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PRECISION ARMS WORKSHOP

AND THE AMERICAN GUNSMITH ARCHIVE

A TECHNICAL JOURNAL OF CRAFT, REPAIR & RESTORATION

09

ARCHIVE ISSUE NUMBER

INSIDE THE ARCHIVE

RESTORING GRANDPA'S GUN

KBC SHOP TOOLS • SMOOTHING TURKISH SHOTGUNS • GUNSMITH HANDLOADING • M1 CARBINE BLACK GUN

ORIGINAL METHODS. MODERN ACCESS.

ARCHIVE EDITION 237

DIGITAL ARCHIVE EDITION

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METALWORKING

KBC Shop Tools

BY AMERICAN GUNSMITH EDITORS SEPTEMBER 2023

ORIGINAL PP. 2

KBC Tools & Machinery has been providing a variety of metalworking tools and accessories since 1965. Originally started as Kabaco Tools by Karel Bass in Detroit, KBC began as a catalog house selling surplus and English tools to the metalworking industry from 1,000 square feet of rental space on Eight Mile Road. They are now certified as a WBE company in Canada, a WBENC company in the United States, and a leading metal cutting tool and machinery catalog house in North America with seven U.

Sand Canada showcase locations stocking over 100,000 products from over 600 manufacturers while remaining family owned with Paula Bass serving as President. KBC Shop Tools A recent addition is the Evolution line of heavy duty cutting tools. Evolution's 14" and 15" Metal Cutting Chop Saws have a no-load speed of 1550 RPM, a high torque motor, and a cast aluminum base with integrated wear plate and bench mounting holes.

They also have a quick release vise with square threaded rod for fast and secure clamping and 0-45 degree miter capacity with an attachable V-shape block for clamping of round and square tube. The fully hardened body plates with tungsten carbide teeth generate almost no heat, sparks, or burrs while keeping teeth sharper for more cuts and a better finish. Cutting capacity for

the 15" Chop Saw is 5"x5" at 90 degrees, 3.1/2"x3.1/2" at 45 degrees, 5.7/8" round at 90 degrees, and 5" round at 45 degrees.

Cutting capacity for the 14" Chop Saw is 4.3/4" x 4.3/4" at 90 degrees, 3.1/2"x3.1/2" at 45 degrees, 5.1/8" round at 90 degrees, and 4.1/8" round at 45 degrees. The Reliable Uberlight is an affordable solution to light up your work area with up to 600 lumens and nine settings for ideal lighting—2700k, 4000k, 5000k, and three color settings of warm white, natural white, or ultra bright.

Available in black or white and three styles with a convenient clamp mount to mount on any machinery or worktable (\$59), with a 7.75" base to prevent tipping (\$89), or a direct table mount, (\$59). The 26.5" silicone gooseneck and 270 degree rotational head allows light precisely where needed with a great hold. The 4.75" LED panel does not create glare or flickering and provides up to 60,000 hours of use and 240% more luminous efficiency.

One user commented, "It's a great light, a game changer at the milling machine." When tools, workpieces, and machining can be seen clearly, rework and mistakes diminish. For more info, visit KBCtools.com or call John M. Buol Jr. AmeriGunsmith.info

SHOTGUNS

Smoothing Turkish Shotguns

An overview of working Turkish shotguns. They are not all equal!

BY ROBERT K. CAMPBELL SEPTEMBER 2023

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During the past few months I have tested and worked with a good number of Turkish pump action shotguns. All have been reliable but there are significant differences between the furniture, fit, smoothness, and trigger action. Those differences are interesting. There are more than two or three manufacturing facilities making these guns—good information indicates there are at least twenty facilities in Turkey.

These shotguns have become very popular based on the fact that they work and are available when no other shotguns are. Price has been good and lately the shotguns have become downright cheap. Citizens concerned with safety and personal protection rightly figure a pump action shotgun is as good a home protection firearm as they are able to own.

I have seen what were once two hundred dollar shotguns at the big box stores bring twice that price during the pandemic—and a Remington 870 Tactical was pushing a thousand dollars. The Mossberg 590

seemed unobtainable. That makes the Turkish guns long on value. So far it has given good service. Major importers such as EAA and Legacy Sports offer very similar shotguns with different furniture and sights. However, there are differences in the shotguns fit and internal parts as well.

Apparently even Armscor no longer imports Philippine made shotguns but instead rebrands Turkish guns. CZ's self loading 712 shotgun is also a Turkish product. Some Turkish guns are very well made but the least expensive are made to sell as cheaply as possible. The action may be rough and the trigger heavy but the firearm functions. There are many of these guns out there and chances are there will be many more. As I write this prices have dropped considerably on all firearms.

The Turkish guns are now seen for less than two hundred dollars in some cases. One dealer sold hundreds in his medium-size shop during the pandemic. He kept up the re-orders and was caught with a surplus of inventory during the inevitable slow

down. This had him selling the shotguns for \$99—a considerable loss. He simply needs to move them and isn't ordering any other shotguns until he does. I recently had the opportunity to work with several Turkish shotguns.

In one case the action was about as smooth as the average domestic shotgun while the others were pretty rough. One was so tight that the shooter firing the shotgun actually put so much effort into racking the action his hand slipped off the forend. There are standard practices in working these shotguns but some cannot be improved by much. Others respond well. Let's look at some of the practices used to smooth up the shotguns. Example Shotgun We'll look at the Rock Island Mireva as a typical example.

When disassembling this shotgun I ran into a problem. The action was racked with the bolt left open and the magazine cap was unscrewed. The barrel was so tight in the action I had to tap the barrel with a

SMOOTHING TURKISH SHOTGUNS CONTINUED

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rubber hammer to get it to release. I did this by placing a wedge behind the barrel lock that fits onto the barrel. Note, the original Rock Island Army Philippine-made shotgun does not have a removable barrel, being based on the High Standard Flite King. When I pulled the barrel out I pulled so hard that when the barrel sprang forward so did the bolt, forend, and action bar! The dual bar action bar is attached to the forend with a spring plunger and fits into a mortise in the forend.

The bolt rides in a trunnion of sorts in the receiver. After the first try, disassembly was easier but never became smooth by any means and the action remained stiff. Accompanied by a nine pound trigger compression this was not an easy shotgun to use well. The action bars were examined. Turns out the bolt is actually very well polished although there were a couple of burrs and

rough spots. I polished them and the bars were well lubricated and replaced. This made the action noticeably smoother.

This type of work may be contra indicated on a cheap gun as it is perhaps best to spend the money to get a better gun. True, but there are thousands of these Turkish shotguns guns out there. They are inexpensive and reliable and I would certainly not turn down the work. Better guns are not only much Top Bottom more expensive these days, they often cannot be found. The Turkish guns have no trade in value at present.

In a few months they will be as common as single shot break open shotguns once were on the used rack if past experience is any guide. So, they can be good candidates for upgrades and are certain to come in the shop. There is something to be said for holding the

action release and cycling the action to wear off burrs. Wear is simply material removed although this isn't the same as a good polish.

This type of action smoothing by operation may work with a higher quality shotgun such as a Remington or Mossberg but won't work with a shotgun with rougher action. Sharp edges and burrs tend to accelerate eccentric wear and make the action rougher as time goes on. Quality firearms will often become smoother as the action is worked but lesser quality firearms do not break in and just get rougher with time. This is because the original burrs and flat spots make for eccentric wear, not smooth wear.

