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EDITION

PRECISION ARMS WORKSHOP

AND THE AMERICAN GUNSMITH ARCHIVE

A TECHNICAL JOURNAL OF CRAFT, REPAIR & RESTORATION

10

ARCHIVE ISSUE NUMBER

INSIDE THE ARCHIVE

REISING TARGET PISTOL

AG COMPOSITES STOCKS • H&R MODEL 402 • THERE IS NO GOING BACK • BAR-STO PRECISION

ORIGINAL METHODS. MODERN ACCESS.

ARCHIVE EDITION 226

DIGITAL ARCHIVE EDITION

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PEOPLE & COMPANIES

AG Composites Stocks

BY AMERICAN GUNSMITH EDITORS OCTOBER 2022

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AG Composites is a veteran-owned company that designs and manufactures advanced composite products in Owens Cross Roads, Alabama. The company uses modern design software to create Computer Aided Design (CAD) models and quality carbon fiber, epoxy, and paint to make its line of rifle stocks.

While factory stocks come in a one-size-fits-all configuration, custom stocks often feature adjustable cheek pieces, ergonomic grips, upgraded recoil pads, and a design that helps reduce felt recoil despite weighing less than a standard stock due to using carbon fiber materials instead of traditional wood or fiberglass. A custom fit aids in achieving consistent accuracy while solidly housing the action, bottom metal, and precisely free-floating the barrel regardless of barrel contour.

AG Composites offers custom stocks with a host of options unique to each build. The AGcomposites.com/stocks website has a builder tool.

Starting by choosing one of eleven base models, each stock is customized for your action size (long or short) and inlet type, bottom metal, barrel type and taper, color or camouflage, and finish options such as accessory

rails, sling attachments, and texturing. “We use modern design software from Solidworks and Auto Desk to create Computer Aided Design (CAD) models of every stock we manufacture,” Tandy said. “Our design engineers bring their aerospace industry CAD modeling experience to every stock we design.

In addition, we use only the highest-quality carbon fiber, epoxy, and paint products to manufacture our premium line of composite rifle stocks. And, our proprietary manufacturing process is the ‘secret sauce’ behind our ability to produce best-in-class stocks with delivery times that are a fraction of our competitors.

Consistency, efficiency, cost control, and frequent quality control checks are the primary drivers of each step of our manufacturing process.

Our goal is to give our customers outstanding value and superior performance, and be the best in the business.” Every stock is tested with the selected action, bottom metal, and barrel hardware before it ships to the customer with a typical delivery time of a few weeks from ordering. AG Composites and their custom stock builder is online at AGcomposites.com or by calling 833/AGSTOCK.

SHOTGUNS

H&R Model 402

A unique design shotgun that had a very short production run, here's how to work the Harrington & Richardson Model 402.

BY DAVID W. MANNEY OCTOBER 2022

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The Harrington & Richardson Model 402 was produced between 1959 and 1960 with production ceasing at the same time the Models 400 and 401 shotguns were released. All of these models are pump shotguns and remaining stock sold until 1967. The 402 is unique in that the receiver has side plates that are screwed on. I could find very little on this shotgun as it is only mention briefly in my H&R history book and Jack First has a very bad photocopied drawing in their catalog.

The sides of the receiver are made of aluminum and most of the parts are stamped steel. I've had two of these come into my shop for cleaning within weeks of each other. Both owners said they were bought at Sears by relatives, back when there was one in our town. Sears closed in the mid-sixties along with Wards. Neither shotgun had a serial number on it. Disassembly As with working on any gun, make sure it is empty before working on it. Remove the magazine plug by unscrewing and pull out the magazine spring.

Undo the screw that holds the magazine mount. Capture the magazine mount key that the screw goes through when pushing the magazine mount forward.

The magazine tube and follower can now be removed by pulling forward out of the receiver. Remove the butt pad and with a large flat screw driver, then unscrew the stock bolt and remove the stock. Lay the gun on the left side and remove the four screws in the right side plate. Note which screw goes where as all four are not the same.

Remove the side plate; you may have to rap it like a revolver to get it to come loose. Lift out the safety lever. Pull the bolt to just before battery and lift out of the receiver. There is a spring on the ejector that may fall out when the bolt is removed. Remove the bottom screw in the trigger guard assembly and the screw on the left side that holds the trigger assembly in. Remove the trigger guard assembly; the bolt release lever may fall out when removed. Lift the cartridge cutoff out of the left side plate.

Remove the remaining screws in the left side plate. This will release the slide. Pull the safety pin out of the safety button. Look at the safety spring as one side is straight and goes to the side where the safety lever is con-

H&R MODEL 402 CONTINUED

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nected. With a pair of needle nose pliers, squeeze the safety spring together and unhook from the receiver holes. Push the safety spring to the rear and the safety button will come out. Push the safety spring to the front to remove. The Arrow points to the dog leg of the trigger spring for spare magazines. Slide has a nut with two holes in it for a spanner. I used a needle nose pliers in the holes to unscrew it from the slide and to remove the fore end from the slide as the nut is very loose.

Detailed Disassembly Starting with the bolt, remove the ejector and ejector spring if they didn't fall out already. The bolt has pins that are swaged on one end. Drive the pin that holds the cartridge stop out towards the right side of the bolt. Remove the cartridge stop and spring, then drive the right extractor pin out through the top of the bolt. There is heavy spring tension so control the extractor and spring when pulling the punch back out.

Drive the pin for the left extractor out through the top and remove the left extractor. There is a split pin that holds the firing pin in. Push this out to remove the firing pin and spring. Moving on to the trigger assembly, remove the bolt release by lifting off the stud on the trigger guard and then unhook from the hammer. This is easier if the hammer is in the cocked position. Lift the carrier lifter off the stud in the trigger guard.

The spring is then rotated clockwise over the stud and pulled out of the trigger guard. While controlling the hammer, pull the trigger and release it forward. Using needle nose pliers, pull the mainspring bridge out of the trigger guard. There is some pressure but keeping a

thumb on the spring will prevent it from flying out. Push the hammer pin out to the left as this is a pin with a head and can only go one way. The hammer will have tension on it from the sear and spring. Remove the trigger pin out to the left.

