it. You'll be begging for all sorts of action problems if you reinstall it incorrectly. As employed with the Raging Bull, they perform more as a muzzle brake. The hand (45) is attached to the rear of the trigger assembly (35). Swing the hand back and out of its frame window, then lift it free of the hand spring (33) and pin (34). The spring and pin might decide to come out with the hand.

If not, pick them out and do not lose them. The next challenge for your brain tissues is how the sear (29) engages the trigger when

the hammer is at rest as opposed to when it's cocked. Once you have those positions permanently relegated to memory, pull the trigger just enough to allow the hammer to be lifted from its frame slot. The sear stays with the hammer. I'll be blunt. The sear must remain on the hammer.

Trigger jobs on a Taurus, or any other double action revolver, are not to be attempted by one who lacks multiple experiences adjusting sear/trigger engagement on a Smith & Wesson. Enter Jerry Kuhnhausen's *The S&W Revolver: A Shop Manual* for an excellent text on the subject. Also look for the specialized tooling by Ron Power. Both will avoid sear/trigger foul ups sure to void a factory warranty.

CLOSE ENCOUNTER WITH THE TAURUS RAGING BULL CONTINUED

ORIGINAL PAGE 6

Put another 90 degree bend in the free end of the paper clip. Pull and hold back the trigger. When you see the small hole in the trigger spring center pin (37) insert the freshly bent end of the spring. Grasp the trigger spring swivel (39) with long nose pliers or sturdy tweezers to remove the assembly from its frame recess. What you have in your hand is a paper clip with one end attached to a mainspring assembly and the other end to a trigger spring assembly.

Leave it alone and safely deposit it in a magnetic parts tray. A minor amount of wiggling will prep the trigger to be released from its pivot and withdrawn upwards. Push the cylinder stop (44) down through its frame slot and lift it out. Turn the frame over. Backing out the thumbpiece screw (18) releases the thumbpiece (17). If the cylinder bolt (22) and its spring (23) remain in the frame, invert the frame and remove them. Just above the cylinder bolt is the firing pin retraining pin (21).

Drift it left to right until you can withdraw the firing pin (19) and spring (20). Save the retaining pin, firing pin and spring in the parts tray. Return to the cylinder/yoke assembly. The cylinder stop plunger with spring (12) may have already Parts List Note: If working simultaneously on more than one Taurus revolver of the same caliber, keep the frames, side plates and yokes distinctly separate. They all carry serial numbers.

Get the numbers mixed up and the guns won't go back together. 1 Extractor 2 Cylinder Retaining Bushing 3 Center Pin 4 Center Pin Spring 5 Extractor Spring 6 Extractor Rod Collar 7 Extractor Rod Spring 8 Cylinder 9 Yoke 10 Front Latch

11 Front Latch Spring 12 Cylinder Stop Plunger w/Spring 13 Front Latch Pin 14 Extractor Rod 15 Barrel 16 Frame separated from the lower barrel of the yoke. If not, make it happen. On the upper side of the yoke is the front latch (10).

It is only present on the Raging Bull and other Taurus revolvers chambered for the .454 as an extra line of defense against the pressure/recoil of the cartridge acting negatively on the cylinder. After all, it wouldn't do to have a cylinder flop open immediately after the dangerous game is down but not out. If that added line of defense ever requires replacement the only item holding its three components together is the front latch pin (13). It's a small roll pin. Treat it kindly and with the proper drift punch.

I'm assuming you don't have Sears Robo Grip pliers in your tool inventory as I do. I recommend you add them because they can be opened to span a cylinder and they have pads to cover their jaws. I do not doubt your ingenuity in whipping up a substitute for them but I chose not to and purchased a couple of ready-mades. Whichever your choice, grab the cylinder in one hand. Hold on tight. Squeeze the end of the extractor rod (14) between the padded plier jaws. Turn it clockwise.

Once it's loosened up 17 Thumbpiece 18 Thumbpiece Screw 19 Firing Pin 20 Firing Pin Spring 21 Firing Pin Retaining Pin 22 Bolt 23 Bolt Spring 24 Hammer Assembly 25 Keylock 26 Keylock Spring 27 Keylock Ball 28 Keylock Pin 29 Sear 30 Sear Spring 31 Sear Pin 32 Transfer Bar 33 Hand Spring 34 Hand Pin 35 Trigger Assembly 36 Trigger Spring Assembly 37 Trigger Spring Center Pin 38 Trigger Spring 39

Trigger Spring Swivel 40 Main Spring Assembly 41 Main Spring Center Pin 42 Main Spring 43 Main Spring Plate 44 Cylinder Stop 45 Hand 46 Side Plate 47 Yoke Screw 48 Yoke Screw Retaining Pin Spring enough, back it all the way out by hand.

Look at the rod attached to the "star" end. If it has a groove you're working with an older model. No groove means it's come off the production line more recently. Please be careful getting the yoke off the cylinder assembly. It's not going to fight you. Just use a wooden dowel or the handle of a screwdriver to start the yoke moving away from the front of the cylinder. After it is clear of the cylinder, the extractor spring (5) and its rod collar (6) can be pushed forward and out of the upper yoke barrel.

Whether the same can be done with the cylinder retaining bushing (2) depends on a groove being present in the extractor rod. If there's a groove you can push out the bushing. If there isn't, you can't. The bushing is press fit in. Problem Solving And Cautions Two full pages on these subjects appeared in an earlier article on the Taurus Judge (January 2002). The same material applies to the Raging Bull.

Since I believe that article is still available as a reprint, I'm avoiding rote repetition here by suggesting you refer to this additional source as it will serve you well. AG 49 Yoke Retaining Pin 50 Side Plate Screw(2) 51 Rubber Grip 52 Grip Screw 53 Rear Sight Assembly 54 Rear Sight Spring 55 Rear Sight Pin 56 Front Sight 57 Front Sight Pin 58 Stock Pin 60 Firing Pin Bushing 61 Center Pin Bushing 63 Rear Sight Screw 69 Cylinder distance Bushing

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**TAURUS RAGING BULL (SPECIFICATIONS SUBJECT TO
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FINISHING

Choosing And Fitting Custom Grip Panels

More than simply a handle, stocks and grips can add function, good looks and personality to your project.

BY ROBERT K. CAMPBELL FEBRUARY 2013

ORIGINAL PP. 8-12

Many things are mass produced today. That's fine for economy but sometimes we look toward something that is more personalized. A superbly polished and bright blue handgun is more attractive than the factory matte blue. A custom holster beats identical, off-the-shelf units and a well turned out pair of custom grips really sets off a classic handgun. Custom handgun grips will often be more attractive and more functional than the original.