We need to look for poor polish, no polish, and burrs. Hard steel working against soft spots isn't a good form of polish and the harder steel parts will stay rough for along time. So, polish the action bars. If need be, pay atten-

SMOOTHING TURKISH SHOTGUNS CONTINUED

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tion to the bolt. The inside of the receiver is usually okay, but along thin file or a tool with some gritty sandpaper to polish the inside of the receiver may be needed. As for a super tight fit, there are several basic designs of the Turkish shotgun. The Rock Island shotgun is just too tight and the result is a difficult disassembly. Some Turkish shotguns follow the line of the Remington 870.

The Rock Island Armory shotgun and the Citadel PRX feature along barrel extension for lock up, making disassembly more difficult. I am not certain why Rock Island or the Turkish maker specified this change; the resulting Rock Island import was very stiff and very difficult to break down. It loosened but little with further work. The EAA Akar Model 612 uses a shorter barrel extension that is easier to disassemble and seems to work fine.

With so many importers bringing in different shotguns apparently from different makers each shotgun must be examined on its own merit. Top Three types of barrel lockup from three different shotguns purchased in the same week. Bottom Disassembly Based on the models I've seen so far, the same disassembly procedure works for take down in all Turkish pump action shotguns. After clearing, the barrel/magazine nut is unscrewed and removed.

Some are the standard barrel nut design that has been around for a hundred years or more. The Rock Island, Iver Johnson, and a few others use an enlarged barrel nut with canelures; this type of nut is much easier to work with. The others are no more difficult than any other traditional shotgun but the new type certainly is an improvement. Some

also feature an enlarged bolt release which is also to be applauded. Next, move to the barrel.

To remove the barrel in general with a pump action shotgun simply rack the bolt a bit to the rear to unlock it from the barrel extension and pull the barrel away. This works well for most Turkish shotguns. The EAA Akkar 612 is one but others are more difficult due to the longer than average barrel extension. These shotguns tend to be fitted tightly and are difficult to remove but this varies. The Rock Island was an extreme example.

I hate to have to tell you how to take down a pump action shotgun as it should be simple, but if you're working with a relatively new shotgun of this type that has not been broken in, I recommend

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There have been reports of other types. Some Turkish choke tubes will have dots on the body indicating the choke. lubricating the firearm with penetrating oil and wiggle the barrel as you remove it. Be careful not to pull the bolt and action bars out. Once the shotgun barrel is removed the forend, action bars, and bolt are easily removed. The primary areas of concern in my experience are the action bars; the bolts are usually polished well enough.

The Rock Island shotgun was very well polished in the bolt but the action bars were another matter. They are not smooth and needed a bit of polish, however, they were smooth enough in some places and this made polishing more difficult. It doesn't hurt to run an old dress sock over the action bars which will snag where the burrs are. Some were large enough for a file but most demanded sanding, resulting in greater smoothness. The improvement isn't startling but incremental.

Some of these shotguns will be rougher than others. A rather different type of problem was encountered with the Legacy Citadel shotgun. The action bars could stand smoothing but it wasn't as rough as the Rock Island shotgun. However, I encountered a situation I cannot recall finding on any other shotgun. After a number of firing tests the shotgun exhibited wear

marks on each side of the receiver. This was from the synthetic forend contacting and wearing on the receiver, resulting in tightness in the action.

This required more thought to address. I carefully ground and filed portions of the forend. Fortunately, the forend was tightly fitted without the side-to-side play often found in inexpensive shotguns. A bit of grinding and final polish resulted in enough relief in the forend to clear the receiver. While this may be required with a number of shotguns it seems an individual problem. I have not yet addressed the trigger action typical of Turkish shotguns.

They seem similar to the Remington 870 but the parts do not interchange. I tested several Turkish shotguns for trigger action and found the EAA Akkar Model 612 action broke at six pounds, the Citadel PAX broke at nine pounds and the Rock Island Mivera shotgun at ten. As a shotgun has a great deal of recoil compared to most rifles and rimfire rifles especially they have a heavier trigger so the trigger will not be knocked off the sear during recoil. A word on smoothing any shotgun but particularly cheap shotguns.

There are some that do not break in and wear in as they should. The cheaper Belgian shotguns were among these many years

ago. Rough spots become galled rather than smoothed in. By the time this has occurred there really isn't much a gunsmith can do. In most cases a time-expensive action job works much better than stroking the action for several hundred repetitions. In the case of the Turkish shotguns it's best if they are caught before they are used and improved out of the box.

Turkish shotguns use Mobil chokes, standard Beretta and Benelli types. Generally, the owner's manuals illustrate the choke marking. Some will have a single dot for full choke, advancing to several dots for open cylinder. Others are marked with a notch in the bottom of the choke, usually one notch for full choke and continuing in that manner. Just the same, one shop reported that their batch of low rent pump shotguns arrived with Remington-type choke tubes.

I could not personally examine these but the gentleman running the shop knows what he is about. Just the same, every Turkish gun I have used has been provided with Mobil-type shotgun chokes. Turkish shotguns are a mixed batch. Some seem to rival or equal Benelli quality. Others are far from it. All respond to careful gunsmithing.
AG

RESTORATION

Restoring Grandpa's Gun

A how-to on a "kitchen table" restoration of an old rimfire rifle.

BY PAUL MAZAN SEPTEMBER 2023

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A family trip to visit Grandparents has been a highlight for many of us as we grew up. Be it a Thanksgiving, birthdays, or Christmas family gatherings bring back memories of Grandma's cooking, holiday feasts, and, best of all, presents. The discovery of Grandpa's old shotgun or .22 caliber rifle that may have been hidden away in a closet, basement, or barn is one of those childhood memories many of us share. Being handed that gun and told it is now yours is an unforgettable experience.

It is a passage into adulthood; proof that we are no longer seen as a child that we can now be trusted with a firearm. It is a milestone in growing up. In many of our experiences, that old shotgun or rimfire rifle is now a family heirloom that we decided needed restoration. We want to make it look like new again but a trip to the local gunsmith soon dashed our hopes when he told us that we could buy anew one for less than he would charge to refinish Grandpa's.

About that time Dad would put his foot down and that 22 rimfire that has been put away for many years. Some rust, fading fin-

ish, and worn stock. old gun would hang on the wall in your room, a fond legacy but rarely used. Years pass, then one day you pull that old gun out and run your hands over the chipped and worn stock, see the corrosion on the metal parts, and wonder if you can restore it yourself. Yes, you can. "Kitchen table gunsmithing" refers to at-home gun tinkering.

It is usually a negative term as it is too often undertaken by someone that doesn't fully understand and appreciate the amount of work and knowledge good gunsmithing involves. Such tinkering is famous for providing skilled gunsmiths new customers when the beleaguered would-be 'smith finally relents and seeks professional help. However, a restoration project can be done without access to a fullyfurnished shop—perhaps even at a kitchen table—if you know what to do and have the necessary tools and supplies.

In this article I will be using an old Glenfield Model 20, a bolt action rifle chambered in 22 Long Rifle to demonstrate some of the things a home hobbyist can do.

The same techniques can be used on any firearm be it a rifle or shotgun. The idea is to use the existing parts and refinish them rather than buy anew stock, barrel, or other parts.

In the end, we will still have Grandpa's gun but, hopefully, in much better condition than when it was given to us and we will add a couple of simple custom touches to enhance its looks. Evaluation Before we start doing any work on the gun, we need to take a close look at it and determine both what needs to be done and what we would like to change. Most likely the two major things that need attention are the wood and the exterior metal. The finish on the stock will probably be worn, dented, perhaps cracked.