The trigger spring can now be removed. Unhook the trip spring from the trip lever and remove the trigger. Note the orientation of the trip spring on the stud on the trigger. The sear pin is pushed out to the left. Lift out the sear and the sear spring. Do not disassemble the cartridge lever or the bolt release any further unless replacing the springs that are staked to them.

Reassembly Tips When reassembling the trigger assembly, make a slave pin out of 0.124" rod at a length of 0.350" to make it easier to install the trigger back into the trigger guard. Put the trigger spring and trip spring on the trigger, holding the trigger spring in place with the slave pin. The dog leg on the trigger spring goes toward the front. Put the trip lever in the trigger guard and insert the trigger and springs. The stud on the trigger goes in the slot on the trip lever.

Pushing the trigger down into place, push in the trigger pin. The sear is put in next. Drop the sear spring in place. The slot in the trip lever goes into the sear, then push in the sear pin. Hook the trip spring on the trip lever. The hammer is easiest if done in the cocked position. Push down on the hammer a bit and replace the hammer pin. Pull the trigger and move the hammer into the fired position. Put the mainspring strut in a vise, put the

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H&R Model 402 (Specifications subject to change without notice) 1 Barrel and receiver 2L Left side plate 2R Right side plate 3 Cartridge cutoff 4 Trigger Guard Assembly 5 Bolt Assembly 6 Slide 7 Fore End 8 Fore End Nut 9 Magazine Tube 10 Magazine Spring 11 Magazine Plug mainspring on the strut followed by the mainspring bridge. Push down on the bridge and grasp the strut with pliers. Hook on the hammer and slip the bridge back into the trigger guard. Test the function of the hammer and trigger for proper operation.

Reinstall the carrier lifter spring and carrier lifter. Then reinstall the bolt release, by cocking the hammer and hooking spring on the stud of the hammer. Put the bolt release on the stud on the trigger guard. The bolt goes back together in reverse order of disassembly. The receiver also goes back together in reverse order of disassembly.

Ensure the slide is in place before put- 12 Magazine Mount Screw 13 Magazine Mount Key 14 Magazine Mount 15 Magazine Follower 16 Safety Spring 17 Safety Lever 18 Safety Pin 19 Safety Button 20 Trigger Guard 21 Trigger 22 Trigger Spring 23 Trip Lever Spring 24

Trip Lever 25 Hammer 26 Hammer Strut 27 Mainspring 28 Mainspring Bridge 29 Sear 30 Sear Spring 31 Cartridge Lifter 32 Hammer Pin 33 Sear Pin 34 Trigger Pin 35 Cartridge Lifter Spring 36 Bolt Release 37 Bolt tining on the left side plate.

The two small screws are for the lower front holes. The screws with the shoulders are for the trigger guard at the lower rear and the remaining two screws are for the center top. The long screw is for the front of the trigger guard. Install the cartridge cutoff before putting in the bolt. The bolt goes in easiest with the slide pulled forward with the bolt almost in battery. The slot in the magazine tube goes to the front and is held in place with the magazine mount key.

Assemble the magazine mount with the screw and mount key in place. Leave the screw loose and install on the barrel with a twisting motion. AG 38 Firing Pin 39 Firing Pin Spring 40 Firing Pin Pin 41 Ejector 42 Ejector Spring 43 Right Extractor 44 Left Extractor 45 Left Extractor Spring 46 Left and Right Extractor Pins 47 Cartridge Stop 48 Cartridge Stop Spring 49 Cartridge Stop Pin

FROM THE ARCHIVE

There Is No Going Back

Moving forward from a tragic story and lessons learned by repairing a Jennings J-22.

BY SCOTT J.N. SMITH OCTOBER 2022

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I am a graduate of Sonoran Desert Institute and have my own gunsmithing business in Arkansas, Stay RED Industries, and hold a type 07 FFL for the manufacture of firearms and ammunition. Whether you have been in the firearms industry for decades, weeks, or you are simply an enthusiast; there is a good chance that you have heard some interesting, wild, and exciting stories about a firearm and the story behind it. Here's one of mine. Recently, I had a client bring in a firearm they wanted to have a "pin" made for.

Curious, I asked what pin they were needing made. It was then I was informed that they had taken the firearm to three other shops before stumbling across mine. They also informed me they had been told by the last "fella" that the pistol was missing a pin and he was going to make them one. Unfortunately, due to an arrest for illicit substance possession, that individual was never able to accomplish their goal of making the much needed pin.

While this was being explained to me, I began inspecting the firearm for amissing, broken, or damaged pin. I was not able to ascertain where this pin would have been located internally or otherwise. The firearm the client brought in was a Jennings J-22 pocket pistol chambered in 22 Long Rifle. This was not a firearm I was familiar with. Initially, when attempting to remove the slide I was stumped. There was no slide release, no slide lock, there really was not much to this firearm at all.

None of those parts were missing, they simply were not part of the design. It was then I noticed what Jennings calls the Takedown Button (part #7 listed in the schematic by Numrich Gun Parts as of 2022) near the rear of the slide which I surmised needed to be depressed in order to remove the slide. Having no experience with this firearm, I did not want to make a fool of myself in front of the client trying to disassemble the firearm.

So, I explained to them that I would take their firearm into the back and "really go through it" later. Afterwards, I would call them and let them know how long it would take and what parts were required along with the pin, if any. While I was fumbling around with the firearm and searching for this mystery pin the client proceeded to tell me a story about the pistol.

He explained to me that he and his wife knew the firearm was not particularly valuable but that it was all that his wife had left of her aunt, whom she was very close with. The client went on to explain the aunt had purchased the firearm new during the 1980s for personal protection and home defense. As fate would have it, someone broke into her home only a few weeks after purchasing the firearm and she attempted to use it to defend herself and her property.

The story then took a very tragic turn, and I stopped fumbling about to focus all

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of my attention on him and his story. He explained, as the aunt tried to use the firearm in self-defense, it failed to function properly, subsequently angering the intruder and resulting in the homeowner losing her life. I could not hardly believe what I was hearing as this older gentleman choked back tears explaining how that little pistol was all his wife had left of her aunt. He went on to explain that the pistol had never worked since, almost as if it were frozen in time in that tragic moment.