While there is some demand for after market grip panels for self loading pistols, most are easy fits. The most common requests for custom stocks come from revolver shooters. Part of the reason is that there are numerous variations in revolver grip frames and one size does not fit all. In the interest of proper hand fit the customer may request a grip or stock that is larger or smaller than the factory style.

The reasons for choosing custom revolver grips are many and the most demanding shooters are those who engage in fast draw, cowboy shooting or some type of action shooting. Hunters also occasionally desire a grip that is more comfortable to use with heavy recoiling handguns or a grip set that fits their hand better. One of the acknowledged artists in the custom grip line is Chris Whisler of the Chisel and Plane Workshop (chiselandplaneworkshop.com).

Chris has good ideas that have manifested into first class wood stocks. He does the base work. It is your job to fit the grips to

the handgun. The reason the grips come oversize is two fold. First, personalized fitting means a better, cleaner look that is a link with the artisans of the past. While there are still artisans in the world it seems that they are few and far between. Much of what we do is standard fare but the occasional custom job is satisfying.

Beginning with an oversized grip panel and fitting to the frame results in a perfectly pleasing fit. Second, grip frames differ enough in the case of single action revolvers that custom fitted grips are almost a necessity. Single action revolvers differ more than double action revolvers and there are many generations among the Colt, their clones and even in the fairly modern Ruger line. The proper size of the grip panel is critical for fit and for good marksmanship.

The grip centers the handgun and makes for more accurate shooting when the hand is perfectly centered on the grip frame. Whisler offers grips in small, medium and large sizes and a pencil tracing of the customer's hand is necessary to determine the proper grip size. This pencil tracing is critical. Do not automatically assume a person with large hands needs a larger grip. Sometimes the meaty hand acts as a cushion and the shorter fingers would be over-stretched by a larger grip.

By the same token, some women have small hands but long fingers. It really isn't surprising to find a female shooter needing larger grips than her husband. You will be doing pairs of guns often as cowboy action

shooters need a pair of revolvers, so fitting four grip sets for a family may not be unusual. Grips are ordered to fit the hand size. The oversize fit isn't for hand size as that is already supplied by the thickness ordered from the custom shop.

The oversize wood is there to allow fitting to the grip frame and the customer's hand fit is inherent in the small, medium or large grip size that is ordered. It may be expressed as interior and exterior dimensions. When you order the grips be certain that the customer's preferences are carefully calculated and do not leave anything out that they may prefer. For example, the base of the grips may be ordered in one of three styles.

The beveled base is simply an angled base and possibly the most attractive, but this is preference. This seems the most common factory base, with the flat base being a custom item. Finally, there is an extended base that results in a longer grip as the stocks extend from the frame and the inside of the bottom of the grips angle back upwards into the grip frame. To give an idea of the appearance, this was a common factory grip on the Cattleman .44 Magnum revolver.

Also be certain that you properly identify the firearms. There are at least four different types of Ruger grip frames, including the XR 3 variations. Once the customer has specified this preferences and you have done the hand tracing you are ready to order the grips and await their arrival.

CHOOSING AND FITTING CUSTOM GRIP PANELS CONTINUED

ORIGINAL PAGE 9

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Hand Tracing The shooting hand goes on a piece of white paper. The thumb and the trigger finger are spread apart with the three remaining fingers together. Trace a solid line around the fingers and all of the way to the sides of the wrist. Then, without removing the hand from the paper, make a dotted line up from the wrist to the small finger. This results in a good idea of the total composition and size of the firing hand. This is not a drawing, it is a tracing and the tracing is sent to the custom shop.

Once the grips have arrived you are ready to fit your grips to the handgun. First, make certain the revolver is clean and unloaded. Remove the old grips and set them aside. Some custom grips will not have the location pin holes drilled, although some will. It depends upon the maker, the special order and the exact steps wished to ensure that the grips are a perfect fit. I prefer drilling the location pin myself for an exact fit. Without the location pin already drilled, remove the location pin from the grip frame.

A brass hammer and light brass punch are ideal for this simple chore. Try not to bend the location pin as some are less robust than others. Once the location pin is out of the way, place the grips on the grip frame and check for fit. There should be an overlap of wood over the grip frame. Check for the overlap particularly in the top, upper corner or "crotch" area as custom makers

and cabinet makers term it. Occasionally, the grips may have been cut too small in this area.

If this is true the grips should be returned. Far more often they will be cut correctly and you will begin to fit the grips to the frame. Use a flat file to address the overlapping wood at the top of the grip panel. These flat sides will exhibit an angle, not a ninety degree fit. Be certain that there is a remainder of wood around the grip and that it covers the grip frame in all areas to be fitted. The grip screw holes must be aligned properly for the grip screw as well.

Next, clamp the grip frame and the grip together using a small vise or, preferably, a clamp. The frame needs to be protected from damage and a pad or small block will do so. Put the crotch into the grip frame and tighten the clamp down firmly. There is an additional step involving grips not delivered with the location pin hole drilled. With a 5/32 drill bit make a hole not more than about 3/16" deep. Normally, the hole is marked with a piece of tape before the drilling begins.

Consider the thickness of the grip before you begin this drilling operation. When all steps have been completed for both grip panels, you may wish to replace the location pin that holds the grip panels in place on the grip frame. Place the new grips on the frame and check the fit and grip screw alignment. Mark the grip frames in the area that needs to be addressed with a file using

a sharp Modern grips are available that make firing these magnum revolvers much more enjoyable. knife.

Remove the panels, carefully using a wood file and then sandpaper to remove the excess wood all the way to the mark lines. After the first effort, replace the grip panels and observe the fit. This is very much a cut and try approach. Take your time and carefully fit the grips a little at a time. Repeat the steps until the fit appears seamless. Always remember, you can always sand more but you cannot put wood back that has been removed!

When sanding it is good to start with the 100 grit sandpaper and progress to ever finer sandpaper such as 120, 150, and finally 220. Sanding with the very finest grit will give a better and smoother finish. After the grips are sanded and you are pleased with the final fit you may wish to dampen the grips with a wet cloth. Do not soak the grips at all or they will swell. Moisture added will raise tiny fuzz in the grips. Allow them to dry thoroughly and remove the fuzzy, raised grain with the finest sandpaper.

If you desire to finish the wooden grips standard finishing techniques work just fine. The tedious but worthwhile part is the fitting. Double action revolver grips also will benefit from hand fitting, although there is usually more consistency in double action revolver grip frames. While Smith and Wesson frames are often very consistent,

CHOOSING AND FITTING CUSTOM GRIP PANELS CONTINUED

ORIGINAL PAGE 10

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there are variations worth considering. As an example, the hard plastic handles of I frame Smith and Wesson revolvers are notoriously fragile. The old plastic handles will shatter even when being tightened up, they do not have to be dropped. Many like the looks of the later Jframe grips, but these differ more than is commonly realized. The first Smith and Wesson Chief's Special revolvers were actually I frame revolvers with deep frames for the longer cylinder but the frames are definitely different on later models.

