



FEB 2011

DIGITAL ARCHIVE
EDITION

PRECISION ARMS WORKSHOP

AND THE AMERICAN GUNSMITH ARCHIVE

A TECHNICAL JOURNAL OF CRAFT, REPAIR & RESTORATION

022

ARCHIVE ISSUE NUMBER

INSIDE THE ARCHIVE

DISASSEMBLY/REASSEMBLY OF THE STEYR AUG BULLPUP, PART I

UNIQUE MARKETING • MYSTERY MARTINI • SAVAGE MODEL 12 EXTRACTOR REFIT • REBARRELING AN M1 GARAND

ORIGINAL METHODS. MODERN ACCESS.

ARCHIVE EDITION 086

DIGITAL ARCHIVE EDITION

Preserved for the bench.

This edition presents the original American Gunsmith editorial work in a modern, searchable layout while preserving its issue, author, and source-page history.

ABOUT THIS EDITION

The article text comes from the original issue and has been reflowed for legibility. Obsolete subscription, ordering, association-service, and house-advertising pages are not reproduced.

Original article images appear only where permission has been confirmed. All other image positions remain visibly reserved so approved art can be restored without rebuilding the issue.

Report corrections or rights information to editor@gunsmithmag.com.



AMERICAN GUNSMITH

DIGITAL ARCHIVE EDITION • FEBRUARY 2011

ISSUE RECORD

ORIGINAL DATE	February 2011
VOLUME	Archive volume not stated
ISSUE NUMBER	02
SOURCE ID	ag-d806f48e8d7cc8b3eb3b400e

DIGITAL EDITION

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

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

IN THIS ISSUE

Contents

A complete guide to the searchable editorial work preserved from February 2011.

2 Unique Marketing
AMERICAN GUNSMITH EDITORS • ORIGINAL PAGES 2

3 Disassembly/Reassembly of the
Steyr AUG Bullpup, Part I
CHICK BLOOD • ORIGINAL PAGES 3-8

9 Mystery Martini
DOMINIC PISANO • ORIGINAL PAGES 9-11

12 Savage Model 12 Extractor Refit
NORMAN E. JOHNSON • ORIGINAL PAGES 12-14

15 Rebarreling An M1 Garand
ROY SEIFERT • ORIGINAL PAGES 15-18

19 Diamonds In The Rough: Reluctant
1911s
ROBERT K. CAMPBELL • ORIGINAL PAGES 19-22

23 Reader Forum
AMERICAN GUNSMITH EDITORS • ORIGINAL PAGES 23-24

FROM THE ARCHIVE

Unique Marketing

BY AMERICAN GUNSMITH EDITORS FEBRUARY 2011

ORIGINAL PP. 2

Marketing has been defined as the processes for creating, communicating, and delivering offerings that have value for customers and society at large. This is much more than mere advertising or sales. In the words of Harvard Business School's emeritus professor of marketing Theodore C. Levitt, "Selling concerns itself with the tricks and techniques of getting people to exchange their cash for your product. It is not concerned with the values that the exchange is all about.

And it does not, as marketing invariably does, view the entire business process as consisting of a tightly integrated effort to discover, create, arouse, and satisfy customer needs." Marketing is more than just an ad or even word of mouth. It includes how you and your company is perceived.

A great example of this was sent to me from custom stock builder and regular American Gunsmith contributor, Dominick Pisano (domscustomrifles.com) "Several months ago my son asked if I would like to contribute something to San Antonio Academy, a private school for boys grades pre-K through eight. We have two grandsons enrolled and find the school to be including academics and sports programs. "I thought his suggestion was a good idea but nothing came immediately to mind.

Upon reflection upon his suggestion I decided to contribute one of my personal custom rifles to be auctioned off at their annual fund raiser. The rifle was a vz.

24 Mauser that cost roughly \$2000 to complete when I built it more than ten years ago. Currently it would take \$3000 and change to replicate. "To make along story short the rifle was a big hit and drew a lot of attention at the fund raiser, along with many inquiries. The rifle sold at auction for \$1700.

This pleased me greatly but that is not the end of the story. I have garnered three projects to date from the exposure I received. I'm pleased to report that my contribution brought much needed funds to an excellent educational facility and enough work to keep me occupied for many months to come. A win - win for all involved." Mr. Pisano is as classy as his custom stocks, something the folks at that school fund raiser certainly realized.

What started as an act of philanthropy lead to several valuable business contacts, no doubt because of his concern with the values that an exchange in abundance is all about. American Gunsmith Index: americangunsmith.wordpress.com Speaking of classy, reader and member Keith Mc Mann, owner of the Mc Mann Gun Shop in New Boston, MI, compiled an index of American Gunsmith articles from November 1993 to present adding 1,174 references by gun name and model in alphabetical order.

The complete list is also available as a.csv (comma-separated values) file that can be input into any spreadsheet or database program that you want.

RIFLES

Disassembly/Reassembly of the Steyr AUG Bullpup, Part I

A look at Austria's famed military rifle. Part II will be dedicated to the trigger mechanism which requires further coverage.

BY CHICK BLOOD FEBRUARY 2011

ORIGINAL PP. 3-8

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-B3EB3B400E-A1517-P03-F01. Know the rights holder? Please ask them to contact us.

AG-B3EB3B400E-A1517-P03-F01

In this particular case I must say I'd like to have been a fly on the wall or the guy with a tape recorder in the unmarked van parked outside eavesdropping as the committee meeting to outlaw "assault" weapons was in progress. I can hear it now: "It's a military rifle." "True, but this one isn't fully automatic." "Maybe so, but it still looks bad. Can't have that sort of thing. Better ban it." That's an approximation of how it might have sounded, folks, when the Steyr AUG was banned back in 1989.

It wasn't the only gun to make the list after a similar in-depth "discussion." I wonder if the decision would have been different if Steyr had called its AUG something else. Nah, what the letters stand for wouldn't have changed committee minds. Spelled out as Armee Universal Gewher would probably have added the words "Too German" to their decision and if Steyr had named the rifle after its configuration, Bullpup, those sitting gun "gurus" would have banned it for fear of rabies.

There may be a few among you unfamiliar with a Bullpup configuration so allow me to expound. It is a shoulder firearm in which both the action and the magazine are positioned aft of the trigger adjacent to the

user's face and lacking a conventional butt stock. What is gained by this set-up is a twenty-five percent shorter overall length for the same length of barrel, significant weight savings and improved handling in tight quarters. The configuration itself isn't new.

It was first employed in rifles and carbines as early as 1901 before being applied to semi-automatics circa 1918. The Steyr AUG of 1977, having overcome problems with this configuration among left handed shooters by allowing both bolt and ejection port cover to be readily switched to left-hand ejection, is often considered the most significant "pup" and was employed by the armed services of more than twenty countries.

If you're really interested, a complete list of rifles of this design guns can be turned up by telling your search engine to go find "Bullpup." At any rate, with thanks from the many fans of the design and an apparent enlightenment amongst gun banners on this side of the pond, Steyr Arms has relaunched its once prohibited AUG as the AUG/A3 SA USA. Basically, the rifle could be considered a proud descendant of the 1977 AUG. It is that and more.

While it remains a handy, gas operated rifle known for a locked action, reliability and quick change barrel, its established reputation for accuracy has received a kick upstairs. This benefit has come about as the result of a stateside partnership between Steyr and Sabre Defence Industries.

You may recall the article appearing in our November 2007 issue featuring the Sabre XR rifle, an AR-15 clone whose bore dimensions are held under Mil-Spec of plus or minus 0.0004 and whose receivers are CNC machined from forgings of 7075-T6 aircraft aluminum. The XR is chambered from the commonly used .223 and the uncommonly used, so far, Grendel 6.5mm. The round, invented by Bill Alexander of Alexander Arms, totally dusts off the 5.56mm in terms of long range performance with half the recoil of the 7.62 NATO.

For those enamored of the big bang, Mr. Alexander has also created a monster called the .50 Beowulf. The rifle to shoot it is built for him by Sabre, available only from Alexander Arms and, except for the size of the hole in its barrel, appears to be an AR-15. When I asked the inventor how his sales for this setup

DISASSEMBLY/REASSEMBLY OF THE STEYR AUG BULLPUP, PART I CONTINUED

ORIGINAL PAGE 4

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-B3EB3B400E-A1517-P04-F01. Know the rights holder? Please ask them to contact us.

AG-B3EB3B400E-A1517-P04-F01

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-B3EB3B400E-A1517-P04-F02. Know the rights holder? Please ask them to contact us.