Suddenly my embarrassment felt grossly insignificant. I told him that I would do my level-best to get that pistol operational. He thanked me and began to shuffle his way to the door. I could not help but to hustle myself over to hold the door open for him, saying I would call in a day or two and I thanked him once more for coming in. I returned to my desk and went about securing the firearm until I had the time to open it up and begin diagnosing the problem(s).

It was either the way the he told the story, the cracking in his voice, or the tears swelled in his eyes peering from under the brim of his cowboy hat, but it just hit me and for a moment you might say I felt the burn of

freshly chopped onions. Seated in the workshop under a light I began looking over the firearm with more intent. Using a small punch, I depressed the take down button to the rear of the slide and pulled the action towards the rear.

Initially this proved to be somewhat frustrating, but very quickly I got the slide up and forward off of the frame. As soon as the slide was off the frame I could see the original packing grease from the factory still on this firearm. It had been forty-eight years and this firearm had never had that thick, sticky, long-term storage grease removed, let alone a cleaner, lubricant, or protectant applied. Could this be the reason that woman lost her life? Of course not, there is no reason to such tragic events.

And the fault rests solely on an intruder with no respect for personal property or life itself. But still, was that the cause of the malfunction? All the client could explain to me was that it would not load, fire, or do anything. I ran some snap caps into the magazine, but they would not even cycle into the breech correctly let alone into the chamber. This led me to consider the magazine to be at fault.

I checked the magazine and aside from being excessively dirty everything seemed to be in order, so I set it to soak while I continue my inspection. With the magazine soaking in my favorite cleaning solvent, I continue inspecting the firearm for broken, worn, or damaged parts. The whole time I am thinking to myself, forty-eight years and this firearm has never worked! Not once, not even when it was needed most. That is when I discovered the magazine release lever spring was, what I would consider, out of specs.

The magazine release lever could move forwards and rearwards a considerable amount without any tension on the spring. So, I begin the process of procuring this spring and disassembling the frame. Once the spring was free I noticed that it had been bent at just near the middle of the spring on one coil only. I then wondered how a firearm that had never functioned correctly became damaged. Was this caused by the previous owner during loading or unloading, or perhaps during a previous inspection?

The client did say they had previously taken the firearm to three other shops. I will never

THERE IS NO GOING BACK CONTINUED

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know what bent the spring but I am going to assume, for my own piece of mind, that whoever told them this firearm needed a pin and that they would have to “make” it for them is the most likely culprit. That being said, I began the search for a replacement spring, just in case this one could not be repaired properly. To my surprise, finding a replacement was far easier than I had anticipated. After taking apart the firearm entirely, I could only think perhaps it was simply dirty. But how could that be?

Obviously, the firearm was not dirty when my client’s aunt had bought it new, so why had the pistol never functioned properly? With this question sneaking through my mind like a serpent hunting a mouse I went about cleaning the J-22 as thoroughly as possible. I removed every trace of that thick yellow factory grease and replaced it with modern clean lubricant and protectant. Even the magazine was working better than it initially had been.

Excited, I re-assembled the firearm, repaired the magazine release spring and performed a functions check. Everything went off without a hitch until I squeezed the trigger. There was no audible click, no clack—nothing, not a sound. My frustration was topped only by confusion. I paused briefly and cycled the action ten more times, and then

finally, a click! So, I continued to cycle the action and discovered it would release the trigger every twelfth or thirteenth attempt.

I thought the pistol simply needed to be broken in. Perfect, I thought. I can shoot the dickens out of this thing, clean it back up, and get it to the customer in no time flat. I grabbed a case of 22LR and headed to the gallery for a little trigger time. So, there I am, range ritual complete. That habitual gathering of all the stuff, the range bag full of every tool except the one I’ll need, maybe another pistol, something I have not shot in awhile, and all those things we tell ourselves we should take.

I load the magazine, insert it into the magazine well, grab the slide and cycle the action like an action movie star, and it jams. Okay, these things happen even to the best of us. It’s no big deal, just need to perform immediate action, right? I cycle the action again to remove the misfed cartridge and to chamber the next cartridge only to have another misfeed. The design of this pistol is not friendly to someone with large hands like mine.

While holding the grip of the firearm my finger is pressed against the front lip of the magazine protruding forward from the magazine at the frame near the base of the magazine well. Perhaps this has caused the magazine to cant and is affecting the

rounds feeding into the chamber? I decide to cycle the action and watch inside the magazine well to see if I can detect the cause of my frustration.

I cycle the action rearward and then forward while holding the slide to control the action’s progression and can see the round tip straight upward from the feed ramp to be greeted by the bolt face contacting the side of the case. This is potentially a dangerous situation regardless of caliber. Immediately, I remove the magazine and pull the slide rearward to shake the cartridge from the firearm. The magazine was working great and the magazine catch lever spring seemed to function as it should.

All I could think of the is the roundness of the bullet’s meplat. Could it be that this particular firearm is an ammo snob? Off to the Internet I went where I encountered numerous blogs, forums, and videos explaining that the Jennings J-22 only operates using CCI Stinger ammunition and no other. Another group of videos and blogs said you can use any ammunition once the firearm is broken in.

As luck would have it, we were in what many called an ammunition shortage at the time this occurred so of course I could not locate any of that particular ammunition anywhere locally. Even finding it on-

THERE IS NO GOING BACK CONTINUED

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line proved to be a daunting task. I found myself searching for gun stores in neighboring states, calling them to ask if they had this ammunition in stock. After what felt like a sea of “I’m sorry, we don’t” I found one shop in Texas that had a box in-stock and they were willing to ship it to me. Now comes the fun part. I had to call the client and tell them their loved one purchased a very budget-friendly firearm that possibly did not work because of the brand of ammunition used.

What I did say was that I have ruled everything out except this one potential problem and if they wanted me to proceed it would add to the price of the repair and I could still not guarantee that would remedy the situation. Because of the sentimental value this firearm held they decided to proceed and I ordered the ammunition. Once the ammunition arrived, I immediately loaded a magazine and tried to cycle a cartridge into the chamber. I could not believe it.