The receiver and barrel may be rusty, pitted, and the original bluing all but gone. The condition of the bore should be evaluated after a thorough cleaning. A good bore is always a sign that this is a project well worth undertaking. Having established that the bore is in good shape and most

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of the problems are cosmetic, it is time to disassemble the gun and get to work on repair, restoration, and even a bit of customization. If you are not sure how to disassemble the gun you have in front of you, the various NRA Disassembly Manuals can be a great source of help, but even these don't cover everything. You Tube is another good source of basic information and you may well be able to watch a step-by-step video of how to disassemble and reassemble the make and model of firearm you have.

One word of warning, if the firearm you are trying to refinish is of a rather complex design—like the Browning A5, Winchester 97 or the Remington Nylon 66—and you have little or no experience, you might be well advised to start with something simpler until you have a better understanding of firearms design and are ready for something more advanced.

Tools To undertake a restoration project like this requires complete disassembly of the firearm so that every part can be cleaned, in-

spected, and repaired or replaced before re-assembly. For this you will need a number of tools. First among them is a good set of screwdrivers. Both Brownells and Midway USA offer screwdriver sets with multiple bits that will allow you to precisely fit every screw slot on the gun.

You may have screwdrivers at home but a good set of parallel ground screwdrivers and bits designed not to mar the screw slots and be in the variety of sizes needed area good investment if you intend to do more gun work in the future. The tighter and more corroded the screw, the more important the correct fit of the screwdriver bit to the screw slot is. You will also need a set of punches, files, sandpaper, paint stripper, wood stain, and wood finish.

If you are not familiar with the firearm you are working on it is a good idea to take detailed pictures as you remove each part so you can refer to it during reassembly. Find a magnetic tray or some container to put the

parts in Far so they stay together and don't get lost. Once the firearm is completely disassembled the cleaning begins.

You will want to do a very detailed cleaning to remove all rust, grease, and any blemishes on the metal parts because when you reblue it, every imperfection is going to be magnified. This is the time to inspect each part for wear and tear. Check your screw slots carefully; it is very common to find that the screw slots are distorted. They can be repaired in a number of ways. If you can weld it is sometimes easier and faster to simply weld the old slot closed and recut the slot.

Often the metal that has been displaced can be forced back in place with a hammer and punches and the slot cleaned up with a file. There are a number of methods of removing the old finish and surface rust. You can use a rust and blue remover and that will remove the remaining old finish and rust from the parts. However, it will not remove any scratches or pits and will leave the surface of the metal

RESTORING GRANDPA'S GUN CONTINUED

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frosted. Those scratches and pits are going to have to be removed by abrasion. If you have a buffer, you can use buffing wheels and abrasive compound to polish the metal but, unless you have had some experience with using buffing wheels, it is very easy to round off the edges, dish out the screw holes, and erase all the markings on the barrel and other metal parts. For your first projects it is much safer to use cloth-backed abrasives.

Starting with a coarse grit and a hard backer, sand the parts until all pits and scratches are eliminated. Then you can sand the parts using finer and finer grits being sure to remove all the scratches from the previous grit before moving on to a finer grit until you achieve

the finish you want. For a dull finish you can stop at about 120 grit and 220 grit will give you a very nice surface. If you have the patience to work down to 320, 400, or finer you can have the metal looking like a mirror.

This is one place where persistence and patience really pay off. Refinishing We'll start with the metal. There are many ways of rebluing a firearm. The best and most surefire is hot salts bluing. Unfortunately, it takes a lot of expensive equipment and dealing with a hot and super caustic solution. It is not something you can do in your basement (and certainly not in a kitchen) but if you have access to someone that will do it for you or you already have a set-up, that is the way to go.

Probably the fastest and most common method used by hobbyists is to use a cold blue. There are many cold bluing solutions on the market and they will all color steel. However, over the years many different alloys have been used in firearms. A cold blue that works wonderfully on one gun made of a particular alloy may be a total flop on another. My go-to cold blue has been Birchwood Casey Super Blue.

I swore by it until the day I had an Italian cap and ball revolver in and the Super Blue would give me nothing more than a medium gray color. I tried several other products

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on it with various degrees of success but nothing I thought was adequate. Then I tried 44/40 Instant Blue from Brownells, a product that I had not had much success with before. Darned if it didn't instantly turn the barrel the deepest, darkest black I have ever seen. The moral of this story is that no cold blue I have found works on every alloy. I keep several around the shop for that very reason.

For your first project, it's worth asking about the specific gun you're restoring to identify an ideal cold blue for it. Another home and small shop friendly method is rust bluing. This calls for boiling the parts in water, swabbing on a rust bluing solution, allowing them to form rust on the surface, and then carding it off—carding is “gunsmith speak” for buffing or wire brushing the surface rust off. This process is repeated over and over until the desired finish is achieved.

Some rust bluing solutions require the use of a damp box but some do not. Personally, I have used Brownells Dicropan IM for many years and it is my go to rust bluing solution as it does not require a damp box and waiting days between applications. No matter what rust bluing method you choose, they all are labor intensive and time consuming. The results are worth the time and work, but make no mistake, rust bluing is a chore. Finally, we come to spray on finishes.

These are fast and easy and they are available in many different colors. If you can operate a spray can, there is a finish for you. Brownells has some baking lacquers that have to be baked in an oven to cure and there are also air activated epoxy finishes such as Brownells Aluma-Hyde II, as well as the entire Duracoat line of products. Some are aerosols, others are liquids that are applied I angle the flutes to point toward the toe of the stock and to parallel the angle of the top of the grip.

Far I think it looks like something out of Brownells catalog. with an air brush. There is literally no reason you can't refinish the metal parts of a gun in your shop, home, or garage. As enticing as the tremendous labor and time saving properties these alternative finishes offer, I don't have a lot of experience with them. With the metal parts cleaned, polished, and reblued it is time to move on to refinishing the stock.

This is one place where you can really transform the gun from a run-of-the-mill factory-style gun to something a little different and more attractive than you think. The fastest way is to strip the old finish, sand the stock lightly, stain it, and use something like Birchwood Casey Tru-Oil on it. In a couple of days you will have a beautifully finished and very serviceable stock. If, however, you're adventurous and would like to learn some customization tricks, read on.

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Choosing the an ideal cold blue for this gun has given usa finish we can be proud of. Sample Project For this project I have tried to take the same steps a hobbyist might use. The metal parts were sanded by hand and then reblued with 44/40 Instant Gun Blue. I found that this type of cold blue was suitable for the Glenfield and I followed the instructions on the bottle.

The stock was stripped with a commercial wood strip- per and then a rasp was used to remove the factory-im- pressed grooves and groundhog on the pistol grip. The rasp was then used to change the contour of the front of the comb and cut in flutes. The stock was sanded down to 220 grit and stained with a water-based walnut stain. It was then finished with a 50/50 mixture of boiled linseed oil and turpentine to give the final result a classic semi-gloss finish.

When sanding the stock I left the buttplate on and sanded it with the stock so they remained a perfect fit. I'm really not a big fan of plastic trigger guards, so I dug out an old Mauser steel trigger guard and slimmed the bow down by hand using a half round file, then pol- ished and blued it, and inletted it into the stock. None

of the modifications are strictly necessary and some are simply a matter of taste. These are suggestions of things you can do not necessarily things you should do.

They are just suggestions of a couple of easily done things that can personalize your rifle. Hopefully, you have learned a few things from this project. If nothing else you will have learned through all the hours of pol- ishing, sanding, and finishing what that gunsmith meant when he quoted that high price and why he would have to charge you more to refinish the gun than anew one would cost. How many hours did you spend on this project?