It is possible to fit Jframe grips to the I frame. The handle is longer but may be sanded away for fit. The locating pin is also in a different location. With the original grips so difficult to acquire, it is worth the time and effort to fit Jframe grips to a nice I frame revolver. The bottom line of the checkering on Jframe grips will be nearly at the base of the grips after this operation.

And, frankly, we are figuring into the equation the fact that the gunsmith or the owner will have on hand a pair of factory Jframe grips that have been written off, such as after the fitting of some modern tactical grip to a

Chief's .38 variant. The tension screw allows from adjustment in the slight variations on 1911 pistol grips. This is a very well made grip set that serves a real purpose. For a special commission handgun they are ideal.

This will solve the common problem of finding grip panels for an I frame Smith and Wesson. The old long Banana grips make excellent grips for the I frame when they may be found and the sanding necessary with the checkered Jframe is not necessary with the "banana grip." A quick mention about fitting the composite grips from Tombstone

CHOOSING AND FITTING CUSTOM GRIP PANELS CONTINUED

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They demonstrate just how good the fit may be from a factory grip set, but the custom pistolsmith can improve on most designs with hand fitting. Gun Grip (tombstonegrips.com). This maker offers blocks of material that you are able to form into grips yourself. Their grips can be had in a general outline, such as single action or double action revolver, and as ninety per cent or almost completely inletted grips.

These grips will require drilling of the location hole and often need the supplied grip screw shortened as well. Tombstone grips are relatively easy to sand and will often add value to a refinished handgun. A good tip on restoring a handgun that works well with

these grips is polishing with regular shoe polish. That is correct, the pores and consistency of the Tombstone grips are very well suited to black shoe polish.

Even better, you may first give an undercoat of the standard brown shoe polish and then work over with black to give a classic brown under black finish. After a few tries and practice the results will be very attractive. When all is said and done, fitting a revolver with custom one-at-a-time grips is well worth the time and effort to add another dimension to a quality revolver.

Other Grips Of Interest It is critical that when ordering grips for the 1911 pistol the customer specify if there is a magazine well,

an extended safety or other modification. They are well made of good material and offer an excellent option for a high grade handgun. As an example, I recently repaired a rather heartbreaking chip in a set of custom grips from Zipps Grips (zippsgrips.com).

These are wonderfully made grips but the customer had attempted to place a standard set on a pistol with an extended thumb safety, resulting in a chip out of the wood due partly to the grips not being tightened down. I was able to patiently polish and refinish the chip. On another occasion a 1911 was dropped on the floor and

CHOOSING AND FITTING CUSTOM GRIP PANELS CONTINUED

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The Commander was made the year the author was born, but it is in better condition! the grips were cracked but careful polishing and gluing lead to a likenew repair. Shooters using the 1911 in long range competition often adopt special target grips. While there have been many attempts at the perfect one hand grip, the Ro Co Firearm- Technology (rocosystem.com) Master XL stands alone for affordability and comfort. These grips must be carefully assembled or they may be cracked.

Be certain they are exactly centered upon the frame and then carefully tighten down the screws to produce the absolute bet fit. Although designed for pure target pistols, the author managed to prove they were excellent for use in an experimental long range 10mm pistol. Finally, there are times when we are commissioned to do a one of a kind pistol and there is nothing like a set of custom grips to set them off and the 1911 grips illustrated here are the first and best of their type.

From Don Son Products (dsplaser.com), they commemorate the 100 years of service of the 1911 pistol and are fitted to a Commander

marked by Colt "100 Years of Service." An excellent set up. When it comes to fitting pistol grips it is all about time and extra care. There are other options that greatly increase the good looks of the handgun while not breaking the bank.

In the end, the choice is very individual and the seasoned gunsmith will lead the customer toward a choice that will not only set the pistol off in terms of appearance but also enhance the shooter's potential. AG

MAINTENANCE & REPAIR

Contracts And Parts

BY ARTHUR HUNT SR. FEBRUARY 2013

ORIGINAL PP. 13

Most of us in gunsmithing don't bother much with written contracts when our customer orders work. Rather, we work from a simple repair ticket, such as sold by Brownells. These are good but aren't really a contract which authorizes us to do any specific work. There should be a space where the customer can sign in order to authorize you to do the work.

At some time, some smart ass is going to tell you he never authorized you to do what you did, while most of our customers are happy to know that they have left their gun with a good responsible repair man, their gunsmith. They all sign an authority to perform work on their car, roof, or appliance repair shop but not yours. Sooner or later you are going to have a problem. What Brownells should do is have these repair tickets revamped.

Leave more lined space so you can write in what your customer wants and have a simple statement that reads, "I have examined this repair order and do herewith authorize the stated work to be done" along with a signature. We never give copies so you are the only one who has the repair ticket. Now if you are so inclined you might consider using two-copy forms in order to give your customer a signed copy of what he is ordering.

Few small shops do this as it is a substantial outlay to buy several thousand forms which you have to in order to get a price you can live with as these should contain the authorization statement. What is necessary is protection of you from the public. Sooner or later you are going to run into a professional cheater who is going to claim he did not give you permission to do something and wants to "adjust" the price rather than have difficulty and end up in small claims court.

Like all suggestions, this one will likely go unheeded until it happens to you. And it will happen. Let's take a hypothetical case. Your customer hands you a Winchester 94, serial over 2,000,000 and says, "Get this reblued for me", so you write up a ticket for the job and nothing else. Let's assume you can't reblue this monster as you know it has to go back to Winchester. You pack it up and ship it out. It gets done (and Winchester is not cheap) and finally comes back.

You put your service charge on it plus the freight and call your customer. Well, he is outraged that the cost is so high and tells you that he was under the impression that you would do the work in your shop at a lesser figure and is upset that you sent it back to the factory without his permission. Now, where is your authorization to send it anywhere? You haven't got it. Even if you had told him verbally that you would have to send it back he can deny you said it.

Such a customer, while thankfully rare, is a scoundrel and you are never getting any more work out of him. In order for you to keep peace, for there may be other people in the shop, you adjust the price so that he does shut up, pays a reduced amount and leaves. You have lost because you had no authorization. Get contract minded. Either use repair tickets a authorization statement on them or go on taking a chance.

It is a sorry thing that honest, hard working people such as you and I have to guard ourselves against the public but this is the real world and these things happen. Forewarned is forearmed hasn't lost it's meaning. Be a gun lawyer! There may come the case where you call your customer and advise him you had best send the gun to the factory or to a specialty house. He says OK, but this is not an authorization. If this arises, have him give you signed authority. C. Y. A.