There was no improvement and the exact same thing happened. I briefly paused in defeat and decided to try another cartridge. It worked, but not well. I had to cycle the action twice to get the cartridge to seat properly. At this point, that was counted as a victory. I immediately went to the gallery to test fire and victory at last! But only that first round before it jammed again. I removed the magazine, ensured the firearm was empty, and began to cycle the action.

I decided I would hand-cycle the action until I could get twenty successful function checks in a row. I employed my son to load the magazine and unload the magazine forty times. After cycling the action over twohundred times, I was able to hit my goal of twenty successful functions checks. Once more I headed to the gallery, inserted a filled magazine, cycled the action and bang, bang, bang, bang, bang! Mag dump!

Well, if you can call five shots a “mag dump,” I loaded another five rounds into the magazine and that worked equally well. Forty-eight years and one horrific tragedy, but there it was working properly for the first time. For my own personal knowledge I did attempt to cycle two other brands of ammunition through the firearm after it was functioning properly and they would not cycle. I also used a different cartridge from the company and it also would not function.

I informed the client their firearm was ready to be Far Correct meplat for proper cycling. picked up, to which they replied, “We’re on our way!” It seemed like only minutes and they were there, standing in front of me, smiles on their faces, eagerly waiting for me to hand them the firearm. I asked for their permission to share their story provided I withheld the names and with tears in their eyes and smiles on their faces they said yes.

I know the pride I felt in getting this firearm working for the first time but I can not even begin to imagine what they must have felt having this pistol back in their possession once more, only this time working properly. I know some readers are probably saying I could have saved a lot of time and headache by simply going online and following the advice offered in some of the videos. I will concede that point but only to an extent.

You see, had I not thoroughly examined the pistol I would not have found the damaged magazine catch lever spring, I would not have determined there was no pin needed, broken, missing, or otherwise. While perhaps I could have saved some time rushing to follow the advice in the video of a couple of strangers, there is nothing in any of those videos to show me how to repair the damaged spring I discovered.

Sure, the original retailer could have cleaned the firearm and sold it with the correct ammunition and I most likely would never have come across this firearm. Personally, I would have preferred that. I am in no way placing blame on anyone from the designer, retailer, or bloggers, all I am saying is while we cannot go backwards and undo our mistakes we can move forward with the lessons learned from them. AG

PISTOLS

Reising Target Pistol

Working the Reising 22 Long Rifle semi-automatic target pistol.

BY KEVIN BAXTER OCTOBER 2022

ORIGINAL PP. 10-14



Right: The author's Reising pistol—it's a bear. Despite the welded slide, the malfunction was in the sear; it shoots fine.

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In the second of what I hope to be my continuing series of articles concerning the amateur resuscitation of oddball and/or old firearms (the first being “1871 Vetterli Conversion”, July 2017) I offer here an overview of the Reising 22 Long Rifle semi-automatic pistol. The Reising name is generally known for the ill-regarded M50 submachinegun chambered in .45 Automatic Colt Pistol disliked by the Marines of Guadalcanal among other places.

However, Eugene Reising was also a highly respected competitive pistol shooter and engineer who worked with John Browning on development of the Model 1911; over the course of his life he amassed over 60 firearms patents. The Reising rimfire pistol was first patented in 1916 and again in 1921.

A few thousand were produced at Reising's factory in Hartford, Connecticut with around a thousand built at his later factory in New York City. Despite the welded slide, the malfunction was in the sear; it shoots fine. in New York City for a total of something over 5,000.

The pistol has a reputation for accuracy and reliability, although the slide is delicate and prone to cracking at about the midpoint of the rail, where it meets the bolt face.

Nonetheless, it is a lovely little pistol—not unlike the Colt Woodsman in size and heft, well made, nicely balanced and uncommonly simple in operation and normal maintenance. My Reising was probably bought new by my grandfather, I suspect for use at his fishing camp in northeast Ontario. Sometime in its past the slide cracked on the left side, on the thin rail immediately forward of the main body of the slide. My grandfather welded the crack and ground down the weld, although it was never refinished.

As the pistol is designed for low velocity 22LR ammunition, the danger of metallurgical changes is low—it seems to be a common failing and repair. It does not appear as though the crack propagated completely through the slide rail, so all of the dimensions are correct and the slide works fine. I remember shooting the pistol as a kid, crack and all with no issues.

However, as time went on my memory of the pistol's performance is that it started doubling, with the incidences of doubling increasing to the point that we finally stopped even trying. However, I have a need to make things work, so while waiting for supplies for my Broomhandle Mauser project, resurrection of a Belgian Frontier Army 44-40 Winchester, and a Mauser switch barrel project, I decided to clear a space on the workbench to see about returning the ancient Reising to its duty.

There isn't much available by way of literature regarding the Reising pistol, but I found a nice article about it by Mac Gregor Scott in American Handgunner magazine online (“The Reising .22 Semi- Auto Pistol”, [Bit.ly/37h0Jd1](https://bit.ly/37h0Jd1)). Most fortunately, there is a company called Cornell Publications (CornellPubs.com) that offers reprints of old firearm manuals and catalogs. I ordered a copy of the Reising 1924 catalog which upon arrival

REISING TARGET PISTOL CONTINUED

ORIGINAL PAGE 11



Left: The Reising taken down for cleaning.

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Below: Left side of the Reising frame with the grips off, exposing the operation of the sear bar and the sear spring.

ORIGINAL ARCHIVE IMAGE • PERMISSION
CONFIRMED



Below: Left side of the Reising frame with the grips off, exposing the operation of the sear bar and the sear spring.

ORIGINAL ARCHIVE IMAGE • PERMISSION
CONFIRMED

proved to have a good cutaway diagram as well as the illustrated parts breakdown. Numrich Gun Parts also has this on their website (GunPartsCorp.com). Thus armed with a clue regarding disassembly and possibly even successful reassembly, I resolved to take the pistol apart to troubleshoot. Function Mr. Reising's pistol is a simple blowback operated semi-automatic and designed for standard or low velocity ammunition.