Even at a \$15 per hour minimum wage (and no gun- smith is going to work for minimum wage) how much would this job have cost you, just for the labor? Add in shop overhead, insurance, and the cost of parts, tools, and supplies, and you'll realize gunsmiths are not over- charging. Even if you never plan to go into business as a gunsmith, projects like this can give you a lot of person- al satisfaction, an appreciation for skilled tradesman- ship, and a hobby that can last a lifetime. AG

FROM THE ARCHIVE

Gunsmith Handloading

Reloading ammunition services in a gunsmith's workshop.

BY KENNETH FINLEY SEPTEMBER 2023

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There are several good reasons why a gunsmith should consider adding ammunition reloading, not so much as a revenue generating activity but as a customer service. I have had several occasions where tailoring a load to a customer's specific needs created a lasting relationship with that customer. One example was assembling a special order of 9mm. If you decide to enter this service arena, it is not advisable to just clamp a reloading press to your workbench and start cranking out shells.

That is what this article is about—experiencebased considerations for how and where to set up a reloading space in your current shop. I think you will be surprised at how little the cost can be to add this activity to your business. There are three factors to consider when committing to the activity in your shop: legality, practicality, and safety. The three are tightly interwo-

ven, as you will see in this article. Many matches were shot using loads from this workstation.

The red coated bullets area new polymer coated lead bullet. Inexpensive and less prone to leading the bore. Legal Stuff This safety discussion is a summary to the article. While there are basically no restrictions on reloading for yourself, reloading for others requires an FFL license for ammunition manufacturing, non-destructive. It is a Type 6 license and costs \$30 for three years.

The application procedure is essentially the same as the process for your Type 1 license, the difference being a Fire Marshal is part of the process. The Fire Marshal will want to know how much powder you have on hand, how it is stored, and how it is secured. This is a major concern when you work from home in a residential area. It is still a factor in an urban or rural area. More on that later. Workspace The inspiration for this article comes from building a reloading station in my new shop.

At my old residence, I did not really have a shop and all spaces were shared with other garage-type activities. In that environment, my reloading station was a metal cart with tiny wheels that usually jammed up when I tried to move it. I was constantly banging my knees on the doors and had to move back from the work surface to have room to reach into the storage underneath. Naturally, I had to move the press to open the right-hand cart door.

Still, a single-stage O-press mounted to the cart enabled me to load thousands of rounds over 42 years. I finally wore out the bearing on the ram of the press. I could store everything except powder in the cart and set up wherever convenient. My initial investment for a Lee Challenger starter kit was less than \$200 dollars in 1981, and surprisingly, you can buy almost the same starter kit for about the

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same amount of money today. Like any good set of tools, purchased wisely, sometimes even purchased used, you can expand your service capacity to your customers with a respectable return on investment. I find reloading to be a relaxing change of pace and it is hard to put a price on that. Do not bolt a press to your main workbench. The last thing you want is random primers or flakes of powder to hide on the bench where they can get into trouble.

It is my experience that you do not need a huge amount of space for reloading so it makes sense to set up a limited but dedicated space. For the new shop, I wanted a more permanent and comfortable station than my original cart. Another consideration for a dedicated space had to do with work style. While I do a lot of my gunsmithing standing up and you can pack a lot of activity in a well-lit and ventilated 3'x3' space. Note the covered scale on the left side of the bench.

Take good care of your scale to keep it accurate. many shop work surfaces are set accordingly, I reload sitting down. So, I wanted my bench height set lower than normal. In this case, I glued and screwed two sections of 3/4" plywood together to form the benchtop and mounted them on top of two wooden two-drawer file cabinets purchased for \$25 at a garage sale. The bench top has sufficient overhang in the front to allow the

press to move freely and for me to have room to slide my knees under while working.

I added a shelf to the back to assist in organizing materials. Since the drawers of the file cabinets were largely sprung, I pulled all but one out and replaced with shelves for various reloading related tools and reference books. The remaining drawer keeps my collected articles on reloading and shooting in general. You will not find carpet or fabric surfaces anywhere around my reloading bench. The floor is easily-swept epoxy-coated concrete and all surfaces are easily cleaned.

Flakes of powder and light machine oil trapped in carpet is a recipe for disaster. Since my old O-press was worn out, I upgraded to an RCBS turret press. I could have gone to a progressive press, in fact I used to have one, but I never do more than 200 rounds at a time for a customer.

There is no magic in Not only is it environmentally good to repurpose them, they stack well in tight spaces for more efficient use of room. the 200 number, it was just what I could comfortably turn out using a simple single stage O-press. Progressive presses are designed for high volume production. Small job lots and frequently changing calibers on a progressive press is both expensive and time consuming. To change calibers, you have to swap out tool heads and bases.

If you just load for yourself, the cost is less than if you load for a variety of cartridges with differing loads for different customers. I unloaded the progressive press (excuse the pun) and reconsidered my alternatives. Whatever press is chosen, the rest of the reloading equipment still serves. The turret press design turned out to better fit my needs and costs a lot less to own and operate. Being able to mount all the dies at one time saved considerable time on reloading projects.

One major plus is that reloading dies are standardized and any manufacturer's dies, used or new, fit most modern presses. I have Pacific Tool dies my father had 70 years ago that fit my new turret press along with my Lee, RCBS, and Lyman dies. You can acquire different caliber dies for reloading as you need them or if you see some at a sale. I've picked up dies for as little as fifteen dollars. Three points about my setup.

The yellow butter tubs are cheap, we have a lot of them around the house, they are sturdy, stackable, and I can sort brass in them by caliber, polished, unpolished, primed, and unprimed. The Nestle's Quick containers are great for storing bullets by caliber, weight, cast, and jacketed. My primer tubes are in a gimme cup at the back of the bench and they stay there—I do not ever use them. I prime cases either one at a time on the press or by using a

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Lee priming tool. I have had a couple of service warnings in the last year or so that the new primers are so sensitive that there have been multiple instances where primers have ignited in the primer tube and set off chain reactions resulting in injuries. You purchase primers in packages that are designed to keep them separate and less prone to set each other off. Stacking them top to bottom in reloading tubes is just a bad idea.

You can buy primer trays that allow you to open packages and place primers in the trays when actually engaged in loading. According to recent safety bulletins, they are a hazard given the sensitivity of today's primers. It is best to use approved primer storage packages and load one at a time in your press use or a specially designed Lee Priming Tool. I repurposed old file cabinets to support my benchtop. You could achieve the same result with old kitchen or bathroom cabinets.

You could also use a solid piece of counter-top for the benchtop. I did the doubled plywood for the extra weight and solidity, and for the ability to provide a little extra depth to the worktop for the storage in the back. At the same time, this setup could be torn down and moved very easily. Placement should depend on the availability of plenty of light, excellent ventilation, and absence of breezes from ceiling fans or air handlers.

Powder Storage I found an old set of school lockers with particle board sides and solid doors. Sides and tops are stapled together. This is compliant with the Fire Marshal requirements for storing powder if you have more than 50 pounds. You are to store primers and powder separately. If you have more than 50 pounds of powder on hand, you must store it in a wooden box that is lockable, and is either nailed or stapled together.

The box cannot be assembled using glue or screws and the powder must be stored in its original containers. With two stacked lockers, I keep powder in one and primers in the other. Since I never have as much as 100 pounds, I do not have to install a sprinkler system. Gunpowder burns, not explodes. Its power is derived from compressing the burning powder and the resulting gasses to a specific pressure point and then providing a release behind the bullet.

Gunpowder containers are designed to burst apart before any pressure can build, and a stapled together wooden container will burst apart rather than contain the pressure. If you have more than 100 pounds of powder, you need to install a sprinkler system. Since my shop is not geared for high volume production, I never have that much powder on hand. While I continued my low-buck approach you

could achieve the same purpose with a set of kitchen cabinets from a builder's salvage store.