AG-B3EB3B400E-A1517-P04-F02

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-B3EB3B400E-A1517-P04-F03. Know the rights holder? Please ask them to contact us.

AG-B3EB3B400E-A1517-P04-F03

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-B3EB3B400E-A1517-P04-F04. Know the rights holder? Please ask them to contact us.

AG-B3EB3B400E-A1517-P04-F04

were doing, he responded with typical British understatement, "Having a distinctly discouraging effect on the intents of modern day Pirates of the Caribbean, they are doing extremely well, thank you, amongst defensively minded yacht owners in the Southern United States." Having seen the Beowulf, I can understand why. You may find it enlightening to visit AlexanderArms.com. I return to the Steyr/Sabre Defence partnership.

The meticulous Austrian engineers having oversight of AUG/ A3 production must have realized so much respect for the materials used and precise tolerances held to on the XR that Sabre was their choice to produce the receivers and barrels for the new AUG.

I'm claiming no credit due my rave notices in the 2007 article, but nice going you Tennessee Volunteers!

About this Bullpup being produced "over there" and over here, it is chambered for .223 Remington and wears A an interchangeable, chromed lined from breech-to-muzzle barrel available in the shooter's choice of 16 or 20 inches. The gas piston assembly is enclosed in a tube on the right side of the barrel. This assembly includes a regulator with two settings. One is for normal use and the other allows an increase in gas flow if the rifle becomes very dirty or must be operated under extreme cold conditions.

I have been told by one AUG/A3 owner that after a couple of thousand rounds he has never had to ask the rifle to perform under other

than a "normal" gas flow setting. It still exists, none the It takes a strong thumb to get 'er done. All its inner orifices can be cleaned out with metric drill bits. Ales, for those not equally inclined to clean a gun after shooting it or who just adore going afield in below zero temperatures prodded further downward by severe wind chill factors.

Whichever model of behavior fits your AUG/A3 customer, here's how to approach the rifle. First, field strip the rifle. As always, the chamber must be empty and the safety "on" along with your eye protection. The AUG/A3 owner's manual takes its reader pretty far into the gun but when was the last time you had an owner's manual brought in by the owner when delivering their gun for service or repair?

DISASSEMBLY/REASSEMBLY OF THE STEYR AUG BULLPUP, PART I CONTINUED

ORIGINAL PAGE 5

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-B3EB3B400E-A1517-P05-F01. Know the rights holder? Please ask them to contact us.

AG-B3EB3B400E-A1517-P05-F01

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-B3EB3B400E-A1517-P05-F02. Know the rights holder? Please ask them to contact us.

AG-B3EB3B400E-A1517-P05-F02

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-B3EB3B400E-A1517-P05-F03. Know the rights holder? Please ask them to contact us.

AG-B3EB3B400E-A1517-P05-F03

Fully expecting that no-show habit to continue, I'll take you through the pages you'd otherwise never see. There is no single schematic of the A3 so I'm forced to indulge your patience by referring to each separate schematic of a specific subassembly as required. I realize that is a bother but it's the best way.

Of course, there's nothing prohibiting you from making a copy of each one along with the appropriate parts list, assembling them on a larger sheet of paper and making an all-encompassing chart to retain for your unique and exclusive use. Be mindful of this: Right out of its case, there is absolutely nothing even slightly loose in an A3. I hope your finger strength hasn't abandoned you. And away we go.

Grasp the front pistol grip with one hand, the magazine with the other and depress the mag catch to release the component. Maintain your hold on the pistol grip. With your free hand, pull the cocking handle fully to the rear and lock it there with a clockwise twist. With the same hand, push down on the barrel locking pin while simultaneously turning the forward grip clockwise. Referring to the Housing Group schematic, remove the barrel from the housing group.

Move your right hand from the front to the rear pistol grip. Release the cocking handle with a counter-clockwise twist. Press the rifle

butt against your body and push the housing lock through from left to right. Slide the housing group and gun lock forward and out of the stock. Hold on to the housing and pull out the gun lock. Position The pin (A) is rotated clockwise and pops to the rear. the butt with its thin end downward and facing away from you.

There is a marked position, a large dimple in appearance, on the butt's wider upper surface. Press down on it with one thumb while pressing inward on the retaining bolt with a free digit or two. Pivot the butt plate to the rear and off. Maintain the present position of the butt. Place one thumb over the rear of the trigger mechanism. Press inward on the retaining bolt lock with the free digits then back out the retaining bolt. Withdraw the trigger assembly.

This suffices for a basic clean up but in case the rifle is beyond basic cleaning you have to go further. Hold the barrel by the forward pistol grip. Press the gas regulator head down and turn it clockwise until its slot aligns with the nose of the gas cylinder. Should the gas head be fouled stuck with pollution you can use an empty cartridge case or the retaining bolt as a tool for depressing and turning it.

In these badly polluted cases, squirting some good quality solvent into the rear of the tube should, after a few minutes have passed for

the solvent to do its thing, enable you to push the gas piston out from behind. When making your own wire hook tool for fitting the barrel grip lid cap use spring steel wire. Awith the right guide tube of the gun lock. After that, removal of the spring is a piece of cake.

Speaking of guide tubes brings me to additional stripping of a gun lock that has tried to exist and function under the extreme dirty conditions that can accumulate in the gas system. Grasp the lock assembly by its slide and place it flat on your bench with the hole in its top facing upwards. At the back end of the slide you'll see two tabs. Steyr refers to what they're attached to as an "anti turn device." Squeeze the tabs together and rotate them up to align with the top hole.

Turn the end of the firing pin counter-clockwise with the fingers of your free hand. It will jump out all by itself and you can remove it. You still have one thumb handy. Use it to push the bolt slightly to the rear while using a digit from your other hand to press down on the bolt control until the bolt moves freely to the front. Back off pressure on the control and withdraw the bolt. The slide lock sleeve and spring ought to come out with it. If not, go fishing for them.

The cocking piece is slid downward to remove it from the rear of the slide.

DISASSEMBLY/REASSEMBLY OF THE STEYR AUG BULLPUP, PART I CONTINUED

ORIGINAL PAGE 6

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-B3EB3B400E-A1517-P06-F01. Know the rights holder? Please ask them to contact us.

AG-B3EB3B400E-A1517-P06-F01

Steyr AUG Barrel Group (Specifications subject to change without notice) 1 Barrel, Sub Assembly 2 Gas Regulator 3 Barrel Grip 4 Lid, Barrel Grip 5 Spring, Barrel Grip 6 Pin 7 Flash Eliminator 8 Nut 1 Housing Sub Assembly 2 Plunger 3 Spring 4 Button, Sub Assembly 5 Grub Screw 6 Pin 7 Front Sling, Sub Assembly 9 Retaining Ring 10 Piston 11 Ring, Piston

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-B3EB3B400E-A1517-P06-F02. Know the rights holder? Please ask them to contact us.

AG-B3EB3B400E-A1517-P06-F02

12 Spring, Piston 17 Bayonet Holder 18 Screw 19 Nut Steyr AUG Housing Group (Specifications subject to change without notice) 8 Button 9 Spring, Button 10 Pin 11 Body, Cocking Slide 12 Pin 13 Spring, Cocking Slide 14 Spring, Connecting Bolt 15 Connecting Bolt 16 Pin 17 Link Piece 18 Spring, Link Piece 19 Grip, Cocking Slide 20 Pin 25 Upper Part Picatinny Stanag

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-B3EB3B400E-A1517-P07-F01. Know the rights holder? Please ask them to contact us.

AG-B3EB3B400E-A1517-P07-F01

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-B3EB3B400E-A1517-P07-F02. Know the rights holder? Please ask them to contact us.