A coil spring mounted in the frame (the retracting spring) has a shuttle (the retracting spring plunger) at the outboard end that engages a bar at the front end of the slide (listed as the bolt in the catalog) and acts as both a buffer and return for the slide. There is no locking mechanism and the spring holds the slide forward. It has no safety per se, but it does have a couple of safety features.

First is the disconnecting safety—a small bar mounted vertically on the left side of the sear, riding on the sear pin, that is pushed up into a hole in the bottom left of the slide by the sear bar when the slide is fully in battery, allowing the pistol to fire. When the slide

starts back, it pushes the bar down, blocking the externally mounted sear bar, preventing the trigger from resetting until it is released and the slide is in battery.

Second, the pistol cannot be fired without a magazine inserted and locked. There is also a half cock position on the hammer. The slide does not lock back after the last round, so keeping count is a good idea. The front sight is fixed; the rear sight is secured by a set screw which can be loosened to allow drifting the sight left or right. Elevation can be adjusted by changing blades on the front sight, although I suspect anew blade would have to be custom made as the catalog does not offer replacements.

Takedown Normal takedown for cleaning is exceptionally simple. One pulls the slide back a bit and then rotates the barrel lock on the left side of the frame above the trigger aft with the thumb, releasing the detent locking the breach end of the barrel to allow the barrel to pivot forward on the frame. Easing the slide forward and lifting the forward end off

of the shuttle at the end of the return spring allows the slide to travel forward a bit more and come off. That's it.

Further takedown of the pistol is not part of normal maintenance but it's reasonably straightforward. For ease of handling, I took the barrel off of the frame by unscrewing the barrel screw on which the barrel pivots. I then removed the Bakelite grips by backing out the screws at the top and bottom of each grip. With the magazine removed, this exposes the three fingered sear spring—one leaf for the magazine release, one operating the sear, and the third for returning the sear bar and trigger.

At the top of the left side of the grip one can also see the lower end of the disconnecting safety. Before proceeding to disassemble the inner workings, the hammer needs to be returned to the forward position by pushing the disconnecting safety down and pulling the trigger (preferably while holding the trigger spur to ease it down). The sear bar, which rides in a slot on the left side of the frame, should be lifted out at this juncture and set aside. Drift the sear pin out from the

REISING TARGET PISTOL CONTINUED

ORIGINAL PAGE 12



Left: The Bakelite grips, showing the spalling at the screw holes. Baxter went to his go-to solution in such cases—J-B Weld.

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This catalog included an illustrated parts breakdown (also found on the Numrich website) and this cutaway of the left side with the location of all of the parts annotated by the catalog numbers. This was helpful in convincing the author to undertake the disassembly himself with some hope of correct reassembly. Right side using a 1/16" punch. The sear and disconnecting safety will drop out with only a little push from the leaf spring—there's no danger of having to pursue them across the shop.

The sear spring can now be removed from its machined slot and set aside. With the sear removed, remove the hammer. Drift the hammer pin out from the right side using a 3/32" punch. Once free, the hammer and hammer strut will fall right out, exposing in the back of the grip the upper main spring follower. The main spring assembly rides in a hole drilled along the length of the back of the grip, secured at the bottom with a pin.

It comprises the spring, the upper main spring plunger with a detent at the top in which the hammer strut rides, and the lower main spring plunger at the bottom that rests on the pin. Drifting the pin out at the

bottom (directly above the magazine catch) will let the main spring assembly drop out, although in my case untold years-worth of oil and crud turned to varnish meant I had to use some paint thinner and a little gentle persuasion to ease it out.

The magazine catch is just a spring loaded Baxter went to his go-to solution in such cases—J-B Weld. serrated knob with an edge to catch the bottom of the magazine. It is at the heel of the grip on the bottom, sliding back to release the magazine. It is held in place at its forward edge with a pin, which can be drifted out with a 1/16" punch.

There is a tiny coil spring set into a hole in the back edge that has to be cared for, but given all of the varnish that had accumulated on the latch, it didn't try to go anywhere. The trigger is affixed with a 3/32" pin which, when drifted out from the right side of the frame, releases the trigger out the bottom. The retracting spring for the slide is held in place by the retracting spring plunger stop screw in the end of the frame, in the slot where the barrel pivot fits.

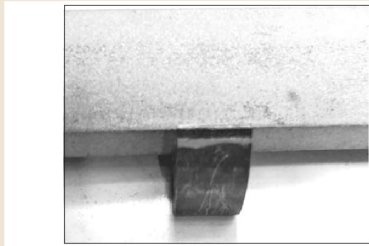
Backing this screw out will allow removal of the spring, guide and the shuttle (retracting spring plunger) that connects it to the slide. At the back of the frame just ahead of the rear of the slide rails is the hammer stop, a square pin mounted transversely. It is relieved at about a 45 degree angle across the surface that faces the top of the sear (to provide clearance for the sear) but completely square on the ends. This can be drifted out with a 1/16" punch.

The barrel lock is retained by a spring-loaded pin (the barrel lock plunger) that fits into a vertical hole next to the barrel lock hole on the right side of the frame. One can push this down with something like a dentist's pick, freeing it from the detent in the barrel lock shaft and allowing the barrel lock to be pulled out from the left side of the frame. The firing pin is held in place by a transverse pin on the slide—drifting it out with a 1/16" punch will allow you to remove the firing pin and spring.

The extractor is similarly affixed with a pin, on which it pivots against a spring that returns it to grasp the edge of the cartridge upon loading. Removing the pin al-

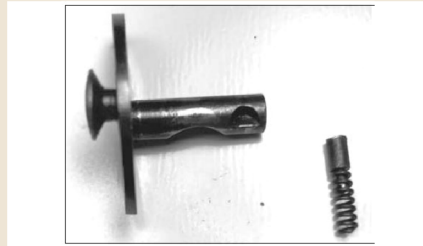
REISING TARGET PISTOL CONTINUED

ORIGINAL PAGE 13



Above left: The sear. The damage to the edge was evident after one pass with the whetstone on the sear top. Above right: The barrel lock and plunger. The shaft of the barrel lock has a curved cutout that rotates to clear the locking tang on the barrel. When the lock is rotated, the cutout clears the cut in the tang on the barrel, releasing the barrel to be pivoted forward. The plunger engages a detent in the right end of the shaft, securing it in the locked position.