My focus is functional while maintaining Fire Marshal compliance. The lockers shown here take very little space next to my reloading bench. It may seem silly to place a lock on a container that will fall apart with very little effort, but the main purpose is to deter casual handling and provide proof of securing the powder in case of a break in. Never store powder in a safe. In a fire, the powder will eventually cook off in the heat and then you have a bomb.

By the way, for the same reason, never store ammunition with your firearms in the safe. It is better to store ammunition in a locked cabinet. Reloading can be complicated but for 99% of your customers, it won't be. The exceptions will be for exotic or antique firearms and for precision shooters. For the average shooter, either plinking or hunting, reloading is like following a recipe and there are cookbooks galore. Virtually every bullet and powder maker publishes a reloading manual.

I have had very good luck with the Hodgdon and Speer reloading manuals, however, they are limited to products allied to their companies. Generally, neither covers cast bullets. Given the recent shortages, I have had to be more flexible and now rely on the Lyman

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Reloading Annual and the Lee Reloading Manuals. Get them both and read them before you start loading. They publish the most comprehensive load data for each caliber. I keep a couple of golden oldies around for the times when a customer wants me to repair an older firearm and replicate a load from when it was new. The older manuals give me an idea about the intended purposes for loads in a specific firearm. As an example, I have a Ruger Super Blackhawk I use for Large Bore Silhouette.

Back when the pistol was new, Sierra Bullets used that pistol to test loads for the 44 Magnum and the folks at Sierra were delighted to share their experiences with me. On another occasion I was looking for a light bullet load for my Gold Cup National Match. Sierra shared the load data for their match bullet and shared the interesting fact that the 185 grain Jacketed Hollow Point shot just as well and was less expensive.

I still shoot that load in matches and load it for my customers who want an accurate, easy shooting load. Although this is not a tutorial on reloading, I want to mention the most commonly repeated safety tip across all reloading manuals: Never The Hodgdon/IMR/Winchester Basic Reloading Manual and others like it are free and contain extensive load data supported by their products.

Lyman and Lee manuals contain valuable reloading tutorials for the equipment they make and provide more comprehensive load data for a large assortment of powders, primers, cases, and bullets. exceed the powder charge listed in any maximum

load regardless of the customer's desires. My Lyman scale has been an invaluable tool in measuring safe loads. Keep it in a level space free of vibration or air currents that can impact its accuracy.

In fact, it is a good, safe practice to start two grains lighter and slowly work up to the maximum load looking for signs of maximum pressure in that particular firearm. Whatever you do, do not mix old and new powders of the same kind. In the last few years, powder manufacturers have been changing the recipe for the powders.

Many extruded powders have been modified to meter more accurately in volume measuring tools, and binders have been changed to reduce possible exposure to carcinogenic elements in the powder design. I compared an old can of IMR3031 with anew can and the powder did not even look the same. The variation was greater than you would expect for different lot numbers. I set the old can back for some loads I wanted for my T/C chambered in 30-30 Winchester and used the new can Keep loads conservative for your customers.

Scales are precision instruments so take care to keep them clean, mounted in a level space free of vibration, and away from stray air currents. for a customer's loads. I will not tell you to throw away old powder, but do not mix with new, even of the same type and manufacturer. I load and shoot a lot of cast bullets. I have several molds, sometimes more than one mold for a specific diameter bullet, such as three different bullet designs for .44 and .45 caliber bullets.

Sometimes when working on an old rifle or pistol with a worn bore, you can cast and slug a bullet to the specific bore and turn a firearm with the accuracy of a garden hose into a respectable shooter. Since mine is a rural business, I get a lot of old firearms to work on, so it makes sense for me. Like reloading starter kits, there are bullet casting starter kits for less than \$200. Casting molds are not expensive either. Like reloading dies, you can pick up different caliber molds as you need them.

My Lyman Big Dipper furnace is from a starter kit. My reloading workbench is very supportive of bullet casting activities, the chief requirement being lots of ventilation. In the summertime, I have an old countertop that I can set on sawhorses just outside the shop door and cast there. When casting bullets, I recommend long sleeves, non-synthetic fibers in your clothing, a good set of gloves, and safety glasses. I keep an apron handy to wear when casting bullets.

If you want to learn about bullet casting from a master, Mike Venturino is the best published author on the topic that I know of. Also, Lyman is a strong supporter and supplier of bullet casting furnaces and casting tools. The Lyman Cast Bullet Handbook 4th Edition is my primary resource and you will find several Venturino articles reprinted therein. The 3rd edition of that Handbook is available online, but it does not cover newer powders, especially the new black powder alternatives.

On the other hand, it has some interesting reference material by other authors.

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If your powder and primers are safely stored, casting can share the same well-ventilated workspace as reloading. I use lead alloy wheel weights for most of my casting. Most cast bullets are not pure lead. The Lyman handbook discusses lead sources and the appropriate alloys for bullet casting. I have about 200 pounds of wheel weight lead from a friendly garage and that is my primary resource for the time being.

Conclusion and Safety The purpose of this article was not to sell you on how great reloading and bullet casting can be as a marksman's activity, how to reload, or to cover specific loads. The purpose was to present lessons learned arranging reloading activities in a busy gunsmith's shop space, and introduce the service aspect for customers. Honestly, it has not been a great money-making activity as much as a relationship building activity.

I've learned that sometimes a firearm's problem isn't parts so much as it is ammunition. Building special loads extends the useful life of a firearm and scope of its use. For many shooters who maybe shoot twenty rounds a year hunting, some loads tailored to their favorite firearm's needs would be much cheaper than anew barrel or anew rifle altogether.

I have covered the legal and paragraphs of practical aspects of reloading and will summarize the safety aspects to consider for setting up your workshop for turning empty cases to finished loads for your customer. Reloading activities should be conducted in a dedicated space as powder flakes and live primers do not play well near sparks, heat, or friction. Reloading spaces should be well lit, well ventilated, and free from fans and heating systems blowing directly on such tools as sensitive scales.

Reloading workspaces should be free of carpet or fabric surfaces that can trap powder flakes or primers. Powder and primers should be stored separate from The Lyman Cast Bullet Handbook is a handy resource for bullet casting, and reloading cast bullets from other suppliers. each other, and away from live ammunition. Powder should be stored in the original containers designed to burst if exposed to heat.

Fifty pounds or more of powder should be stored in a lockable wooden enclosure that is not screwed or glued together. Primers should be stored in their original containers. Do not use primer tubes on presses as there is no way to prevent a chain reaction if a sensitive primer detonates. Never exceed the powder charge listed in any maximum load regardless of the customer's desires. Do not mix old and new powders, even of the same brand and number.

Keep your scale in a level space free of vibration or air currents that can impact its accuracy. If casting bullets, do so in a well-ventilated area and perhaps wear a mask. When casting bullets, wear long sleeves, non-synthetic fibers in your clothing, a good set of gloves, and safety glasses. Consider keeping an apron handy to wear when casting bullets. As a gunsmith, reloading is away to provide additional services to your customers, services that encourage them to shoot more and keep them coming back to you.

The shop space required is not large as you are not engaging in commercial volume production and the financial outlay is small, certainly less than the cost of anew upright drill press or lathe. Since you can add caliber capability as you need them, the cost is spread over time, and as with any quality tool, good for a lifetime. Perhaps more importantly, learning about reloading and ballistics will give you further insight into the design, function, and repair of firearms. AG

RIFLES

M1 Carbine Black Gun

Reconfiguring the stock on a M1 Carbine for improved shooting and a “black gun” look.