Selling And Pricing Parts You must decide if you are a parts seller or a gunsmith. While it's understandable for someone working on his own gun to want to parts cheap, you don't have to sell him one. There are plenty of dealers that list parts and prices. Your customer may not know of these people but his buddy does. Of course, he doesn't want to pay the shipping costs, so he comes to you. If you have apart and you mark it up 100% and still have only a \$10.00 item you could make \$5.00. Big deal.

I would rather sell him the part at cost if he brings the gun in and I charge my minimum service fee plus the part. If I sell him the part, I sure don't get rich at \$5.00 gross profit and it may be the only one I have so why sell it? You are not doing yourself favors and don't know this customer will bring in any more business. I don't compete with parts houses. I can't for they publish their prices and anyone can buy from them.

When the day comes that I can't make a profit on parts plus labor I just won't buy parts. You buy them and I will put them in, and not at a minimum service fee either. I strongly feel that none of these parts houses or junk dealers are doing the gunsmith any favors, they just don't care who they sell to and it is one price to all. If this presents itself as a battle it is one we as gunsmiths will not win. I just don't sell parts. If you want it repaired I will do it and put any part in it that it needs.

You have to formulate your own policy but will find you can't sell enough parts to make it worthwhile. I also believe the gunsmith who sells parts loses his respectability as a gunsmith. True, the guy that buys a few dollars worth of parts has not only used you as a supply house but he will probably sell the gun he is working on for a great deal more profit than you made on the part. The gunsmith shop is open, the parts house is closed! AG

FROM THE ARCHIVE

A Shop-made Trigger Shoe

A potentially useful accessory for some custom projects, here's how to make trigger shoes in your shop.

BY JOHN BAXTER FEBRUARY 2013

ORIGINAL PP. 14-16

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A trigger shoe is an accessory that fits over the front of the trigger providing a wider contact area for the trigger finger. The shoe is typically made from metal and features vertical grooves to improve the “feel” during the pull. Some shooters believe the increased contact area reduces the perceived pull, while others simply like the fact that it helps position the point of pull directly opposite of the finger nail base. Trigger shoes are normally used on competition rifles and, to a lesser degree, pistols.

While the benefits of a trigger shoe certainly applies to hunting rifles and pistols, the extended width of the shoe increases the chances of an accidental discharge, which outweighs any of the benefits. Trigger shoes must be fitted to the specific gun. The trigger width and radius are specific dimensions that help to determine the proper shoe size.

Additionally, the shoe should be slightly thinner than the trigger guard for safety and must be relieved to allow for full travel, including enough over-travel to easily remove the bolt in rifles fitted with this type of mechanism. Because the trigger shoe is

wider than the trigger, the shoe must be designed for easy removal and installation to allow the trigger to fit through the slot in the floorplate when the action is removed from the stock.

This is typically accomplished by means of two or three small set screws on the side of the shoe opposite the trigger hand. Trigger shoes are often made from aluminum, brass, steel, stainless steel, and even titanium. Obviously the last three materials provide excellent strength assuring many troublefree disassembly/reassembly cycles. Brass and aluminum shoes should be fitted carefully to avoid stripping the fine threads or bending the shoe with excessive screw torque.

Commercial trigger shoes are available through specialty catalogs and online stores. The user can select from a list of common rifles, and sometimes materials, based on specific needs. In the event the desired rifle model is not listed, the buyer can measure the trigger width and radius and look through the list for a close match. Measuring the trigger width is straightforward but accurately measuring the radius takes more care.

Often a close match can be found by trying different sized coins or washers, and then measuring the coin or washer diameter using micrometers. Special care should be taken with this technique to observe the shape of the trigger outside of the contact area and make sure it will not interfere with fitting the trigger shoe. In the event no catalog shoe can be found, many stores will offer custom trigger shoe fabrication given the information above.

Cost will depend on the popularity of the shoe as well as the material. In my experience, this ranges from \$40 to \$60 and up. Recently, I decided to fit a trigger shoe to a Remington Model 33 Youth Rifle, a .22 Long Rifle single shot bolt action, for my 10 year old son who is participating in a Junior Rifle program at my club. The Model 33 is a lightweight rifle that he can handle comfortably through several hours of prone shooting.

This rifle was made between 1932 and 1935 in relatively small numbers but not small enough to warrant a high price for rarity. I bought it years ago as a

A SHOP-MADE TRIGGER SHOE CONTINUED

ORIGINAL PAGE 15

training rifle for less than \$150. I could not bring myself to spend 20 to 30% of the gun's value on a custom trigger shoe, so I decided to make my own. The first step in machining a trigger shoe, or almost anything else, is to determine the design. This process involves measuring the rifle's trigger diameter, which will determine the diameter of the bar stock required, trigger width, which sets the proper slot dimension, and the trigger guard width.

The width of the shoe must be the same or smaller than the trigger guard for obvious safety reasons. The final dimension is a matter of preference but careful thought needs to be given to the design for this decision. Remember, the trigger shoe is held in place by small set screws on one side. These set screws will be about 3/32 of an inch in length. For the set screw to lie flush or below the trigger shoe surface, the shoe will need to be at least 3/16" wider than the trigger.

The trigger guard on most non-military rifles is only two times the thickness of the trigger and the trigger is generally around 1/8" wide. As a result, the trigger shoe will be only slightly smaller than the trigger guard in most cases. Measuring the trigger is best accomplished by either removing the action from the stock or removing the trigger guard. The width of the trigger is easily measured with calipers. My Model

33 has a trigger that is 0.175 inches wide. Measuring the trigger radius is a bit trickier.

For those of us who have not invested in a set of large radius gauges, I think the easiest method is to estimate the radius using coins. Quarters and nickels are pretty good starting points. In my case, a quarter was close to the right dimension. Then find a few washers that are a bit smaller and a bit larger than the closest coin. Hold each up to the trigger with a bright surface behind. If the washer is too small, you will see light on either side of the contact point.

If the washer is too large you will have two contact points with a crescent of light in between. Once you have found the washer with a minimal gap, simply measure the diameter with calipers. The Model 33 measured 1.24 inches here. The largest diameter of the trigger guard should cover the trigger. This required an outer diameter of 1.54 inches in my case.

The inner diameter should be small enough to allow serrations to be machined on the business side of the guard but not so small as to limit the amount of room for the trigger finger within the trigger guard. I decided on an inside diameter. Now measure the width of the trigger guard using the calipers. I measured the width just forward of the trigger position. My

Remington measured 0.380 inches. This determines the maximum width for the trigger shoe.

I decided to use two 6-48 x 1/8 inch long set screws to hold the trigger shoe in place. Like many firearm applications, the trigger shoe has a relatively short distance for the screws to engage. In order to have a reasonable number of threads, the thread pitch is larger, or finer, than standard screws. Most number 6 machine screws have 32 threads per inch but for this type of application a 40 or 48 pitch screw is better suited.