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Above left: The sear. The damage to the edge was evident after one pass with the whetstone on the sear top. Above right: The barrel lock and plunger. The shaft of the barrel lock has a curved cutout that rotates to clear the locking tang on the barrel. When the lock is rotated, the cutout clears the cut in the tang on the barrel, releasing the barrel to be pivoted forward. The plunger engages a detent in the right end of the shaft, securing it in the locked position.

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Below: The mating tang on the barrel.

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The damage to the edge was evident after one pass with the whetstone on the sear top. The shaft of the barrel lock has a curved cutout that rotates to clear the locking tang on the barrel. When the lock is rotated, the cutout clears the cut in the tang on the barrel, releasing the barrel to be pivoted forward. The plunger engages a detent in the right end of the shaft, securing it in the locked position. lows the extractor and spring to be detached.

Inspection With the pistol thus disassembled, I did a close inspection of the parts. It was evident that the pistol had been thoroughly taken down some time in the past as the pins all showed signs of having been drifted out before. With the exception of the grip screws, which were all pretty badly buggered, the hammer lock plunger, sear, and all of the components were in good shape, but in most cases pretty gummed up with years of oil, solvent, and powder residue.

The Bakelite grips had each spalled off apiece of the back surrounding one screw hole; it was evident that the other holes had suffered similar failure in the past and had already been repaired. The working edge of the sear proved to be worn and peened over, present-

ing a rounded edge to the hammer and clearly not engaging it effectively. I suspected this to be the cause of the doubling. I effected repairs with a fine whetstone, some light oil, and a good deal of patience.

When I was done I had restored the edge and removed the burrs on the underside of it, giving me confidence in taking it to the range for a test (with two rounds in the magazine to start) once reassembled. The hammer lock plunger had also suffered over the years. Again, I dressed it carefully with the whetstone, allowing it to more reliably engage the detent in the barrel lock. The remainder of my work on the parts consisted of a good scrubbing and light lubrication of the parts that are normally hidden.

I repaired the grips with a gentle dose of J-B Weld. Reassembly With cleaning and repairs complete, reassembly of the pistol proved to be reasonably simple. Reinserting the various elements (the ejector, the magazine catch, the barrel lock and plunger, the trigger, the firing pin and the main spring) is simply a reversal of the takedown and fully intuitive.

The hammer goes back in as easily—one just needs to make sure the hammer strut engages the main spring upper plunger.

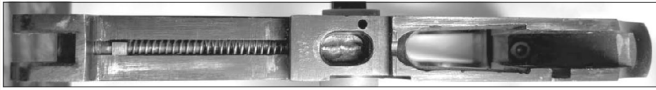
The hammer stop pin has to be reinserted correctly with the angled relief parallel to the top of the sear. The sear, disconnecting safety, and sear spring reassembly require some care simply because there are more parts to assemble at once.

Laying the frame on its right side and positioning the sear above the hammer with the working edge toward the rear and aligned with the pin hole, then inserting the disconnecting safety in its slot on top (on the left side of the sear) allows one to insert the sear pin simply from the left side. With the sear and disconnecting safety thus attached, the sear spring has to be reattached. My take on the sear spring is that it is easier to put it in after the sear.

The spring is not particularly robust, so my solution was to reach the middle leaf of the spring in behind the sear then position the spring over its milled home in the frame, at the bottom of which is a Vshaped notch (visible in the picture of the right side of the frame above)

REISING TARGET PISTOL CONTINUED

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Above: The top of the frame, showing the socket into which the barrel lock tang on the barrel drops, where it engages the shaft of the barrel lock. The bolt retracting spring and plunger are clearly visible ahead of the socket.

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The bolt retracting spring and plunger are clearly visible ahead of the socket. that holds the bottom of the spring. It is a simple matter to align it just above the catch with ones thumb, then press the base of the spring with the thumb until it touches the frame and slide it down a bit into its notch, whereupon it snaps into place. There is a bit of tension from the spring taking up against the sear and from bending the spring into place but nothing that can't be overcome with thumb pressure.

With the sear spring in place, one has only to return the sear bar by placing the pin at the front end in the matching slot in the trigger, and aligning the back against the left side leaf of the sear spring. Replacing the left side grip then holds the sear bar in place. Replace the right side grip, align the barrel on the frame, and return the barrel screw—the pistol is now in its normal cleaning configuration.

Slide the rear of the slide onto the frame and pull it back over the hammer stop, then ease it forward so the bar on the front of the slide engages the retracting spring plunger. Rotate the barrel down to mate with the frame and rotate the barrel lock forward into place and the pistol is ready

for service. Test Firing Following a frustrating search for low or standard velocity 22 Long Rifle ammunition, it ultimately dawned on me to try the Civilian Marksmanship Program store online (estore.TheCMP.org).

This proved successful as I was able to order two bricks of Eley's subsonic (1050 feet per second, 42 grain bullet) target ammunition at \$62.50 for a brick of 300. Note, one has to be a member of a CMP affiliated club to order ammunition from the CMP store with a copy of a current membership card on file. At this moment one also has to be patient—I placed my order on 3 February and received the ammunition on 11 June.

Regardless, with ammunition in hand I promptly repaired to the Fairfax Rod and Gun Club range to test the pistol. My test plan was simple—load two rounds in the magazine, point it at a silhouette on the plinking range, pull the trigger, and see how many rounds come out. The first try yielded one round, so I tried it again, with the same result. I next tried with three rounds—still good. So I burned through the remainder of the box of 50, five at a time, re-discovering how much I like the pistol.



Below: Baxter shooting his resuscitated Reising.

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It performed flawlessly and was dead on in azimuth, shooting a bit high in elevation. The subsonic ammunition shoots wonderfully. The Eley ammo is designed specifically for semi-auto target pistols, so it's ideal, being very easy to shoot, provides a nice and smooth action, and is consistently accurate. Once the current ammunition shortage sorts itself out, I'll try some other low velocity rounds for comparison (hopefully finding some that are a little less expensive—I grew up in the penny-per-bang era).