AG-B3EB3B400E-A1517-P07-F02

Steyr AUG Gun Lock Sub Assembly (Specifications subject to change without notice) 1 Slide 2 Plunger Spring Lock, Long 3 Spring, Lock Long 6 Thrustpiece, Left 7 Thrustpiece, Right 8 Bolt, Lock 10 Extractor Steyr AUG Butt Group (Specifications subject to change without notice) 11 Pin, Extractor 12 Spring, Extractor 13 Ejector 14 Spring, Ejector 15 Pin, Retaining 16 Slide, Locking 17 Pin, Control 18 Spring, Slide Locking 1 Butt Sub Assembly 2 Plate, Buffer 3 Rod, Guide 4 Buffer 5 Screw, Trigger 6 Washer, Trigger 7 Trigger 19 Pin, Firing

20 Sleeve, Spring Slide Lock 21 Cocking Piece 22 Control Pin Retaining Pin 23 Roller, Slide 24 Pin, Roller 25 Spring Loaded Firing Pin 26 Sleeve, Spring Loaded Firing Pin 8 Nut, Trigger 9 Sear 10 Spring, Catch Safety 11 Catch, Safety 12 Housing Lock 13 Spring, Housing 14 Catch, Magazine 15 Bolt, Magazine Catch 16 Nut, Magazine Catch 17 Spring, Magazine Catch 18 Butt Plate Sub Assembly 19 Lid 20 Ejection Lid, Inside 21 Ejection Lid, Outside

DISASSEMBLY/REASSEMBLY OF THE STEYR AUG BULLPUP, PART I CONTINUED

ORIGINAL PAGE 8

A few words of warning regarding a badly fouled A3. The rifle has many polymer components. The trigger mechanism is loaded with them. Harsh cleaners, such as brake drum and or carburetor cleaners, can put a real dent in compacted fouling, however, these types of cleaners should never be used on a polymer unless you have been assured by factory technicians that they will not weaken or actually melt the polymers employed in the construction of the gun.

A product resolving the quandary and saving you long distance charges has been mentioned here in Tech Topics. Dunk-Kit allows you to soak a polymer component, large or small, in it for days if necessary. No harm will come except to the encrusted deposit you are trying to remove. The gent who came up with Dunk-Kit is a member of the American Pistolsmiths Guild and a past Pistolsmith of the Year.

You can order a small bucket, a medium bucket or barrel of his brainchild at Detailed Disassembly I'll try and make things easier for you from here on out by eliminating the need for your eyes to dart back and forth to the individual schematics and parts lists. I will instead limit instructions by the part numbers and the schematic of the section being worked on. Starting with the Barrel Group schematic, the gas system should be removed from the gas tube as previously described.

You'll need a 200 gram fitter's hammer, a 4mm pin punch and a hook for reassembly. Add to those a double open-end 19 x 22mm wrench, a small blow torch and some Loctite 648. The hook is pictured elsewhere and can be fabricated from drill rod stock. It will be used to reinstall the spring (5) in the barrel grip (3). Note the lid (4) on the grip. It's the spring-related part and can fly when you drift the grip retaining pin (6) downward. Whatever, remove the grip lid and spring from the grip.

With the torch, heat up the flash eliminator (7) and nut (8) to 482 degrees Fahrenheit. Tempilaq, from Brownells, can

be used to alert you when the desired temperature has been reached. There will also be a small amount of smoke. The heat is required to defeat the integrity of the Loctite the factory has applied to the eliminator and nut threads. Note that both are left handed. Loosen the nut with the open-end wrench and then back off both the flash hider and nut.

Turn your attention to the regulator (13) of the gas system and gather together the following twist drills: 1.6mm, 2.1mm, 3.2mm and 8.0mm. These will fit every orifice in the regulator and can be used like a reamer to clean them out if major fouling is present. Failure to eliminate this fouling will assuredly result in feeding and/or jamming problems.

As for the bayonet holder (17), I doubt your customer will be using a pig sticker even when hunting wild boar so remove the holder by backing the screw (18) and nut (19) totally off. The cocking slide assembly will require your fitter's hammer, 3mm punch and the hook you made from drill stock. Drift out the pin (20) from the cocking slide grip (19). Separate the grip by pulling it off the link piece (17). Push through the pin (16), remove the link piece and link piece spring (18).

Pull back and swivel out the slide cocking body (11), punch through its pin (12) and remove the cocking spring (13) with the selfmade hook. Refer to the Gun Lock schematic. You've already been through separating the bolt from the rifle in the field stripping section. Now I'll start taking down the bolt. The fitter's hammer remains as a tool to be aided and abetted, this time with a 2mm pin punch and a 6.5mm screwdriver. Addressing the extractor (10), push through its pin (11) with the punch.

Being careful not to drop the extractor, remove the extractor spring sub-assembly (12). The ejector pin (15) is located immediately aft of the bolt lugs and should be positioned uppermost before drifting it downward with the pin punch. Do not re-

move the punch. It must remain in place to prevent the ejector (13) from escaping into who knows where from the bolt head. After you have that possibility eliminated, remove the punch, pull out the ejector and its spring (14).

The only two items remaining in the bolt body are the bolt control pin (17) and its retaining pin (22). Insert the screwdriver into the control pin hole and push out the retaining pin. If the shooter is a southpaw you'll need to change from right hand to left hand ejection. Refer to the Butt Group schematic and have a screwdriver with a 3.5mm blade on hand. There is provision for an ejection port on both upper sides of the butt and two components occupy either.

One is an outer cover (21) and the other is an inner lid (20). Use the screwdriver to lightly lift the front end of the outer cover while pushing its back end forward with your opposite thumb. When you remove the loosened outer cover the inner lid will drop down into the stock and can be removed from the magazine well or ejection port. In this switch, the inner lid is inserted first from inside the butt and held in the port opening while the outer cover is slid in from the rear to engage it.

A left-hand bolt is required to complete the change and is available from Steyr, requiring no check of head space after installation. At least what Steyr says. It does seem the tolerances being held by the Austrians are so precise there is never a need to be concerned about headspace. Me? If I were making a right-to-left ejection switch you can safely bet I'd pop in GO and NO-GO gauges before handing the rifle back to its owner.

Perhaps I tread too cautiously but I've never made a bolt change that didn't include a check of head space, function with dummy rounds and test firing with live ammo. With every respect for Austrian precision, I never will. AG

MACHINING

Mystery Martini

It looks like a Martini rifle. But is it?

BY DOMINIC PISANO FEBRUARY 2011

ORIGINAL PP. 9-11

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-B3EB3B400E-A1518-P09-F01. Know the rights holder? Please ask them to contact us.

AG-B3EB3B400E-A1518-P09-F01

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-B3EB3B400E-A1518-P09-F02. Know the rights holder? Please ask them to contact us.

AG-B3EB3B400E-A1518-P09-F02

One of my customers told me he was sending another large Martini my way to have fitted to a machined stock. When it arrived the rifle looked somewhat like a large Martini mainly because of the pivoting breech block — as pioneered by Henry O. Martini of Boston, Massachusetts — and the overall size and appearance of the receiver. However, the lever was part of the trigger guard which was not very Martini like.

All Martini rifles I have encountered feature the lever behind the trigger guard loop, with the original Peabody side hammer action being an exception. The biggest difference with my customer's rifle was that the trigger assembly was a separate unit attached to a trigger plate. I had never seen a build quite like this and it was something of a mystery to me. I looked for markings that might provide some clues. All I found was the following inscription on the left side of the frame: hry ryennsr.

Under that was the Swiss cross with the text “aardy (suisse)” inscribed below, indicating the action was made in Switzerland. There was a small lever on the lower right side of the frame which served as a safety. That was it. There were no proof marks of any kind. The unit came without a barrel so I could glean no information via that source. I looked through all of my single shot books and could find no reference to this action. Be that as it may, I began the process of fitting the action to the machined stock.

The action had a small lever coming out of its rear and a small spring attached to it. Again I had never seen anything like this before and assumed it was part of the firing mechanism, however, I could not confirm this until the fitting process was well under way. Despite having never before seen this particular Martini variant, fitting the action turned out to be a fairly straight forward

process as there was stock bolt which made a ready reference with the fit of the action to the stock.

Using a combination of chisels and rotary burrs on the Dremel tool I made short work of completing the task. The key elements to inletting the stock on this action was to be certain that the abutment fitted perfectly up against the rear action rim. Just as important though not visible to the eye was to get the front wall of the stock firmly up against the rear wall of the frame. This is necessary because the contact here is the main area for absorbing the rifle's recoil upon firing.

Failing to precisely fit this area would allow the recoil to be thrust directly against the rim, which abuts the frame, and eventually chipping it out. I mixed up a small batch of Brownells Acraglas Gel and carefully lined the rim of the frame and the forward portion of the stock with the bedding compound. In addition to a mirror-perfect fit, the epoxy serves the second purpose of

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-B3EB3B400E-A1518-P10-F01. Know the rights holder? Please ask them to contact us.

AG-B3EB3B400E-A1518-P10-F01

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-B3EB3B400E-A1518-P10-F02. Know the rights holder? Please ask them to contact us.

AG-B3EB3B400E-A1518-P10-F02

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-B3EB3B400E-A1518-P10-F03. Know the rights holder? Please ask them to contact us.

AG-B3EB3B400E-A1518-P10-F03

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-B3EB3B400E-A1518-P10-F04. Know the rights holder? Please ask them to contact us.