I settled on a 0.38 width, which leaves just over 0.10 inches for the set screws to make sure they mount slightly below the surface. I looked through my collection of cut-offs for a suitable piece of bar stock and settled on a hollow brass bar with an outside diameter of 1 1/4 inches and a 1/2 inch bore. After cutting the stock down to a reasonable length, the lathe work began with finishing the inside diameter to an even one inch using a boring bar.

The outside diameter was turned down to 1.54 inches and a notch was carefully cut to a diameter of 1.24 inches and a width of 0.175 inches. The notch must be positioned in the center of the trigger guard, so it is important to measure carefully. The last step for the lathe is to make vertical serrations on the inner diameter of the trigger shoe. This was accomplished by using

A SHOP-MADE TRIGGER SHOE CONTINUED

ORIGINAL PAGE 16

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Next comes machining the set screw holes and cutting the shoe from the turned ring. A tap guide is chucked into the drill press to hold the tap in alignment. The boring bar with a 45 degree pointed tip to cut into the shoe. I used five serrations so the middle cut occurred halfway into the trigger guard, or 0.19 inches. The lathe carriage should be carefully positioned and then locked in place for this operation.

The depth of cut will determine the width of the serration, in fact, these numbers will be equal for a 45 degree cutting tool. I wanted a small flat between the minor, or smallest, diameter of the serrations, while leaving a small flat between the outermost serrations and the edge. The carriage was indexed in increments of 0.060 inches for each cut. The shoe was then polished using emery cloth before being cut off to the final width.

After marking the left side of the trigger shoe (for a right handed shooter) with machinist blue, the overall shape of the shoe was marked along with the desired placement of the set screw holes. The centers of the holes

were placed between the outer and groove diameters at a distance of 0.10" from the ends. The piece was then clamped and positioned in a drill press vise. To assure an evenly tapped hole, the entire sequence of spot drill, drill and tap should be completed without moving the part.

Tapping is best done with a tap guide, which holds the tap perfectly in line with the drill spindle while applying a force to help start the tap. Proper alignment is especially critical with a fine pitched tap. After tapping, a modeling file can be used to remove any small burrs from the inside edge. The trigger shoe can then be cut off from the turned piece either in a milling machine or by hand. I chose to use an abrasive wheel. The final shape was accomplished with a file.

To avoid scratching, remember to card the file regularly to avoid buildup of chips. Once contouring is complete the shoe can be buffed using a felt wheel and compound. This requires a delicate touch with brass as it is easy to remove too much material, not to mention generate too much heat! The trigger shoe is

now ready to be mounted. Once fitted, make sure the trigger has sufficient travel to drop the hammer and, for some guns, to easily remove the bolt.

This may take several sessions with the file and buffing wheel. Remember to use a soft touch with the hex wrench when tightening the screws to avoid stripping the threads. If a thread lock is to be used be sure to select a removable type made for small screws. The trigger shoe will eventually have to come off to remove the action from the stock, so don't make the assembly permanent. A proper fitting wrench can be carried with the shooting supplies in case the set screws become loose at the range.

Making your own trigger shoe requires careful planning and machining but can be accomplished over a weekend. Remember to plan ahead and have the raw material and set screws on hand before finalizing your design. The custom trigger shoe will add a nice touch to your favorite target rifle and can help to tighten groups through improved trigger control. AG

RIFLES

Installing Sling Swivels On A Hunting Rifle

A carry strap, not to mention an actual shooting sling, is a useful accessory on a hunting rifle, but only if there are sling swivels there.

BY WENDELL DEANER FEBRUARY 2013

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I used to go into the deer woods with a cut piece of plastic (to sit on a wet downfall), a six-foot length of drag rope and a turkey sandwich left over from Thanksgiving. Of course, I had my knife and maybe a candy bar along with something to drink which I carried in my pockets or a small backpack.

My six and half pound carbine rested in the crook of my arm instantly ready but I really didn't think about how I would carry my rifle until I was dragging a deer about a mile back to camp while trying to shift my Model 94 Winchester from one hand to another. It soon became obvious that a good sling would be beneficial. Unfortunately, the 94s at that time didn't come with such accouterments and I was forced to install my own.

Nowadays, most hunting rifles have factory-installed studs for attaching the quick-release swivels favored by many hunters. Some, however, are still bare and the wood stocks we make and finish ourselves need

to be so equipped. I wouldn't dream of handing a rifle I've built to an excited customer without adding these small but not insignificant parts of a finished stock. I want to stop here and enter a personal aside to this article.

It's true I think a sling is a necessity on a hunting rifle but only when the first job of the rifle, that is, putting the animal on the ground, is over. The only one time I want a sling on my rifle is when I am bringing both it and the game back to camp. An exception would be serious climbing that requires two hands also requires a sling. A sheep hunter watching his expensive mountain rifle bounce down a rocky cliff would agree with me. For other hunting pursuits I believe it's best to have the rifle at hand.

A quick shot Although serviceable, it is noticeably off the centerline of the stock. A good man screwed this up with a hand drill in a moment of inattention. He also apologizes for the white spacers. The "V" shaped

jig is shown along with (left to right) the 5/32" pilot drill, the 7/32" counter bore and the number ten safety drill and counter bore. may be needed or the opportunity lost.

Whether we are hunting from good concealment where the game is completely unaware of your presence, such as a tower blind in Texas or a twenty foot high tree stand in Illinois, or still hunting the pines, (yes, some hunters do it the old fashioned way) a hunting rifle should be at the ready at all times. A sling in these cases just gets in the way. I don't believe it is good practice to actually hunt when your rifle is slung over your shoulder.

I understand that some folks use the sling as support, such as a hasty sling. If that is your thing, OK, but I prefer to use natural rests such as tree limbs and stumps or my hat over a suitable rock. This works better for me because in my part of the woods such rests are normally close at hand.

INSTALLING SLING SWIVELS ON A HUNTING RIFLE CONTINUED

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In this case I used a milling machine and a small machinist's level for set up. Make sure that the 5/32" pilot drill is absolutely cutting the centerline of the stock toe at least 2.5" to 3" from the end. An extra pair of hands doesn't hurt the process. This is a wood screw and the manufacturer recommends coating the screw with Hoppes Boiled Linseed Oil to "bind" the wood fibers. I have also resorted to Acraglas for this procedure. They never work loose.

Also, I can shoot with acceptable field accuracy offhand, since I practice regularly from that position and only take shots at game that are not too far out of my self-imposed range limit. When I had a smaller waist I took my sling off when I stepped into the woods and wrapped it around me like a belt. Nowadays, it stows in the pack until I'm ready to use it. Either way, I keep my rifle in my hands. It was a hot day for deer season in Maryland during the end of November, probably almost eighty.