But clearly the admonition to shoot subsonic rounds through this pistol is an important one, albeit probably not necessary when the pistol was produced. With this op test I've declared victory and can now add this family heirloom to the traditional post-Thanksgiving excursion with the nephews to the plinking range.

I strongly suspect that some hotter-than-advisable rounds went down the barrel at some point in the past, causing the damage to the sear and the hammer stop pin and ultimately leading to this article—a cautionary tale to think about the scantlings of the pistol before charging the magazine. AG

FROM THE ARCHIVE

Bar-Sto Precision

Starting as a one-man shop and side project, Bar-Sto Precision has been a prominent player in the custom gunsmith world for decades.

BY DEAN MEIER OCTOBER 2022

ORIGINAL PP. 15-16

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Bar-Sto Precision (Bar Sto. com, started in the mid 1950s when Irv Stone was working in the aerospace industry doing prototype work. He was also active with the very first practical shooting competitions, all the way back to the Leather Slap matches organized by Jeff Cooper in Big Bear, California held during the annual community Old Miner's Day Carnival.

Influenced by Fast Draw competition, marketed around the Wild West style popular at the time, and in theme with the Carnival, these first matches were the genesis of a new series of shooting disciplines. Being involved with the shooting events, Irv Stone noticed the competitors were welding up factory barrels to make them fit better in their competition pistols. He thought about making an oversized barrel as an aftermarket option that was ready for customizing.

Given that his work in the aerospace industry had gone soft, this seemed a good side business to make a little bit of money while waiting for aerospace opportunities to

come back. It turned out, this temporary side business would become a full time business that is now a multi-generation family-owned company. Bar-Sto Precision has been making custom auto pistol barrels since 1971. Now a third generation family-owned business, Bar-Sto barrels have been used by the U. S.

Marine Corps Shooting Teams, the Army Marksmanship Unit, Army Reserve Marksmanship Program, and have been used to win every major pistol tournament worldwide, including the National Matches at Camp Perry, United States Practical Shooting Association Nationals, Steel Challenge, the Masters, and many more. All Bar-Sto pistol barrels are machined from solid 416 stainless steel bar stock which has been heat treated 39 to 43 Rockwell C hardness and 180,000 pounds per square inch tensile strength.

Barrels are machined, bored, and rifled completely in their shop. All barrels have a rate of twist of 1 turn in 16". These products are offered for most all 1911 variants

and chamberings; Springfield XD/XDM and Hellcat pistols; almost every Glock model variant and caliber conversion; most of the entire SIG P-series, including the recent 320, 365, and X5, as well as the more classic 226, 229, 224, and 239, the Beretta 92/96; and the Browning High Power and variants, including the Springfield SA-35 and Girsan.

All of these can be extended and threaded for suppressor and compensator, or extended and ported and fluted. Bar-Sto does many odd length and caliber options. A call or email via their website will answer if they can handle your special project request. As was the original offering, Bar-Sto barrels are semi fit and purposely oversized compared to factory barrel dimensions. The reason for this is to allow custom fitting so the barrel locks up better and shoots more accurately than a factory barrel can.

**IN MOST CASES, BAR-STO BARRELS
WILL REQUIRE SOME**

BAR-STO PRECISION CONTINUED

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“A mess it is,” he says. Many of us can relate! minor fitting and the company does not offer drop-in barrels. The idea is that the only way to take advantage of a better, more accurate barrel than the factory option and to enjoy a higher standard of accuracy is to custom fit it exactly to the gun. A drop-in barrel simply can’t do that. For experienced gunsmiths, this usually entails minor filing of a few key areas.

Gunsmithing Services Given the original Bar-Sto business model was (and is) offering semi fit barrels demanding some gunsmith work for the best possible fit, the company is receptive to questions by phone or email from gunsmiths using their products in their project guns. Bar-Sto also offers inhouse fit-

ting of their barrels. This can be useful for less experienced gunsmiths not wanting to tackle barrel installation yet or busy gunsmiths looking to outsource some shop work.

Bar-Sto also offers trigger work for 1911 pistols and gun enhancement packages. These packages include fitting and gunsmithing work includes barrel, individual component, and sight fitting for 1911, SIG, Glock, and Springfield XD pistols. Grip reductions are a unique, custom process which reduces the size of the pistol’s gripping area while adding increased traction for the shooter’s hands.

Bar-Sto also offers full custom builds ranging from sight installs and basic fixes on most all firearms, milling red dot sight cuts in slides and/or lightning cuts, scalloping and grip regrinds, and stippling. They thread barrels (pistol and rifle) for suppressors as well. Being a complete gunsmithing and machine shop, Bar-Sto can perform most types of custom work and has a 12-14 week turn around time. In addition to their products and services, Bar-Sto also demonstrates a successful business model for gunsmiths.

What started as a side project and one-man shop has blossomed into a multi-generational family-owned business that has been a “name” in the custom gunsmith world for decades. AG

PEOPLE & COMPANIES

Working the T/CR22

Thompson-Center's excellent 10/22 clone offers high value for the price and incorporates a number of unique and desirable features.

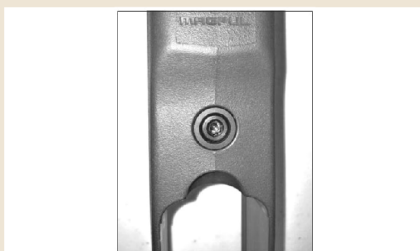
BY BRIAN R. SMITH OCTOBER 2022

ORIGINAL PP. 17-20



Above: The Thompson-Center T/CR22 is a sleek, lightweight, fast-handling, "product improved" clone of the classic Ruger 10/22 incorporating a number of high-value features including a bolt hold open system that uses the proprietary T/CR22 magazine.