BY JOHN BAXTER SEPTEMBER 2023

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Some military guns reach a legendary status with enthusiasts that attempting to alter or improve these legends is frowned on in most circles. The United States Carbine, Caliber .30, M1 certainly falls into this category, and merely asking the question of possible upgrades to the original can unleash a torrent of admonition, typically coupled with a lengthy history lesson about why this is a heretical line of thought.

On that note, let me be clear that any gun projects I take on first start with a decision if I should do anything to the gun that I cannot reverse. The subject of this article is a 30 M1 Carbine manufactured in 1978 by Iver Johnson. Since it is a reproduction of the iconic WWII namesake the project (I think) is much less contentious. Nonetheless, I decided to make my “prime directive” that I would make no alterations that could not be completely undone, leaving the gun easily put back to 100% original condition.

The Carbine Collectors Club (M1Carbines-Inc.com) has an excellent website that details the history of the M1 Carbine, including postwar variations like my Iver Johnson. This site describes the convoluted path that led to the Iver Johnson company marking on a Plainfield Machine Company

M1 variant. In addition to the standard carbine, a Paratrooper model and machine pistol (“Enforcer” variant) were also offered. The motivation for my effort predominately revolved around the stock.

My example is the folding stock designed for paratroopers; This Paratrooper model was manufactured around 1978. wood handgrips front and back and a collapsing wire shoulder stock. It is quite possibly the most uncomfortable rifle to put to shoulder I have come across. Fortunately, the 30 Carbine’s limited recoil is easily absorbed by the action; a stouter round would undoubtedly result in bruises on the cheek and shoulder.

I considered fitting the action to a traditional new-production M1 Carbine stock as modifying an original would violate the prime directive. While this would have been a distinct improvement, I must admit that I am not a huge fan of that stock either as I prefer a longer length of pull. Fortunately, Choate Machine and Tool (RifleStock.com, produces fixed and telescoping composite stocks for the original military M1. Both feature the ability to mount a bipod, which seemed like a good idea.

I also liked the idea of the telescoping stock but noted that Choate is very clear that these stocks will only fit the military model. I decided to take a chance and see if I could make it work. Midway USA (Midway U-SA.com) was out of inventory, so I signed up for their “notify me” service and was pleasantly surprised when I received an email a couple The Choate features an adjustable pull and two waterproof compartments. of weeks later indicating the stock was available.

I quickly ordered it and as usual Midway had it on my doorstep shortly thereafter. The claims that the stock would not fit my model were right. Fortunately, the problem was interference and not basic dimensions. This meant the action should fit with some judicious machining to the stock. The first order of business was to field strip the rifle. To remove the rifle from the stock, first remove the magazine (if present) and open the bolt by pulling the charging handle back to assure the action is empty.

Depress the spring lock on the front band and slide it forward towards the muzzle until it clears the lower stock. Lift the barrel by the muzzle until it can be removed from the recoil plate. Remove the main spring by pulling back on the guide until it is disengaged and then forward and

M1 CARBINE BLACK GUN CONTINUED

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This rifle was designed for easy field stripping without the need for any specialized tools.. to the right for removal. The trigger housing is held in by a single pin which is removed from left to right. Slide the housing forward to free it from the frame. Pull the operating slide back until the slide stop is aligned with the notch in the receiver, and then pull the handle up and to the right to free the lug from the groove.

Move the slide forward until the rightside lug is aligned with its notch and rotate the slide free from the frame. If desired the bolt can be removed by positioning the operating lug behind the locking lugs and rotating it free. Next, I removed the recoil plate as this would be the first piece requiring fitting. A cursory inspection of the remaining parts indicated that the action, trigger housing, and front band would also require work.

The recoil plate fits into a curved mortise on the top of the stock and includes a small tenon fitting into a rectangular mortise along the bottom edge of the plate. The recoil plate required several small dimensions to be ad-

justed in the new stock. The groove on the new stock was too narrow, a bit short along the length and the mortise was a bit too shallow. The amount of material removal was minimal, so I opted to handle the fit with a handheld rotary tool.

Painter's tape applied to the stock allowed for a careful marking of the material to be removed, starting with the width, then toggling between the depth and the mortise. The Choate stock proved amenable to milling; the material was solid with no signs of porosity or spring-back with a smooth finish. Only a bit of file deburring was required for the edges and the recoil plate was mated. With the recoil plate fitted I checked the fit of the action.

The left side of the receiver required more space, but it was difficult to gauge the required dimensions since the stock is asymmetric. A common centerline for each stock was needed to accurately transfer dimensions. Fortunately, the recoil plate screw is on center as is the midpoint of the front-band spring-lock. Oak "gauge blocks" were made

that referenced these features on each stock. The gauge blocks must be the same width and secured to the stocks along the centerline of the barrel.

This permits direct measurements of the gap between the gauge and the stock. The actual gauge width does not matter (within reason) since the amount of material to be removed is the difference between the two stock measurements. I opted to use calipers, but a good measuring ruler would have worked fine. I found it useful to only work on one section at a time and to have the stocks next to each other to avoid transferring measurements to the wrong location.

To prepare the Choate stock for machining, the buttstock was removed by unscrewing the spanner nut behind the pistol grip. The threaded portion of the stock is metal, including the two flats above the pistol grip. This makes an ideal place to clamp this end of the stock in the milling machine using padded fixtures. I fashioned an oak block to provide the right spacing for the forearm incorporating a screw to secure it to the milling

M1 CARBINE BLACK GUN CONTINUED

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machine table and an offset nut to accommodate a hold-down clamp. The stock required relieving 0.080" along the left side of the receiver. The left side of the magazine needed an additional 0.060" removed after re-fixturing to the table. The trigger housing required both sides to be opened by a total of 0.120" and the trigger guard required removing and straightening the front of pistol grip.

Working with the receiver first assured that the centerlines could be maintained when fitting the magazine and trigger housing. There was very little cleanup required after the machining as Choate's composite material machines very nicely. The front band was a snug fit on the Choate stock, resulting in the front band screw not quite engaging. I considered machining the stock back but decided instead to fit anew screw as the band would open to accommodate the stock. The band spring functioned as designed.

With the action fitted I ordered a Champion stud-mount adjustable bipod with 6-9" legs from Midway. After a quick check I confirmed the location indicated on the stock was correct and bored the appropriate hole for the included stud. The bipod was easily secured and fits the Choate stock perfectly. To complete the "black gun" theme I considered a dot-type sight with an elevated mount to allow the iron sights to be used with the optic mounted.

The M1 Carbine has low iron sights, ruling out many of the options as the housing blocks the view. I bought a Sig Sauer ROMEO-MSR Compact Green Dot Sight from Midway based on its extremely low profile to see what could be done. The Sig Sauer dot-sight is quite solid and the controls are easy to operate despite the small size. The packaging is very nice and the sight comes with all the tools neatly compartmentalized.

It was going to be a challenge to fit it to the gun as the sight basically needed to sit on top of the receiver to work. I tried a few things short of machining the receiver (recalling the prime directive) but nothing has worked out to this point. I decided to leave the optical sight challenge for another day. A trip to the range proved that the Choate stock was a winner. The gun is much easier to shoulder standing and sitting (I'm getting a bit too stiff to try it prone).

With a longer pull and full stock the sight picture comes naturally and the factory sights have a great field of view at 100 yards. The bipod is nice for bench shooting and much faster to set up than other rests. An M1 Carbine always stands out at the range, but this 30 M1 with a "black gun look" brings both old and young shooters over for a closer look. AG

MEASUREMENT & INSPECTION

Certified Gunsmithing

Certified Gunsmithing The ins and outs of the certification process and its potential effects on gunsmithing.