I was a teenager who hadn't taken his first buck hunting and was hunting on public land. I came to a dirt road where the bank was just right for me to sit down and take a rest. I looked up the mountain where I would have to hike back to the truck as if it were the thirteen steps to the top of the gallows. I was hot, sweaty, overdressed for the heat and worn out.

While considering my situation, I noticed a very nice eight point buck standing in the middle of the road thirty yards away won-

dering what the heck I was doing there! I grabbed for my slung rifle, the buck bolted, and down the hill another hunter dropped it cleanly. Well, that's the way a hunting kid goes to school and what I learned about rifles that were hung over my shoulder that should have been ready to go. In more open country a bipod or backpack may be used as a rest.

Here, too, a sling just gets in the way of a fast setup. Many guides have bemoaned their hunter's slow reaction time after spotting game that may be nervous about sensing them and ready to bolt as the hunter fools around adjusting this and that and is rewarded with a hurried shot at a bouncing tail. Using binoculars is problematic at times while carrying an unslung rifle but I can usually manage a quick look through a 7-8 power pair with one hand.

If I want to take a longer look-see, that means I have unspooked game ahead and I can sit down, putting my rifle safely aside and enjoying a rest for my glass using both hands. Then we have so-called hunters who never set foot in the field without a guide and maybe a small safari. They've just bought anew magnum rifle that the guide generously agrees to sight in for them since they've never actually fired the piece themselves.

After watching a miserable performance at the so-called sightin (where the guide is actually measuring their client's skill with a rifle) the guide doesn't allow them to load

their rifle until they are within spitting distance of the so-called "game." I don't blame him for that. I understand there are many ways to hunt and where a sling is useful and where it is not.

One thing for sure, you must have sling studs installed to match the modern swivels if you want to use a sling on your rifle and if they aren't there, a gunsmith must install them. I did this job as a boy. Drill a hole, then screw 'em in. What's the big deal? I wonder how many installations I messed up. Thankfully, it wasn't a whole lot because I soon learned that off center holes and cock eyed sling studs stuck out on a stock like a missing picket of a fence and branded you as an amateur.

This job can be handled well by anyone who takes care in their work. An amateur with a good hand drill and a steady eye can do a good job but the best job is consistently done with a good tool. Without enough precision, day after day, even the best craftsman can mess up. Not enough coffee that day, a cup too many, a tiny bit of casualness for a small job in the scheme of things, who knows? But sooner or later it will happen due to human nature, usually on the most expensive stock you've ever had in the shop.

Off-center holes drilled in the toe of fancy French-walnut are really difficult to hide.

INSTALLING SLING SWIVELS ON A HUNTING RIFLE CONTINUED

ORIGINAL PAGE 19

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Blue Loctite is recommended to make this a secure installation. Notice the jig placed at the end of the stock which gives 2.5" clearance. This distance is not engraved in stone and each gunsmith must do as they think best. Another place a sling is essential is target shooting. For my part I don't get to work on many fullblown target rifles and many of the competitors have very definite ideas about how their rifles are set up, so for this discussion let's stick to the regular hunting rifles most of us take afield.

It's not unusual to have one of these seemingly inconsequential little pieces of metal ruin a stock or ruin a hunt if installed improperly. I had a fancy target rifle of my own mounted with a 24X Leupold target scope attached that I foolishly slung over my shoulder the first day at the range with it, only to have the front swivel stud separate from the heavy-barreled rifle stock, bending the aluminum tube of my expensive scope as it hit the ground with a sickening thud.

Fortunately, the manufacturers of these quality products made things right and my world was good again. I want my hunting rifles and heavy rifles to have the front studs bolted securely in the stock without any chance of failure. Once bitten, you know? The rear stud, of course, must be screwed in as far as it will go and then left to hope. I have Acraglased the rear studs on

some of my hunting rifles but that may be overkill. One thing for sure, those suckers ain't coming out.

There are several fixtures (jigs) available to the trade for installing sling studs and the accompanying swivels. I don't have sales figures but at least one of these tools has been around for many years. Someone agrees with me that a steady hand may not be all that's needed for this job. Two jigs I recommend are available through Brownells.

The Kleinendorst Sling Swivel Drill Jig (488-000-006WB) is the more expensive of the two, retailing for \$129.99, and the B-Square Swivel Jig and Drill Set (122-140-000WB) comes in at \$54.99. Since the B-Square is the only one I have in stock at the moment, we will discuss its use in this article. This is not meant to imply one tool is better than the other. I may acquire the Kleinendorst one day, since I am a tool nut, but I can report the B-Square model works as advertised.

The B-Square swivel installation kit comes with a Swivel jig, a 5/32" diameter pilot drill, a number 10 (0.1935) diameter safety drill and counter bore, and a 7/32" safety counter bore. For this installation I chose Uncle Mike's Quick Detachable Super Swivels set number 1001-2 (Brownells 593-100-100AH.) This kit includes the rear wood screw stud, the front machine screw

stud and nut, and two locking quick-release swivels. They are sized for one inch or one and a quarter inch slings.

This kit is for all bolt action rifle stocks and there is another available for shotguns. In use, the stock is leveled correctly and the B-Square swivel jig is placed in the appropriate position. The jig is equipped with a 5/32" drill guide to keep the pilot hole straight. It is absolutely necessary to keep this hole centered and flush with the toe of the buttstock. The jig itself measures two and one-half inches from the toe for the hole.

Some of us want a minimum of three inches, the theory being that anything less will eventually crack the stock. I will not enter the controversy and leave it up to each individual practitioner. The extra half inch may be more prudent for a nine-pound rifle than a mountain rifle weighing seven pounds or so. The 5/32" pilot drill is used to drill a hole approximately one inch deep in the toe for the rear sling stud.

The 7/32" safety counter bore is then used to provide room for the unthreaded portion of the swivel screw. B-Square recommends that the swivel screw be coated with Hoppes Linseed Oil to seal the wood and bind the fibers. It will probably keep the stud in place better than using some soap to facilitate threading it in the hole as these studs have a tendency to twist loosely in their seats after several years of use. Us-

INSTALLING SLING SWIVELS ON A HUNTING RIFLE CONTINUED

ORIGINAL PAGE 20

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Notice how the sides are beveled and smoothed so as not to damage a finished stock. Notice the white spacers. Apparently someone still wants them. ing a dab of Accraglas on the shank when screwing in it will stop this annoying nuisance. The stud should be aligned perfectly if the stock was leveled and a milling machine or drill press used during installation. If it does not seat level in its counter bore just a little kiss on the high side with the counter bore mounted in a hand drill will straighten it out.