AG-B3EB3B400E-A1518-P10-F04

insuring that the wood is perfectly sealed. Any moisture which manages to get into this area can wick up into the end grain of what is the weakest area of the stock. Of course I first applied wax to all metal surfaces to be certain that I could safely remove the stock once the Acraglas had set. I applied wax to the stock bolt as well. After a 24 hour wait I unscrewed the stock bolt and removed the

stock from the frame. It was a perfect fit. Next came the fitting of the trigger plate and trigger assembly.

I had several guides to go by which greatly assisted me in this task. First there was a small tenon in the forward portion of the trigger plate which fit snugly into a corresponding mortise in the lower rear of the frame. The second item was a small spring that served as a lock for the operating lever

when it was in the closed position. Using black stock inletting marking agent I made certain that the components of the trigger assembly were free to operate and not binding on wood.

This took several try and fits before I was satisfied with the task. When I thought all was in order I assembled the butt stock to the action and fit the trigger plate/trigger



ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-B3EB3B400E-A1518-P11-F01. Know the rights holder? Please ask them to contact us.

AG-B3EB3B400E-A1518-P11-F01



ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-B3EB3B400E-A1518-P11-F02. Know the rights holder? Please ask them to contact us.

AG-B3EB3B400E-A1518-P11-F02

assembly. Everything fit into place after a bit of fine tweaking. Most importantly, the double set trigger operated perfectly, with the set trigger needing just the finest touch to release the striker. I felt good about the This is the original Peabody design seen in a multitude of various Martinis from the small Cadet model to the

large Martini Enfield made in the millions and used by the Brits during the halcyon days of the British empire. project.

Not only did I learn about an entirely new and different type of Martini action, I was able to fit it into the stock so that the customer would be delighted with the effort. Mystery solved!

PEOPLE & COMPANIES

Savage Model 12 Extractor Refit

Rebarreling a Savage Model 12 rifle with a .308 Winchester-size bolt face for a PPC cartridge will require extractor replacement. Such extractors can be made by careful machining and fitting of a new part.

BY NORMAN E. JOHNSON FEBRUARY 2011

ORIGINAL PP. 12-14

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-B3EB3B400E-A1519-P12-F01. Know the rights holder? Please ask them to contact us.

AG-B3EB3B400E-A1519-P12-F01

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-B3EB3B400E-A1519-P12-F02. Know the rights holder? Please ask them to contact us.

AG-B3EB3B400E-A1519-P12-F02

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-B3EB3B400E-A1519-P12-F03. Know the rights holder? Please ask them to contact us.

AG-B3EB3B400E-A1519-P12-F03

As with most other manufacturers, Savage rifles use all of the common bolt face sizes to fit cartridges like .223, .308, et al. Odd-sized cartridges such as the .22 PPC and 6mm PPC fall inbetween these two cartridge sizes with a case head size of 0.441-inches. The closest common bolt face size that fits the .22 PPC is the .308 Winchester, sized at 0.473-inches, but this size bolt fails to extract the PPC cases.

Some other rifles like the Remington Model 700 and 40X will extract fired .22 and 6mm PPC cases equipped with a .308 Winchester bolt head but the Savage Model 12 does not. Unaware of this issue with the Savage design, I had built a rifle for chambered in .22 PPC and later learned that case extraction would be a problem. I called the company to see if they could offer any solutions and they suggested trying their extractors made for the .223 Remington bolt.

The Savage engineer I spoke with informed me that 441" as compared with the larger .308 size case head. The standard Savage extractor fails to extract these smaller cases. these extractors are longer and just might work. Unfortunately, this did not prove to be the case. On arrival of the new .223 Remington-size Model 12 extractors I learned that they are also a few thousandths too short of full case rim engagement. I made plans to design and machine a replacement extractor to fit the .22 PPC case head.

SAVAGE MODEL 12 EXTRACTOR REFIT CONTINUED

ORIGINAL PAGE 13

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-B3EB3B400E-A1519-P13-F01. Know the rights holder? Please ask them to contact us.

AG-B3EB3B400E-A1519-P13-F01

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-B3EB3B400E-A1519-P13-F02. Know the rights holder? Please ask them to contact us.

AG-B3EB3B400E-A1519-P13-F02

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-B3EB3B400E-A1519-P13-F03. Know the rights holder? Please ask them to contact us.

AG-B3EB3B400E-A1519-P13-F03

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-B3EB3B400E-A1519-P13-F04. Know the rights holder? Please ask them to contact us.

AG-B3EB3B400E-A1519-P13-F04

308 size bolt face. From this stage the end must be shaped to fit the outside of the case head and the extractor claw must be milled to proper length. The piece is later cut to proper length. Making a New Extractor Following very careful measurement of the existing .308-size extractors I selected a suitable piece of steel bar stock for machining and milled it to form a rectangular end measuring 0.275 by 0.105-inches.

Then, with the stock piece in a special jig in the mill vise, laterally opposing edges were milled from each topside 0.055inches deep and 0.045-inches wide. This left the top ridge 0.185-inches wide to fit the upper extractor slot in the Savage bolt. It is important to try the stock part in the bolt and not rely totally on measurements as it may need some fitting

and polishing. With the piece formed thus far and fitting the bolt extractor groove smoothly the extractor claw and tip radius are formed.

This requires a 7/16-inch end mill, which is very close to the PPC case extractor groove radius. The end mill, held in a jig, is slowly fed into the tip of the stock piece forming the same configuration as the end of the factory extractor slot. With this step complete, it is now time to actually try a cartridge on the bolt face and allow the new extractor to engage the case extractor groove.

A proper bevel is then filed on the top end of the extractor, right up to the claw, to form a similar angle to the existing extractor claw. The new extractor needs a radius to better fit the cartridge and the use of a fine, round file to form the angle is best. If the bolt is closed over a chambered cartridge this bevel engages the end of the case rim, pushing the

extractor to the side and allowing the claw to engage the case and snap into the extractor groove.

Before cutting the new extractor from the stock piece or a 7/16" end mill is used here to fit the radius of the .22 PPC case head. making the beveled hole, it is well to try pushing a case into the extractor to test its function and length. With this accomplished it's time to carefully position and form the beveled hole in the new part to fit the 1/8-inch spring driven steel ball. The spring and steel ball are positioned in a hole in the bolt locking lug beneath the extractor.

The beveled hole position in the extractor is critical so the spring-loaded part engages the case rim and extractor groove correctly at proper depth. Carefully study the original extractor and position the new beveled hole about 0.050-inches

SAVAGE MODEL 12 EXTRACTOR REFIT CONTINUED

ORIGINAL PAGE 14

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-B3EB3B400E-A1519-P14-F01. Know the rights holder? Please ask them to contact us.

AG-B3EB3B400E-A1519-P14-F01

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-B3EB3B400E-A1519-P14-F02. Know the rights holder? Please ask them to contact us.

AG-B3EB3B400E-A1519-P14-F02

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-B3EB3B400E-A1519-P14-F03. Know the rights holder? Please ask them to contact us.

AG-B3EB3B400E-A1519-P14-F03

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-B3EB3B400E-A1519-P14-F04. Know the rights holder? Please ask them to contact us.

AG-B3EB3B400E-A1519-P14-F04

A chambered cartridge rim will push on the angle of the claw, causing the spring-loaded extractor to pop into the rim of the cartridge and properly engage. farther from the tip of the new extractor, which will allow the new extractor tip to extend farther into the bolt face. The hole is drilled using a small starter drill about 0.100-inches deep and enlarged to correct depth and angle with a 1/4-inch, 82-degree counter sink. Compare the new hole for depth with the old extractor.

As a result of proper positioning of the hole, the periphery will be very close to the forward edge of the extractor. Before cutting the part to length from the stock piece actually try it in the bolt with the spring and ball in place with a sample cartridge. If it fits and functions smoothly, cut the part to correct length just short of the outer margin of the bolt locking lug. Conclusion Though a small part, an extractor requires very intricate machining and finishing.

Hand building one from scratch may be your only alternative when trying to mate PPC cartridges to a .308 size bolt face on a Savage rifle. AG 308-size bolt faces clearly shows the differences in the two extractors. The overall length and extended claw needed to grasp the smaller PPC case rim and the radius on the new extractor shows a much improved extraction surface for a more positive case extraction. The new extractor extends farther into the bolt face making extraction of the smaller PPC case possible.

HISTORY

Rebarreling An M1 Garand

Breathing new life into an old war horse can provide satisfaction for both the gunsmith and the owner.

BY ROY SEIFERT FEBRUARY 2011

ORIGINAL PP. 15-18

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-B3EB3B400E-A1520-P15-F01. Know the rights holder? Please ask them to contact us.