BY BILL SMITH SEPTEMBER 2023

ORIGINAL PP. 20-22

How is a gunsmith “certified”? Are you? Is this worth worrying about?

Here’s a rundown on certification and its impact on gunsmithing. We’ll start by going over how this works generically. Certification is an evaluation of a process, system, product, event, or skill, typically measured against some existing norm or standard by a third party.

Industry and/or trade associations will often create certification programs to test and evaluate the skills of those performing services within the interest area of that association. Testing laboratories may also certify that certain products meet pre-established standards, or governmental agencies may certify that a company is meeting existing regulations. Certification is a voluntary process in which an individual demonstrates proficiency or competence on standardized criteria that relate to a specific field.

To become certified, an individual must often meet eligibility requirements and pass an assessment. Certificants may have ongoing requirements, such as continuing education or retesting, to maintain the certification. Certification has traditionally arisen when a group of professionals determines the need to publicly set standards for a field.

ASTM International, formerly known as American Society for Testing and Materials, is an international standards or-

ganization that develops and publishes for over 12,000 voluntary consensus standards globally. These are created by individual committees which are formed as needed, upon request of interested members. Membership in most committees is voluntary and is initiated by request, not by appointment.

ASTM International has no role in requiring or enforcing compliance with its standards, however, these standards may become mandatory if referenced by a contract, corporation, or government. Certification is also commonly associated with the International Organization for Standardization, an independent, non-governmental standards organization which develops voluntary standardization. Registration is mostly the same thing as certification.

If a company implements a standard (e.g., Machine tools safety according to ISO 16090), has successfully completed a certification audit, and the certification body has issued a certificate, this formal acknowledgment is commonly called registration in North America even though other countries may call it certification.

To be clear, certification is when a certification body issues a certificate proving that a company is compliant with a standard while registration is when this certificate is registered with the certification body. This comes down to the same thing—a compa-

ny received a certificate that is formally recognized. ISO recommends referring to this as certification. Similarly, a certification body is the basically the same thing as a registrar.

ISO recommends using the term “certification body.” In order for certification bodies to be able to perform the certification audits and issue certificates, they need to get a license or some other formal acknowledgment of their ability to maintain an established standard. That is the good and bad news. Certification is sometimes used synonymously with accreditation despite having different meanings.

Accreditation is a specific organization’s process of certification, a voluntary process in which an organization’s or institution’s operations are evaluated according to established qualifications or standards. Accreditation is generally considered to be a higher level of recognition and it is common for certification bodies to hold some kind of accreditation to confirm their ability to assess certifications.

Accreditation is the formal declaration by a neutral third party that the certification program is administered in a way that meets the relevant norms or standards of a certification program. Generally, certification is given to individuals while accreditation applies to organizations. There is usually only one accreditation body for each country, such as ANSI (American National

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Standards Institute) National Accreditation Board or UKAS (United Kingdom Accreditation Service), however, there may be a number of certification bodies operating in each country. Accreditation organizations also need to be compliant with a standard, such as ISO 17011 (Conformity assessment) which outlines the requirements and process for accreditation. For organizations, ISO publishes about 20,000 standards recognized in every country, including management standards.

For individuals, in order to implement a standard or to audit a company, someone needs to be trained to do it and have that confirmed as being compliant with a published standard. Training programs for ISO standards have been developed and there are also certifications and accreditations related to this. If an institution wants to provide training certificates, it should be accredited by an accreditation body.

In most cases, accredited training institutions are not delivering the courses directly to students, rather, they have a network of training providers delivering course work.

This relationship between accredited institutions and training providers works by the training providers using courses developed by an accredited institution and the accredited institution issuing certificates directly to students, or the training organization developing their own course and an accredited institution certifying the course and the training organization issuing certificates to passing students.

Certified Gunsmithing There is no official national or international certification or accreditation process for gunsmithing. I went over how this works so if someone insists upon a “gunsmith certification” you’ll understand enough to realize this isn’t one single, fully formalized thing. If someone continues to insist, ask for the ISO or ANSI or similar standard they’re referring to and the accreditation body that certifies compliance with it. Hint, it doesn’t exist.

It’s worth pointing out that there are certifications in use in the gun world, particularly for manufacturers. For example, Forster Products, the precision reloading and gunsmithing tools manufacturer, was certified compliant with ISO 9001:2015 by adhering to these Quality Management System Standards after seeking to be accredited by an independent auditor. The Sporting Arms and Ammunition Manufacturers Institute is an accredited standards developer that publishes several American National Standards via ANSI.

You’re likely already familiar with Z299.4-2015, Voluntary Industry Performance Standards for Pressure and Velocity of Centerfire Rifle Ammunition for the Use of Commercial Manufacturers. This is the formal, ANSI-recognized specification on ammunition that SAAMI is most known for. Notable for gunsmiths is Z299.5-2016, Voluntary Industry Performance Standards Criteria for Evaluation of New Firearms

Designs Under Conditions of Abusive Mishandling for the Use of Commercial Manufacturers.

As a response to negligent firearms handling being used as the basis to sue firearms manufacturers, SAAMI created this standard to provide design advice as legal protection from liability lawsuits. While intended for manufacturers, gunsmiths should study it as any repairs or modifications could possibly be subject to the same kind of lawsuit and understanding and keeping your work in compliance with Z299.5-2016 will help.

Of special importance, the explanations of Drop Testing, Exposed Hammer Testing, Jar-Off Testing, and Rotation Testing provide an ANSI-recognized industry standard for determining the appropriate safety of your workmanship. This complete report is available for free download from SAAMI.org ([Bit.ly/33dEG4v](https://bit.ly/33dEG4v)) or by searching “SAAMI Abusive- Mishandling- Approved”. Despite having no formal certification or accreditation for gunsmithing recognized nationally or internationally, there are still standards for learning.

Gunsmithing is In addition to Z299.4-2015 (the SAAMI-created, ANSI-recognized specification on ammunition) Z299.5-2016 covers proper safety checks on firearms you should be using in your shop.

CERTIFIED GUNSMITHING CONTINUED

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the art of repairing and providing maintenance care to guns, in the same way any tradesman works by diagnosing, fixing, and/or improving items for customers. Repairing, modifying, and building parts and entire guns using a wide variety of hand and power tools on what could arguably be more models and types than other trades is an involved learning process.

Because many gunsmiths are either self-employed or are hired to work for small businesses, they also need skills in management, business operations, and basic finance. However, there isn't any single standard, certification, or accreditation for this. Those interested in pursuing a career in gunsmithing will find that either a certificate program or degree program may provide them with the education and training needed to achieve their goals.

These programs are usually offered through trade schools, community colleges, or universities and may take one to two years to complete. These are not certifications as defined above, rather, each school provides a certificate or degree demonstrating a student passed their particular curriculum. Some certificate programs are offered through continuing education programs at specific institutions that also offer a more in depth Associate's or Bachelor's degree.

Gunsmith education options range in terms of the material covered and the time necessary for completion. Some schools offer individual gunsmith courses, such as the NRA Short Term Gunsmithing Courses or a college curriculum that is 12 to 18 credits in length. These typically hone in on more specific gunsmithing skills and can be completed in a short amount of time. They're great for those wanting to learn a specific skill or are auditing the possibility of eventually pursuing a degree.

There are also courses that offer a more comprehensive education and take longer to complete. These types of programs will include classes in metal finishing, wood-working, and welding. For students looking for a stronger foundation in gunsmith principles and skills, a formal Associate's or Bachelor's degree program may be an appropriate route.

This will include a full range of gunsmithing topics, a series of projects from tool building to a variety of firearms, and use of a full range of equipment from hand tools, power tools, and computer aided design. A degree-granting curriculum will include topics including some general education courses with heavy focus on an in-depth study of the gunsmithing trade.