The front swivel screw is a little different in that the action will have to be removed from the stock and a hole be drilled all the way through to allow a machine screw to lock up with a nut inside the barrel channel. There is no way this will pull out in normal use. You will have to determine where to place the stud. B-Square recommends (again) 2.5" back from the tip of the stock as measured by the jig. The jig is inserted into the barrel channel with the "V" down, which if held in place will center in the stock.

Always check to make sure. The pilot hole is again drilled by the 5/32" drill and then enlarged with the number 10 drill and counter bore. B-Square also recommends this hole be coated with linseed oil and the swivel screw nut be inserted and tapped to the bottom of the hole with a drill or

punch. They then recommend putting Loctite on the screw to make sure it holds (I use the blue.) Strangely, the counter bore for the outside part of the stock for the front swivel is ignored in the directions.

I just use the 7/32" tool that was used for the rear screw. In lieu of the counter bore, little white spacers can be used and used to be very popular. Today they are not seen as much. I personally don't care for them but it depends on the client's taste. Sling swivels have value in many hunting applications, but must be used at the proper time of the hunt. Otherwise they just get in the way. One problem with the studs is that even if the sling is removed the studs will interfere with shooting from the bench.

You will never see a true benchrest rifle with sling studs installed. There are recessed studs available and they have a little different installation procedure. They are usually used on higher-priced rifles with a lot of fancy checkering on the bottom of the forestock, which is not conducive to a lot of bench shooting since the friction from the bags will very quickly smooth out the finest of checkering.

However, with care, the studs will still allow a rifleman to sight in his piece as long as he understands the limitations. I also think about shotgun sling installations and Uncle Mike's does too since it has a kit that

fits most modern guns. The turkey hunter could well utilize such a setup since he or she is usually sitting against a tree calling in an unwary bird.

There is no need to have a sling on your gun at that point but after the bird is down being able to hang the gun over a shoulder and carrying the bird plus a lot of equipment (decoys, small blinds, etc.) makes sense. Another area some of us may not think of is the shotgun used exclusively for squirrel hunting. I guess most of us use the same gun for upland game but I have an old single shot twelve gauge that I am partial to when it comes to beating around in the mountains trying to find gray squirrels.

That gun was left to me by a beloved relative and I have piled up a truckload of those furry creatures with it. Now, I often scout the woods during the early seasons so I can put my grandsons on a hot spot and carry that old gun just to have it along. In my neck of the woods a ruffed grouse can scare the hell out of you by exploding from a berry patch and drumming up out of cover as you pass, giving you a turnaround-quick or miss shot.

I can remember wishing I could sling that gun over my shoulder for the long hike back to the truck. I might go ahead and install some swivels so I can put one on it this year. AG

METALWORKING

A Unique Method of Custom Scope Base Fitting

as getting the scope reticle to optical center. Proper coaxial congruity can be most difficult to achieve in a base. Individual custom scope base fitting can be a very workable option.

BY NORMAN E. JOHNSON FEBRUARY 2013

ORIGINAL PP. 21-22

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Where coincident axis fails to exist in scope mounting, springing or stresses between metal parts will occur or scope reticle optical center may be compromised—or both. Either way, accuracy and precision becomes problematic at best. In most cases there is something we can do about it, as I shall point out in this treatise. I was working with a pair of Talley scope bases and rings made for one of the earlier Model 112 Savage singleshot actions and was mounting an 8-32 Bausch & Lomb target scope of proven quality.

As I initially mounted the scope, the bore was precisely centered on a distant aim point but the scope reticle failed to adjust fully upward to the aim point. This indicated the rear base was too high for this particular rifle. I was using Talley Screw-Lock steel rings and Talley steel scope ring bases – a combination that has always yielded superb precision and alignment in a wide range of rifle applications—but this particular receiver was not compatible with these bases.

I was mounting this scope on one of my three older Savage Model 112 single-shot rifles. Unlike today's Savage Model 12 rifles with round receiver front and rear, the former Model 112 had a flat rear receiver.

These older models were available in long and medium length actions as well as single shot variants and are very rigid, producing excellent accuracy, but not many scope-ring combinations worked.

Milling And Bedding The Bases I looked at several possible solutions to the problem, including custom fitting a one-piece Picatinny style base, which I had done on along-action Model 112, but I wanted to use this fine Talley mounting system if at all possible. I then got the idea to mill off the required metal from the rear base 0.050 inches from the underside of the rear Talley scope base for the flat rear receiver. and set the bases in place with bases attached to the scope via the rings.

Brownells Steel Bed was used as an interface between the scope bases and the receiver. This is how it all came off. First, I milled 0.050" from the underside of the rear base and attached both front and rear bases to the receiver. I then attached both scope rings to the scope and mounted these to the bases just as a scope would be mounted to the rifle. With this accomplished, the rifle was placed solidly in position with the bore viewing a distant aim point. I adjusted the scope with the reticle

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The receiver is not yet masked nor is the release agent on the receiver. at optical center with respect to both elevation and windage. It was now very close to the position I wanted and decided not to mill any more from the rear base. At this point I masked around the attached scope bases and removed the bases from the receiver and reattached the rings to the bases. Release agent was applied to the surfaces where the bases would come down on the receiver.

Brownells Steel Bed was then applied to the bottom of each inverted scope base and the scope was gently and precisely lowered onto the receiver. To be sure things were in true coaxial alignment, I viewed through the scope. It was still in alignment with the reti-

cle focused to the exact aim point where the bore was directed. Following this, I carefully placed a couple strips of adhesive tape to secure the scope in place on the level receiver.

The Steel Bed was allowed to sit for 24 hours before removing the scope from the bonded bases. A gentle tap with a brass hammer removed the bases, showing a perfect base-to-receiver fit. Without the Steed Bed interface it would be impossible to set a pair of milled bases atop a receiver resulting in true alignment. The bases were cleaned up and screwed to the receiver. Brownells Scope Alignment Rods showed perfect scope/ring alignment, a condition otherwise impossible without the Steel Bed fix.

Subsequent groups on The scope is held in position by two lengths of masking tape until the Steel Bed is thoroughly dried. The included targets show good accuracy at 100 yards with the .257 Improved cartridge loaded with 100 grain Sierra match bullets. The scope reticle is now at optical reticle center. target were most excellent with a full range of reticle adjustment available.

Conclusions Though it may appear an involved procedure, aligning and attaching scope bases in this way resulted in a most solid and stress-free scope base/ring alignment. It involves but a little time and a small amount of Steel Bed for a perfect job. I can strongly recommend it. AG

TOOLS & FIXTURES

Reader Forum

BY AMERICAN GUNSMITH EDITORS FEBRUARY 2013

ORIGINAL PP. 23-24

But, hey, if Chick wanted to buy anew tool I won't argue with that. I just had to point out what I thought was incorrect info in the article. Andy Wander Upper Black Eddy, PA Right on...almost. After several unsuccessful attempts using the square shanked screwdriver and wrench bit in a freshly injured hand and still fearing serious cosmetic damage to the 90 pound Frankenscrew, Chick took the risk with his brand new 20-200 pound torque wench.