AG-B3EB3B400E-A1520-P15-F01

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-B3EB3B400E-A1520-P15-F02. Know the rights holder? Please ask them to contact us.

AG-B3EB3B400E-A1520-P15-F02

I have always been fascinated with military firearms. When I saw a project M1 Garand at a gun show for a very reasonable price I just had to have it. The wood and metal were in respectable condition, but the barrel was completely worn out. This classic piece of history deserved to be revitalized. First, a few words about that history. The M1 Garand was developed by Canadian-born firearms designer John C. Garand and was the first semi-automatic rifle to be generally issued to soldiers of any nation.

During WWII the M1's gas-operated, semi-automatic action gave United States forces a significant advantage in firepower and shot-to-shot recovery time over the standard bolt-action rifles commonly in use by enemy soldiers. The Garand also provided increased shot capacity of eight rounds compared to those bolt-action rifles which typically held only 5 rounds.

One of the disadvantages of the Garand was that enemy soldiers soon learned to listen for the "ping" of the ejecting clip, a tell-tale sign that the rifle was empty. Even so, General George S. Patton called it "The

greatest battle implement ever devised." The Garand officially replaced the bolt-action M1903 Springfield as the standard service rifle in 1936 and was heavily used by U. S. forces in WWII and the Korean War. It continued in service to a limited extent until 1966 during the Vietnam War.

Many thousands were also lent or provided as foreign aid to America's allies. Approximately 5.4 million M1 Garands were produced for military use and some recent manufacturers have produced new receivers with military surplus parts. Garands are widely available to civilian shooters and collectors and can be found at gun stores and gun shows across the country. The Civilian Marksmanship Program (thecmp.org), formerly the Department of Civilian Marksmanship, continues to sell Garands to American citizens.

The M1 Garand is a rugged, reliable battle rifle that has withstood harsh use over decades of time. It was designed to take the punishment of the battlefield. Unfortunately, many of these surplus Garands have seen hard use and come with It fails the bullet test. See article for details.

less-than-suitable barrels. This is understandable since some individual rifles may have had thousands of rounds fired through them during their 70 year service.

Even a Garand that has been through an arsenal rebuild may come with a worn barrel. Due to the design the barrel is normally cleaned from the muzzle end and you can bet that troops in the field didn't use a bore guide for their steel cleaning rods. I have seen many Garand barrels with a good bore, except for the last inch or so at the muzzle which was worn smooth because of poor cleaning technique.

Useful tools for examining barrels include a throat erosion gauge to measure chamber throat wear and a muzzle gauge to measure muzzle wear. One simple expedient for testing muzzle wear is to insert a bullet seated in a cartridge case into the muzzle. If the bullet can be inserted up to the case neck or cannelure on the bullet the barrel is excessively worn and needs to be replaced. My 1942 Springfield M1 Garand was an arsenal rebuild that had a worn out

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-B3EB3B400E-A1520-P16-F01. Know the rights holder? Please ask them to contact us.

AG-B3EB3B400E-A1520-P16-F01

barrel. This article explains how I installed anew replacement and returned it to shooting condition. Tools Rebarreling a Garand requires special tools. The following tools (and part numbers) are available from Midway USA (midwayusa.com): Barrel vise (226100), Action Wrench, M1 Garand (279337), Rosin (846792), .30-06 Go gauge (763069), .30-06 Field gauge (556668), .30-06 pull through chamber reamer (258068), Receiver and Barrel Timing Gauge, M1 Garand (872304).

The receiver and barrel timing gauge is nothing more than two aluminum bars that attach to the rear sight base on the receiver and the gas cylinder on the barrel indicating a proper index between the barrel and receiver. To save some money on this project I made my own. I went to my local home improvement store and purchased 3/4 x 12-inch and 1 1/2 x 12-inch aluminum bars. I cut one 5/8-inch notch in the first bar and two quarter-inch notches 1 1/4-inches apart in the second.

The narrow bar sets over the dovetail on the sight flange on the gas cylinder and the wide bar sets between the rear sight ears on the receiver. I also found a less expensive alternative to purchasing the .30-06 pull through chamber reamer which I will explain later. Disassembly First, I completely disassembled the receiver, including the rear sight, but left the clip latch in place. I will assume the reader already knows how to accomplish this.

If not, there are many fine guides and books available that contain instructions on how to disassemble this rifle. So now I had a bare receiver with the worn barrel attached. Time to remove it. I wrapped tape around the front of the receiver to protect the finish and attached the receiver wrench. Then I applied rosin to the barrel bushing, slipped it over the barrel and attached the barrel vise. I set the barrel vise in my bench vise and pushed down on the receiver wrench to loosen the receiver from the barrel.

Once the receiver was loose I removed the barrel vise from the bench vise to completely remove the barrel from the receiver. Installing the New Barrel There are a number of sources for new barrels. I found the best price for a Criterion barrel to be from either the Civilian Marksmanship Program or Dean's Gun Restorations (drguns.com). I purchased my Criterion barrel from the CMP. Once the new barrel arrived I installed the gas cylinder with the front sight removed.

Depending on how tight the splines of the new barrel are you may have to drive the gas cylinder onto the barrel with a piece of wood and a mallet. I installed the barrel vise and screwed the new barrel onto the receiver, tightening the barrel until the bars of the receiver and barrel timing gauge were parallel indicating that the barrel was properly indexed. With the barrel installed, let's look at finish reaming.

The chamber of my new barrel came about 0.010 inches short which meant I would have to finish cutting the chamber to the proper headspace. The pull through chamber reamer is an expensive tool that I would probably only use once for this project. Instead of purchasing this tool I went to Elk Ridge Reamer Rentals (reamer-rentals.com) where I rented the reamer for a little over 30% of the cost of purchasing one.

It is critical when doing this sort of rifle work to check the headspace and the only correct way to confirm proper headspace is with cartridge specific precision gauges. Excluding multi-tool headspace gauge sets for extreme precision work, there are typically three lengths of headspace gauges in a set. Go gauges are the shortest and used to set minimum headspace for a new barrel.

This ensures that the rifle chamber will accept cartridges made to maximum Sporting Arms and Ammunition Manufacturers Institute specifications. No-Go gauges are the middle length of the three gauges. With this gauge installed a firearm should not go to battery, however, if the bolt does close on this gauge the barrel may still be within acceptable SAA-MI tolerances. If this is the case the Field gauge is needed. The longest of the three gauges, it usually represents the extreme end of safe tolerances set by SAAMI.

Technically, a bolt should never close on a field gauge, however, some gauge manufacturers purposely make their Field gauges a bit undersize so headspace

REBARRELING AN M1 GARAND CONTINUED

ORIGINAL PAGE 17

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-B3EB3B400E-A1520-P17-F01. Know the rights holder? Please ask them to contact us.

AG-B3EB3B400E-A1520-P17-F01

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-B3EB3B400E-A1520-P17-F02. Know the rights holder? Please ask them to contact us.

AG-B3EB3B400E-A1520-P17-F02

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-B3EB3B400E-A1520-P17-F03. Know the rights holder? Please ask them to contact us.

AG-B3EB3B400E-A1520-P17-F03

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-B3EB3B400E-A1520-P17-F04. Know the rights holder? Please ask them to contact us.

AG-B3EB3B400E-A1520-P17-F04

I tightened the new barrel until the bars were parallel. I used plenty of lubrication while cutting the chamber. could still be within SAAMI specifications, but just barely. In almost every case a bolt that can close on a Field gauge needs serious attention. To use these gauge completely disassemble the bolt. There should be no extractor or ejector contact on the gauge, just the bolt face.

To disassemble the Garand bolt I slipped a small flat-blade screwdriver between the extractor and extractor plunger so the plunger was depressed. While holding my thumb over the bolt face I used a punch to drive out the extractor from the bolt body, thus preventing the ejector from flying out. After the extractor was removed I carefully relieved ejector spring tension by allowing the ejector to move out of the bolt face.

I removed the ejector and ejector spring, then removed the firing pin from the rear of the bolt. Finally, I used a pair of needle-nose pliers to remove the extractor spring and plunger. While the bolt was disassembled I cleaned and lubricated all parts, then set them aside in a small plastic container so I

wouldn't lose them. I am always amazed how dirty a semiautomatic can get, especially all the little nooks and crannies where powder residue can accumulate.

With the rifle and bolt disassembled, I inserted the .30-06 Go gauge into the chamber and gently tried to close the bolt using just light finger pressure. Never try to force a bolt closed on a gauge. Just light finger pressure is all that is needed. The bolt would not close on the Go gauge, indicating a short chamber. I placed a bore guide on the front of the barrel and ran the pull-through rod through the bore until it was visible in the action.