Courses that students will take in one of these programs may include a thorough history of firearms, stock making, ballistics, machine work, finishing, business management, accounting, and manufacturing. Such a Master Gunsmithing Program will take several years to complete and fully prepare graduating students for positions in the field. Admission for any of the above programs will be dependent on the institution.

In many cases, students must be at least 18 years old, have a high school diploma or GED, and pass a background check in order to be admitted. Tuition for gunsmithing programs vary by the institution and the type of program, costing anywhere from a few hundred to several tens of thousands of dollars. Priced per credit hour, courses may range from \$50 to \$80.

A degree program will typically cost more than a single course, but students will graduate with a full degree instead of a course certificate of completion. In addition to standard tuition, many gunsmithing programs require that students purchase their own supplies. This is a cost that students looking to pursue gunsmithing degrees should consider. Of course, any aspiring and practicing gun-

smith is already budgeting for tools. Financial aid is available for many these programs.

The Free Application for Federal Student Aid (FAFSA) determines eligibility for federal assistance. Gunsmithspecific scholarship funds are awarded through associations such as the American Custom Gunmakers Guild, American Pistolsmiths Guild, and the National Rifle Association. Many schools and courses recognize GI Bill benefits.

The application process for each of these will be individual to the school and may include submitting samples of one's work, a personal statement, letters of reference, and an academic transcript. Bill's Take Jazz saxophonist Charlie Parker once said, "Master your instrument, master the music. Then, forget all that crap and just play." Something similar applies here. First, an aspiring gunsmith needs to be trained.

While there is no formal certification programs for gunsmiths, take advantage of at least one of the numerous training outlets. Gunsmithing is a trade just as any other even if the government doesn't demand or require payment for a license. Any craftsman must develop ability and knowledge by working on their craft. While I'm in favor of in-person education, a correspondence course is cheaper and is a less expensive way to determine if you're really serious.

Gunsmithing courses offered via community or technical colleges can then be pursued to further set a path. Often, these courses are offered as part of a certificate program and they tend to cover use of machine shop tools, firearm safety, ways to identify problems, and firearm repair techniques. The next step is to earn licensing. While there isn't a specific government-recognized gunsmith license, the Bureau of Alcohol, Tobacco, Firearms, and Explosives requires anyone trading or

RIFLES

Reader Forum

BY AMERICAN GUNSMITH EDITORS SEPTEMBER 2023

ORIGINAL PP. 23-24

Additional Parts Sources I've used your Gun Part Sources from your website

(AmericanGunsmith.info/gun-parts). I've used several that weren't on that list. Allegheny Arms (AlleghenyArms.com). Suppliers of threaded barrels.; Black Guns Wood (Black-GunsWood.com). Wood furniture for AR-15 rifles/carbines.; Hoosier Gun Works (Hoosier Gun Works. com). Commercial and Military firearms parts.; Triple K Holsters (TripleK.com).

Magazines, Grips, buttplates and parts as well as fine leather holsters.; Amherst Military Depot (Amherst Military Depot. com). Vintage U. S. Military firearms.; Carl Walther (Carl Walther. com). Factory parts for any Walther firearm ever manufactured.; Fulton Armory (Fulton-Armory. com). Vintage U. S. military fire-
A craftsman is a person that can make things with skill and care.

This has more to do with the careful attention of a devotee doing great work than any formal stamp of approval from any educational institution. As gunsmiths, firearms are our medium. Ultimately, the educational program(s) taken won't matter as much as the on-going work and ever increasing list of completed jobs. Any gunsmith worthy of the name will always have at least one active project on their bench at all times, usually several.

Even those with a professional shop and successful business will still likely have personal or home projects. Someone that

merely takes a workaday approach to their gunsmithing probably won't become really good at it. Perhaps it's a compulsion (or sickness) but I can't not have on-going projects in the works. I view any degree or certification program as a stepping stone on the start of a journey.

It is a useful—and possibly necessary—foot in the door to land a job at someone else's shop before you're able arms parts.; Galloway Precision (GallowayPrecision. com). Performance parts for many different makes and models.; Tornado Technologies (Tornado Technologies. com). Barrel threading service.; Volquartsen (Volquartsen.com). Precision performance parts and custom-made firearms.; Sons of Liberty Gun Works (SOLGW, SonsOfLibertyGW.com).

High quality (Lifetime Warranty) AR-15 parts and custom-made Modern Sporting Rifles.; Liberty Tree Collectors (Liberty-TreeCollectors.com). Collectable military parts and accessories as well as vintage firearms and ammunition. Thanks for the additions. I've added this to our list on the website. to start your own business. These programs can serve as a survey course and a means to determine if you're really serious.

Do you relish the course work, routinely add to it, seek ways to perfect them further, and look for more things to build or repair? Or is it a bit of a slog that you find dwindles enthusiasm? Any craftwork demands careful attention to dull tasks you

may have done hundreds of times before. If there isn't at least some innate spark of inspiration to see every project through to a better-than-anticipated conclusion, hand labor at your bench on yet another gun will rapidly lose its luster.

Better to find out during the initial few weeks of a trades course than after you've invested heavily in building a shop you now dread going to every day. So, there's no official gunsmithing certification. For us entrepreneurs, that gives more free reign and less government oversight to ply our trade, where we can compete solely on our ability. Which is exactly how I like it. AG Cowan's & Hindman Auctions Hindman is a leading fine art auction house connecting cities nationwide to the global art market.

With offices and salerooms throughout the country, Hindman conducts over 140 auctions annually in all major fine art and luxury collecting categories, while offering buyers and sellers an exceptional experience across multiple selling channels and price points. Hindman provides collectors, fiduciaries, and institutions with a comprehensive suite of services including auctions, appraisals, private sales, and art advisory.

Hindman was formed through the merger of two auction houses, Leslie Hindman Auctioneers (est. 1982) and Cowan's Auctions (est. 1995), celebrating its 40th Anniversary in 2022. Headquartered in Jon P. Lewis

Chicago with 15 additional locations serving clients coast to coast, these auctions generate over \$100 million in annual sales. While known for its fine art auctions, Hindman also conducts Arms, Armor & Militaria auctions. These auctions realized more than \$1.4 million, with 97 percent of lots sold and 61 percent of lots sold within or above the estimate.

One recent example was a Bergmann Schmeisser Prototype 1897 Model 5 Experimental Pistol with Holster Stock, a museum-quality prototype that is a remarkable example of turn-of-the-century technology that showcases the innovations taking place at that time. At auction, it went well past its \$15,000- 25,000 estimate to realize \$72,000. "This pistol is an outstanding display of technology that was among the best of its time," said Tim Carey, Cowan's Director of Arms, Armor & Militaria.

Bergmann Schmeisser Prototype Other arms auctioned include a Peter Chapman 28 Gauge Sidelock Hammerless Side-by-Side Shotgun with Straight English Stock; Parker GH Grade 20 Gauge Shotgun with 32 Inch Barrels on a 0 Frame; Japanese Model 1902 "Grandpa" Nambu Holster Stock with Spare Wood Bottom Magazine & Cleaning Rod; and Factory Engraved Colt 1877 Thunderer Sheriff's Model with Pearl Grips in Decorative "Book" Casing.

Bidding for these auctions are available at Cowan's in Cincinnati, via telephone, and live online. Cowan's continues to welcome consignments for its future Arms, Armor & Militaria auctions. Visit HindmanAuctions.com or call G Peter Chapman Parker GH Grade Japanese Model 1902 Colt 1877 Thunderer

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