He said what he counted on was the wrench being more than twice as strong as the screw was tight. He also took it easy, listening carefully for any sound of protest from the wrench. By the way, in his subsequent article on the Savage Rascal .22 LR, Chick described his usual, and preferred, way of backing out tough fasteners when he encountered a Loctited-in cocking piece on the Rascal bolt. It involves using a 1/4" five-inch long drive and the Brownells adapter with an Allen Magna-Tip inserted.

Taurus PT38S Grips I have found another place making CNC machined grips while searching for a Tokarev TTC-33 set. Marschal Grips (marschalgrrips.com) doesn't list them directly, however, they are makers of walnut and exotic for numerous pistols. An email to the company revealed they take on custom work. Gregory P. Kidder All useful information welcome here. Thank you Mr. Kidder.

Three Holes In Mauser I can answer the question posed by author Wendell Dwight Deaner about why there were three holes drilled in the rear receiver bridge on the rifle in his "An Old Mauser" article (American Gunsmith, November 2012.) He is correct as to the hole spacing for Weaver mounts and Redfield mounts on FN and other commercial Mauser rifles, however,

Redfield makes amount base for military Mausers that have not had the rear bridge ground and still retain the loading strip slots.

This mount reaches over the clip slot hump and the rear hole for it will be in the middle of the two Weaver base screw holes. Emri Stidham Gunsmith, Campbell Hardware Author Wendell Dwight Deaner responds: Thanks for your input on my article and thanks for taking the time to read it. I agree that this explains the threehole issue. I couldn't believe that a rifle that appeared to have been built by a competent 'smith would have a hole drilled in the receiver for no reason.

I have not used the one-piece mount on any 98s but have on some 96s. I held up a Weaver #55 mount beside a 96 with a Redfield one-piece mount on the rear of the receiver and, sure enough, it looked as though the spacing would be three equidistant holes if drilled for both mounts. The #46 Weaver mount matches the spacing in the front of the receiver. Where and when this happened remains a mystery to me since the gun could have met up with several gunsmiths in its long history.

I wonder if it was common practice to modify the receiver for both kinds of mounts or did the owner want to switch from one to the other? I always enjoy checking out these old guns as they have a rich personality. 280 Ackley Improved I have a Ruger 77 stainless in .280 Remington I would like to rechamber to 280 Ackley Improved. Do I need to set the barrel back when this is done? If so, how far? Any other tips or info you can give me on this project would be greatly appreciated.

Tom Cureton We have no data on the .280 Ackley Improved in our files, which include Cartridges of The World and a thick—

READER FORUM CONTINUED

ORIGINAL PAGE 24

901 drawings—volume on cartridge conversions from The International Cartridge Archives. Your first step should be to contact SAAMI, which establishes dimensional chamber and pressure standards for all U. S. ammunition/firearm manufacturers (saami.org). They can advise on cartridge compatibility and pressure difference between your existing and the desired chamberings.

Finally, if there is any warranty remaining on your Ruger Model 77 it will vanish once the rifle's been rechambered and if the rifle ever has to be returned to the factory for service it will be returned wearing a .280 Remington barrel. Winchester 1300 I have a Winchester 1300 12 gauge in my shop that goes out of battery when fired. It locks up tight when loading. I have re-examined the shotgun numerous times and can find no abnormal wear or breakage.

My first thought was grime not allowing the bolt to close and rotate but I discarded that idea as it was relatively clean. Mike Dill Pickle's Pistol Packers What you have is a Model 1300, Series 120, which caused concern among many owners soon after its introduction by US Repeating Arms (R. I. P.). This model featured what the manufacturer advertised as a "Fast Action." Perhaps that was somewhat of an understatement.

The gun could actually eject a spent hull when and if the operator failed to hold the charging handle forward. According to input from a former Winchester Authorized Service Center, there is nothing amiss. Advise the owner to hang on to the handle a little more firmly and don't allow it to move to the rear. Marlin 70 I will be installing anew barrel in a Marlin 70. The barrel has not had the retaining pin slot cut in it to hold it to the receiver.

How is the best way to do this job without getting the slot too far forward or rearward and also keeping it straight in line with the receiver hole? I will be working with an aluminum receiver. I will also have to align the

sight dovetails when installing the barrel. Bucklin, KS We are reasonably certain the receiver isn't pure aluminum but an alloy of the metal strong enough to serve as a receiver.

Marking the centerline of the receiver and the barrel prior to removal will serve to index the new barrel for dovetail alignment. The best reference for barrel installation/replacement has been written by John Hinnant, *The Complete Illustrated Guide to Precision Rifle Barrel Fitting*. We recommend you secure a copy before getting too far into the project. Midway USA offers it as does the author at johnsha-s&w.com. I have a S&W Airweight .38 Special. The side plate /crane retaining screw hole has stripped out.

Do they sell an over sized screw and tap to tap out the old screw hole and install a bigger screw? It has an aluminum frame and I don't know how else to fix the stripped out screw hole. Mark Alcorn Step One: Call S&W to confirm availability, diameter, metric or otherwise, and TPI of the oversize screw. Step Two: S&W doesn't sell taps but once you know the diameter and TPI you can get one from Brownells or maybe even your local hardware store. While you're about it, purchase a die as well. The reason?

It may come in very handy if no oversize is available and you have to recut the threads of a screw a size larger than the factory original to fabricate your own replacement. In doing so, you may have to reform the head or crane contact area of the replacement with a fine file, polish and cold blue the result. You wouldn't want the finished replacement to gall the crane or fail to blend in nicely with the frame. Bob Hopefully, the side plate hasn't bent.

Check this out by placing it on a true surface such as a square of plate glass and poking down at different spots around the plate to see if it wobbles. If it does, return the revolver and plate to the factory for a fix. AG

SEARCHABLE ISSUE RECORD

Archive index

Child Safety In School American Gunsmith Editors	2	A Shop-made Trigger Shoe John Baxter	14-16
Close Encounter With The Taurus Raging Bull Chick Blood	3-7	Installing Sling Swivels On A Hunting Rifle Wendell Deaner	17-20
Choosing And Fitting Custom Grip Panels Robert K. Campbell	8-12	A Unique Method of Custom Scope Base Fitting Norman E. Johnson	21-22
Contracts And Parts Arthur Hunt Sr.	13	Reader Forum American Gunsmith Editors	23-24

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