I attached the reamer to the rod and liberally lubricated it with cutting oil. After pulling the rod until I felt the reamer contact the rifling, I gave it about ten turns. The reamer should only be turned in the cutting direction as turning the reamer in the opposite direction could damage the cutting edges. I could feel the reamer 30-06 Go gauge in the chamber the gap between the right locking lug and the receiver shows that the bolt would not close.

This indicates a short chamber, which I will have to continue reaming until the bolt falls into place with the Go gauge installed. 45 caliber cleaning patch wrapped around a .25 caliber bore brush then impregnated with cleaning compound is used to polish the bore and newly cut chamber throat. cutting into the new barrel indicating it was making a longer chamber and new throat. I pushed the reamer back into the action and unscrewed it from the rod.

After removing the rod and bore guide from the barrel I thoroughly flushed the reamer and barrel with brake parts cleaner to remove all chips and cutting oil. I ran a clean, dry patch through the bore from the breach to the muzzle to make sure there were no metal chips left and rechecked with the Go gauge again, but the bolt still would not close on the Go gauge.

This entire procedure was repeated until the bolt would completely drop into battery with the Go gauge in place, indicating the chamber and throat were properly cut to the correct headspace. Just to make sure, I

also checked with the Field gauge that the bolt would not close. Barrel Break In I purchased a Chrome Moly barrel manufactured by Criterion which is actually a subsidiary of Krieger Barrels, Inc. The company's web site, kriegerbarrels.com, contains a lot of information regarding their manufacturing process and how to break in anew barrel.

When I cut the fi nal chamber dimensions by turning the reamer ninety degrees to the direction of bullet travel, I left reamer marks in the throat across — at right angles to — the lands. These marks are rough enough to strip copper off of a bullet and this in combination with the hot expanding gas turns the copper into a plasma which is deposited down the length of the bore causing fouling. To prevent this fouling the reamer marks in the chamber throat have to be removed.

This can be accomplished by either a number of shoot-and-clean cycles to break Complete your American Gunsmith collection. Or read up on a special subject! A limited number of the following

ORIGINAL SOURCE PAGE

18

MAINTENANCE & REPAIR

Diamonds In The Rough: Reluctant 1911s

Despite an earned reputation for reliability, even John Browning's famed design can hiccup.

BY ROBERT K. CAMPBELL FEBRUARY 2011

ORIGINAL PP. 19-22

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-B3EB3B400E-A1521-P19-F01. Know the rights holder? Please ask them to contact us.

AG-B3EB3B400E-A1521-P19-F01

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-B3EB3B400E-A1521-P19-F02. Know the rights holder? Please ask them to contact us.

AG-B3EB3B400E-A1521-P19-F02

I have benefited a great deal from my research on 1911 pistols. I have enjoyed writing articles and the research often proves to be an enjoyable dig for information. Improving a good firearm is always interesting but straightforward repair of a perplexing problem is a real accomplishment. 1911 pistols often cross my bench that are text book examples of repair work, but others require a bit of research to refresh my memory in procedure.

Sometimes we may repair a firearm with information off the top of our head but more often a bit of research and study is needed. Sometimes we learn new things. One such learning experience came from an Auto Ordnance General's Model. This is a typical steel frame Commander-type pistol generically referred to as Combat Commanders. Aluminum frame versions are typically called Commanders.

All of these are Government Models with a four-and-one-quarter-inch barrel rather than the full length five-inch barrel, with modification to the barrel bushing and a lightweight frame. While we must be aware of

the differences in cycle characteristics, the Commander is much more similar to the Government Model than the shorter Officer's Model. Just the same, some differences, such as the shorter barrel bushing and taller ejector, exist.

The General's Model was different in detail from the majority of 1911 pistols I have worked with in that it featured a unique slide stop and magazine, as we will cover. As for the name of the pistol, I am certain the name is a play on the Colt Officer's Model. A late model Auto Ordnance product, just prior to Kahr production, this pistol was roughly finished in most regards. The slide was a plum color that is often found when the part is removed from the bluing tank too early.

The logo on the left of the slide was stamped too hard and unevenly, with some letters deeper than others and a couple of the letters actually faint. The sights were high visibility. Fortunately the fit and function may be tested without a field strip. The barrel on the right has lugs that are being beat up during firing. Something is amiss.

types but somehow seemed too large, overflowing the dovetail on each side. Despite these flaws, the pistol was of good steel as far as I could ascertain.

Unlike quite a few Auto Ordnance pistols I have examined, the trigger and safety were well fitted and quite crisp. I did the standard safety and action check with good results. I cocked the hammer and then applied the safety. I pressed the trigger and the hammer did not fall. Next, I released the safety then reapplied the safety and pressed the hammer to the rear. There was no tell tale click of a poorly fitted safety or sear connection.

The mushy, ill-fitting safety of these parts often found on other Auto Ordnance pistols was not present. The pistol had been returned to a retail outlet with complaints of malfunctions. The new buyer was disgusted and the shop owner traded with him on another piece. My job was to check the General's Model and correct any problems found.

DIAMONDS IN THE ROUGH: RELUCTANT 1911S

CONTINUED

ORIGINAL PAGE 20

I did not let the appearance of the pistol discourage me as I have seen rough 1911s work just fine, but test firing was another matter. I used Winchester ball ammunition and Wilson Combat magazines to eliminate any possibility of an ammunition or magazine related problems because this is as reliable a combination as can be found. Ball ammo should feed perfectly and Wilson Combat magazines present the bullet nose more into the chamber and less onto the feed ramp than GI magazines.

Despite this, the pistol short cycled several times and the slide stop bounced into the slide lock in recoil, locking the pistol back. I have experienced this problem with extended slide stops in the past. Often, when firing +P loads my support hand would bounce into the slide stop and lock the slide back during a firing string, but when I fired with just one hand I still experienced the same issue. This was not a shooter-induced problem as the slide lock was bouncing into the slide of its own accord.

The 1911 is normally a fail-safe design. The slide will bump the slide lock down if it rises up during firing, so something was amiss. The ammunition was hardball so a too long SWC or JHP bullet could not be blamed for catching the slide stop. The malfunctions continued with different magazines as well. I used one magazine of Winchester Silvertip 185 grain JHPs. The piece fed the hollow point bullets but would still lock back with the slide stop on its own.

I had the box the pistol was delivered in at the shop and as a lark used the original Auto Ordnance magazine on the next range trip. It was a tinny looking thing with a follower that seemed ready to burst from the magazine feed lips. My first impression was that here is a magazine made as cheaply as possible. Imagine my surprise when this magazine functioned flawlessly! The answer here was with the oversized slide stop, an "improvement" I have no use for.

Sometimes, their extra weight gives momentum to the part and they will lock the slide back even if the support hand does not contact it during firing. Sure, a dimple in the slide lock sometimes helps with keeping it in place, and I will outline the dimple procedure later in this report, but I prefer a standard slide lock.

On this particular pistol, the slide stop protruded into the magazine well sufficiently to cause an occasional lock up with any magazines other than the factory-supplied one from Auto Ordnance which was cut sufficiently to allow the slide stop to function properly. I tested with Mec-Gar, Colt, Shooting Star, Cobra, GI, Checkmate, Triple K, Wilson Combat, Les Baer and a few others and none would function except the Auto Ordnance in the General's Model!

I was surprised that Auto Ordnance turned out a special slide stop that required a purpose-designed magazine in the light of all of the 1911 parts and magazines available but they certainly did. The parts appeared factory original. The pistol did function but who wants a 1911 that is reliable with only one magazine from a defunct company? Current Kahr-produced Auto Ordnance pistols use all standard 1911 magazines and so did most of the old A/O pistols.

I am unaware of a present Auto Ordnance version with extended slide lock and the General's Model has not been revived by Kahr. The slide stop was oversized in more than one particular area as it proved difficult to remove during a field strip. Both the shaft and the pedal were oversized. I replaced the oversized/extended slide stop with a Wilson Combat slide stop. No fitting was required and the pistol functioned perfectly with a variety of ammunition and magazines.

To add insult to injury during the firing test the plastic medallion in the pistol's grips fell out. I used Super Glue to restore the estruchon. It continued to work just fine and seemed permanent enough. I returned the pistol with a note of explanation and a bill for the new slide stop and spent ammunition. No charge for the new

gray hairs. I have had considerable experience with slide stops in other pistols that required a bit more work. There are other causes of slide stop problems other than poor design.

Some bullet styles will contact the nose of the slide stop and lock the pistol open during firing. Hand loads are the usual suspect but an unusual bullet shape in factory ammunition sometimes causes a problem. In some cases the slide stop needs to be filed, but carefully. This is cut and try, filing a bit and checking function. The slide stop must lock the pistol open on the last round but it must not interfere with feeding. A few strokes and a touch up with Blue Wonder Gun Blue worked with one such Commander.

The overweight slide stop is not recommended for personal defense but the extended type is still found in competition. A good trick is to use a triangular file to cut a transverse groove in the back of the slide stop where it comes to the slide stop plunger. The slide stop's movement is countered by this groove allowing the plunger tube button to take a larger bite. A simpler solution is to make a dimple in the slide stop by taking a punch and hammer to form a dimple into the slide stop and you have it.

In short, the pistol was OK only with the factory magazine. To use other magazines the slide stop had to be replaced and the problem with slide stop mass causing the pistol to go into lock back may have been present in the overweight slide stop with any magazine. Another pistol caused the author to go back and check notes from several years ago.

The owner purchased the pistol on the cheap, a pretty nice Argentine FMAP 1911, however, at close examination he found the pistol was fitted with National Match parts and an aftermarket trigger. My job was to check and be certain the parts were properly fitted. The owner had not fired the pistol and he is one of those that is rightly cautious with a pistol worked over by those he does not know. The pistol gave every appearance of a handgun that had been

DIAMONDS IN THE ROUGH: RELUCTANT 1911S CONTINUED

ORIGINAL PAGE 21

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-B3EB3B400E-A1521-P21-F01. Know the rights holder? Please ask them to contact us.

AG-B3EB3B400E-A1521-P21-F01

used but not abused. If you know how to install custom parts you should know how to check for proper fit. I did so but the initial firing test bears mention. The pistol looked good as I mentioned and showed a nice trigger compression of four pounds on the RCBS registering trigger pull weight scale. The barrel was a National Match with Colt-type collet bushing. The action was flawless and all parts seemed properly set, but when I fed the pistol it refused to extract a cartridge.

Upon stripping the pistol I found the extractor was not serviceable. In fact it was home-made! I have seen this type of thing before and the pistol may have worked for a time but this did not look good. The extractor was of white metal was not likely tempered. I found this quite odd considering the quality of the other work done on this pistol. While I waited for a Wilson Combat extractor to arrive I tested the fit of the National Match parts. This procedure applies to all 1911 handguns.

First, we press the slide to the rear enough to allow the barrel hood to clear and no more. Attempt to turn the barrel by hand. It should be tight and resistant to movement. If there is slop, the pistol will not be very accurate and there may be issues with the link and link pin. A link pin or link that is not properly adjusted will lead to battering. The barrel bushing is responsible for much of the tightness in lockup but the link and pin may be loose and wallowed out.

The National Match barrel is actually thinner than a standard barrel. The thinner section behind the barrel allows the fitting of a match-grade barrel bushing. By these tests,

my sample FMAP was fitted very well. When the slide was racked the barrel hood slid into the slide cleanly with no play. The time proven check of pressing down on the barrel while the pistol is locked up produced no downward movement. This was as well fitted a barrel as I had seen.

When sliding the slide stop out of its notch and pressing on the muzzle, the slide stop remained loose, indicating proper fit. If pressure on the muzzle had exerted pressure on the slide stop then the link was too short or the link pin had a problem. Another tell-tale problem sign could be an off center firing pin strike. It was some time later before I tested the piece live but the firing pin strikes were dead center. This simple check of barrel fit serves to check not only your own work but also that of others.

When a pistol is fitted with high grade parts there are high expectations and such checks are very important. When the extractor arrived I wanted to be certain the Modelo 1927 was identical in fit to the Colt. Yes, the few I had worked with years ago had been but more recent experience with many 1911s left the issue in doubt. As it turns out, the Modelo 1927 is Coltlike and very little fitting was needed to achieve proper tension. You can waste a lot of time if you do not set the extractor correctly.

Place the extractor so that it picks up the cartridge case properly while maintaining sufficient tension. You may need to file the pad on the extractor slightly. I needed a few strokes on the Wilson Combat extractor and this is normal. The firing pin stop held the extractor correctly and after firing a few

magazines full of Winchester USA ball there was no indication of clocking. I had a good fit.

I was pleased that my work seemed to rival the quality of the original artist who had worked with the rest of that Argentine .45. Some further notes on the extractor. The extractor hook should not contact the slide when the piece is locked up or it may be damaged. The hook should not contact the cartridge case head but rather the cartridge case head must slide properly into the extractor slot. The extractor should move about 0.010-inches when a case is picked up.

Once you have seen a few that are set correctly you will be able to read that small amount of movement by eye without further measurement. If you need to bend the extractor to add tension, a point about 1.3-inches back is ideal. This is just in front of the "hump" on the extractor. A number of conclusions may be drawn. The FMAP 1927 Argentine is compatible with National Match parts. When the extractor arrived, fitting was minimal, the hump on the extractor required a few passes and all went well.

The hump behind the claw did not require any more attention than with any other 1911 pistol. Another 1911 that crossed my bench reflected home improvement gone awry. The Rock Island .45 was brought to my office with the comment that something was wrong with the magazine release. The user was certain the magazine release was broken. I double checked the piece to be certain it was not loaded and tried the magazine release. It was in fact

DIAMONDS IN THE ROUGH: RELUCTANT 1911S CONTINUED

ORIGINAL PAGE 22

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-B3EB3B400E-A1521-P22-F01. Know the rights holder? Please ask them to contact us.

AG-B3EB3B400E-A1521-P22-F01

ARCHIVE IMAGE WITHHELD

The original image is not displayed while permission is being confirmed. If you are the author, photographer, or rights holder, contact editor@gunsmithmag.com and reference AG-B3EB3B400E-A1521-P22-F02. Know the rights holder? Please ask them to contact us.

AG-B3EB3B400E-A1521-P22-F02

The author could have cut out the magazine release clearance but the customer decided to use the originals instead. Very stiff and would not completely depress. I began my examination with the thought that I have enjoyed good success with Rock Island Armory pistols and this piece looked good. The owner reported it was accurate enough and fed hollowpoints. I did not laugh when I discovered the problem.

He had replaced the original grips — note I did not say he fitted them — with a good looking set made of green Cocobolo wood from a reputable maker. I won't mention the maker and embarrass the company because they usually produce great products, but this one was a mistake. The relief for the magazine release was misplaced on the grip! I swapped them out with another set of grips that had the relief cut in the proper place and this solved the issue.

I offered to cut anew relief in the correct place on the customer's Cocobolo grips but I was not certain how it would look. The customer instead decided to replace them with the originals. I never dispose of parts that have been replaced until the pistol is up and running and the customer happy and this is another example why. In another case, a home gunsmith fitted an add-on magazine well, the type that attaches to the grip screw extension, and a set of Crimson Trace Lasergrips.

When fitting wooden grips to this type of magazine guide a bit of relief is needed, but this can not be done with Lasergrips due to the mechanism inside. When the pistol was fired with these accessories bolted on the grips were tilted by the magazine well hooks, tying the slide up! It is worth noting that Lasergrips are a good product but sometimes won't work with certain combinations of other accessories.

I already knew they won't work with pistols fitted with ambidextrous magazine releases, at least the versions I have worked with. Now we have a caution concerning magazine guides as well. The magazine guide served to move the grips cocked. This problem could be experienced with any grip made of synthetic material. While on the subject of accessory issues, I had another customer requesting a Clipdraw on top of a list of custom work.

This device is thin enough to slip under the grips and has an extension that retains the pistol in place when slipping the pistol inside the trouser's waistline. This is a step above not using a holster at all, but professionals in the personal defense community generally prefer using a proper holster. In working with this customer's pistol, I discovered the Clipdraw interfered with the newly-fitted ambidextrous safety. Note this doesn't mean a minimalist affair like the Clipdraw has no utility.

I like this addition for small handguns, especially on snub .38s, but it will not work with an ambidextrous safety on the 1911 and may not be suitable for a fullsize handgun. Complications? Just a learning experience. What did I learn from checking and repairing these 1911s? First of all, to keep an open mind. I knew that Llama and Star produced 1911 variants with proprietary magazines but did not expect this from Auto Ordnance, especially one of older production.

My ignorance is no excuse but the special magazine and slide stop combination was unexpected. The excellent workmanship of the barrel and bushing of the previously-modified Modelo 1927 left me unprepared for such a poor extractor. I probably would not have found that problem in examining the pistol without actually removing the extractor and would have missed the problem if I examined the pistol in a retail outlet.

The final problems were almost silly, in one case unexpected and in the other, simply a matter of parts incompatibility. All I can say is keep an open mind and follow the same procedure as often as possible. These .45s were reluctant to perform properly but with a little coaxing they were quickly back into use. AG

METALWORKING

Reader Forum

BY AMERICAN GUNSMITH EDITORS FEBRUARY 2011

ORIGINAL PP. 23-24

Tightening The .30 Carbine Does RK Campbell, the author of "Tightening Up The .30 Carbine", really recommend routing out the M1 Carbine barrel channel until there's a whole half inch of clearance below the barrel? William R. McCants We asked Mr. Campbell to handle this one. When you take the barrel band off a Carbine, note the the barrel springs free. There is actually about a half inch of clearance at the front when the barrel springs are free.

Be aware there are different strokes for different carbines and you may need to work differently with other types but remember this is not something that is responsive to some single standard remedy. Refinishing Gunstocks Which issue of American Gunsmith would provide me with information on the steps to refinishing a gunstock? We have not yet entered into the preparation of a series of articles on stock refinishing.

Details of the process call for application of a wide range of techniques dependent on an equal range of factors. For example, the expanding use of polymers in the manufacture of rifle and shotgun stocks probably would not apply to anything published on the refinishing of wood stocks. For the moment, we'll assume the stock you have in mind is traditional wood.

Walnut preferably, though quality walnut is rapidly becoming downright precious and substitutes have become an economic necessity in keeping the manufacturing cost of a finished rifle or shotgun within the reach of the average sportsman or woman. While we have not pursued a series on stock refinishing we have answered a number of reader queries regarding it.

All those answers have been based on information found in a single book, Professional Stockmaking by David

Westbrook published by Wolfe Publishing Company of Prescott, AZ. It is a step-by-step, large format hard bound volume covering all aspects and techniques employed by the very best craftsmen in the trade. That may sound like overkill to you if all you intend is the refinishing of an existing stock.

That too is covered in detail by Westbrook, along with contributors Monte Mandarino, Mark Silver, Ed Webber, Richard Schreiber and Bruce Farman. Most if not all those names are known well to and called upon regularly by members of the Custom Gunmakers Guild. We strongly recommend you locate and purchase a copy of the book and deeply digest the advice it contains.

Of course, if you're dealing with a polymer stock, simply fill any dents, sand them smooth and spray the material with the color or camouflage pattern of your choice after speaking with Steve Lauer of Lauer Custom Weaponry, John Wetzel Winchester Model 1905 I am looking for a forend fitting a Winchester Model 1905 self loader. The part number I need is 869150. I have tried Numrich Gun Parts Corporation but they do not have any in stock and did not anticipate a resupply. Do you know where I could obtain this part?

Failing that, can you recommend where I could have one made? Phillip R. Burns Call Brownells and request a complimentary copy of their Parts Source List. It deals primarily with sources for out-of-production firearms and includes some that specialize in Winchesters.

If your fingers get worn out making long distance calls resulting in "not available" responses, call Boyds Gunstock Industries and Wenig Custom Gunstocks Stuck Hoppe's Bore Snake Do you have any advice on removing a broken off Hoppe's

Bore Snake out of a rifle barrel? It will not be driven out. I need to dissolve it I think. Kent Williams We think anything you pour in that is capable of dissolving a Snake could also harm the rifling.

Our suggestion is to introduce penetrating oil into the barrel to about two inches below the chamber. Plug the breech with a tightly rolled cloth patch and allow the barrel to rest at least overnight. Using a brass or aluminum rod barely fitting inside the bore apply one end to the patch. Tap on the opposite end to drive the patch ahead of it. If you have both patch and rod tight enough against the bore you will create enough hydraulic pressure to push out the snake.

We know this solution may sound like something Rube Goldberg thought it up but it has worked to oust objects stubbornly stuck in a gun barrel. Mossberg 183KE I have a Mossberg 183KE bolt action .410 shotgun. Have you ever published an article regarding disassembly and assembly? This would save me reading through years of indexes to locate it. If you haven't published something on this, where would you recommend I request this information, specifically regarding the disassembly of the bolt.

My Mossberg does not fire consistently and I believe the striker/firing pin spring is weak. The striker assembly appears to be threaded into the cocking piece and the firing pin protrusion is adequate. Kittery, ME SFC Thomas Muscolino You'd be wasting your time in searching our archives as we've never done an article on the 183, which was last made in the mid 1980s. We've checked

READER FORUM CONTINUED

ORIGINAL PAGE 24

our files and can find no schematic, only a parts layout. All is not hopeless, however. No one knows more about obsolete Mossbergs than Vic Havlin of Festus, MO. He's the head honcho of the Mossberg Collectors Association. Call and pass along Chick Blood's best regards. 1917 Enfield Info Numrich still catalogs a cock-onopening "speedlock" for the 1917 and P14 Enfield.

The coverage of this item in their "phonebook" has dwindled from a full page in several places to a single entry on page 1081 of catalog #31 (part #303560, \$36.70). I've used five or six over the last 30-ish years. The procedure is to unscrew the stock striker from the bolt body, while blocking the striker against the shroud with a penny to relieve spring pressure, and screw in the replacement. Quick, easy and this doesn't compromise value or condition.

Numrich cautions against using anything but the military trigger with it, but on one of my keeper Enfields I installed a Timney Sportsman and satisfied myself that this is a safe and robust system. However, one example rifle is not a good basis for going against the manufacturer's specifications. I contacted Bob Obarska with this and passed it along here. Thanks for sharing Mr. Roca. Shop Product Question What is carding cloth?

I've seen reference to it, including your April 2010 issue where author Brian Capps mentions it. I'm familiar with carding wheels and carding brushes. I was of the impression the carding cloth, versus cloth carding which serves a separate function not related to gunsmithing, was a material used to clean the metal surfaces. What is this product and where might I purchase it? Among his friends and acquaintances author Brian Capps must count at least one weaver. They also card in following their trade or avocation.

If traditional in nature, meaning as performed by American Indians, carding is accomplished with multi-tined wooden forks to separate textile strands prior to

weaving or spinning. Needless to say, such forks wouldn't do well in prepping a metal surface for either initial or additional coating. One of our staff is married to a weaver and she has mentioned carding cloth as a substitute for forks.

While it might serve well to comb out textile strands, it's suitability for clearing deposits from wheels, brushes, rasps and files could be questionable. This despite the fact that samples of the product we saw on the web appeared to be in the same abrasive league as the skin of a large shark. Google turned up some sources after we entered a search for Carding Cloth. One was Danish Village, Solvang, CA There are several grades of carding cloth available.

We suggest you call the Solvang operation for a discussion of how you intend to use the product so you don't waste any money purchasing from whatever source you finally choose. Mike Roca Brian Capp further adds he has never purchased any cloth products for the purpose of carding gun finishes. When he is ready to do the job, he digs through a rag basket which contains worn out clothing items, bed sheets, etc.

Some of the coarser stuff, such as old blue jeans, works very well particularly when doing browning as it seems all too easy to build up excess material on the surface and, even better, it doesn't cost anything. Most any cloth will work, the coarser material just requires less rubbing pressure. Mike Rumsey Fairfax, VA Shotgun Parts I have a Charles Daly 12 gauge Auto Field, model KBI-HBG PA, made in Turkey that needs a bolt handle. I have tried Jack First, Numrich, and several parts suppliers with no luck.

Do you have any idea where I might find a bolt handle? Also I have an old High Standard Flite King K2011 automatic in 20 gauge that needs a stock and a trigger guard. Duane Wolfersperger Try contacting KBI, by phone or on the web. AG

SEARCHABLE ISSUE RECORD

Archive index

Unique Marketing American Gunsmith Editors	2	Rebarreling An M1 Garand Roy Seifert	15-18
Disassembly/Reassembly of the Steyr AUG Bullpup, Part I Chick Blood	3-8	Diamonds In The Rough: Reluctant 1911s Robert K. Campbell	19-22
Mystery Martini Dominic Pisano	9-11	Reader Forum American Gunsmith Editors	23-24
Savage Model 12 Extractor Refit Norman E. Johnson	12-14		

Rights and corrections. Images without confirmed permission remain reserved in place. Authors, photographers, and rights holders may contact editor@gunsmithmag.com. Corrections to searchable text are tracked against the source-page record.



American Gunsmith

The complete searchable archive of a technical journal devoted to craft, repair, maintenance, machining, and restoration.

GUNSMITHMAG.COM • EDITOR@GUNSMITHMAG.COM