ORIGINAL ARCHIVE IMAGE • PERMISSION CONFIRMED



Far left: Before attempting to remove the stock, make sure the crossbolt safety is centered in the trigger housing so that the trigger housing mortise in the stock will clear each side of the safety button. This will prevent cosmetic damage to the stock at the edge of the trigger housing mortise. Left: As with the 10/22, the T/CR22's stock is held to the barreled action with one brass bushed captured screw. It's in the exact location of the takedown screw on the 10/22, so any stock for the Ruger rifle should interchange with the T/CR22.

ORIGINAL ARCHIVE IMAGE • PERMISSION CONFIRMED



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The Ruger 10/22 made its debut almost 60 years ago and has gone on to be perhaps the most successful semi-automatic rimfire rifle of all time. Its rotary magazine was innovative in a rimfire rifle, making the 10/22 light, compact, quick-handling, and reliable. That the basic "carbine" model was value priced strongly drove its popularity and sales of nearly eight million units to date.

Ruger introduced other models with sculpted stocks minus the infernal carbine band, laminated stocks that were more stable with temperature and humidity changes but heavy, and the graceful "International" model with its full-length Mannlicherstyle stock in either walnut or laminated wood. Models were offered with black polymer stocks, stainless models were available, and special editions for different distributors. The list goes on.

Because of the patented method of barrel attachment to the receiver that was of interest to Ruger for individual finishing of steel barrels and aluminum alloy receivers and which allowed quick assembly of those components, the aftermarket jumped in. Soon a number of heavy "bull" barrels for 22 Long Rifle competition and varminting appeared, as well as weight-reducing carbonfiber jacketed barrels, aftermarket trigger groups and fire control parts, composite stocks, optics... the variety is all but endless.

Ruger held on to the 10/22 market, but as patent protection expired it was challenged briefly by AMT with its Lightning 25/22. More recently, Ruger successfully won a judgment against Armscorp/Rock Island Armory to block U. S. distribution and sale of a wood stocked 10/22 clone that was virtually identical in all ways except for a substantially lower MSRP.

Other manufacturers have since introduced competitive 10/22 rifles, including the Bergara BXR, the Smith & Wesson/Thompson-Center T/CR22, higher-end offerings from Volquartsen, Magnum Research and Tactical Solutions, and the most recent entry being the Winchester Wildcat, which was covered in these pages by fellow contributor RK Campbell in the October 2021 issue. It was Mr.

Campbell's Wildcat piece that caused me to realize that the T/CR22 hadn't been the subject of an American Gunsmith article, so I'm setting things right herewith. Far This will prevent cosmetic damage to the stock at the edge of the trigger housing mortise. It's in the exact location of the takedown screw on the 10/22, so any stock for the Ruger rifle should interchange with the T/CR22.

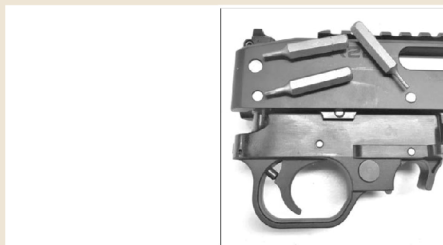
WORKING THE T/CR22 CONTINUED

ORIGINAL PAGE 18



Far left: The hex driver tips point to the three pins that hold the barreled action and trigger housing assembled; clockwise from right are the two identical-diameter trigger housing pins, and the larger bolt stop pin that is usually self-removing once the stock is separated from the barreled action. Left: Four T/CR22 "value" features are visible in this view: The rear wall of the receiver is drilled for cleaning rod access; the fully adjustable rear peep sight on its cast-in dovetail, the integral Picatinny rail for optic mounting, and forward to the right is the round, serrated operating handle.

ORIGINAL ARCHIVE IMAGE • PERMISSION CONFIRMED



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ORIGINAL ARCHIVE IMAGE • PERMISSION CONFIRMED



Below: Just as with the 10/22 and

ORIGINAL ARCHIVE IMAGE • PERMISSION CONFIRMED



Below: The front sight with fiber optic insert is held to the barrel with one hex inset flat head screw. Directly in front of the sight is the knurled muzzle thread protector found on T/CR22 versions that are sold in states which allow threaded muzzles.

ORIGINAL ARCHIVE IMAGE • PERMISSION CONFIRMED

When I first saw a T/CR22, the word that came to mind was "modernized." After studying the rifle, its features, and price point, two more words were "competitive value." The T/CR22 offers the buyer of a semi-auto 22LR rifle most of the things he or she finds of interest in the third decade of the 21st century; features like an integral Picatinny "cheese grater" cast as part of the anodized aluminum alloy receiver, a fully adjustable peep rear sight. Directly in front of the sight is the knurled muzzle thread protector found on T/CR22 versions that are sold in states which allow threaded muzzles. perched on its own cast-in dovetail at the rear of the receiver, a lightgathering fiber op-

tic front sight, a 1/2"-28 threaded muzzle with protective ring on T/CR22s destined for states that allow such intrinsically deadly features, a receiver whose rear wall is pre-drilled for a cleaning rod for accessing the barrel from the breech, a custom-designed M-Lok compatible Magpul stock that has a removable barrel channel insert to allow mounting of bull barrels to the receiver and still permit use of the factory stock, recesses for quick detach sling mounts and a short "cheese grater" under the forend tip for a light or laser.

That's a lot of value compared to a similarly-functioning rifle with only a stained birch stock and furshlugginer carbine band. Far

Internally, the T/CR22 evokes a strong sense of déjà vu to anyone familiar with a 10/22 under the hood.

The barrel is attached with two screws and a gib, the trigger group joins with the receiver with two identical pins, there's a larger bolt stop pin that readily falls out of the assembly just like that of the 10/22, the safety lever is a bit extended and works exactly as that of the original, and the trigger guard assembly readily interchanges between the 10/22. When installing new barrels be sure that the barrel is properly clocked for the extractor slot and that the front sight is plumb.

WORKING THE T/CR22 CONTINUED

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Above left: The T/CR22's bolt is shown tilted down at the front having been released from the operating handle and recoil spring assembly. The bolt is reinstalled in the same position, tail first and up. Above right: The major bits of the T/CR22 are shown, top to bottom: Operating handle/recoil spring and guide assembly, anodized alloy receiver with attached barrel, bolt assembly showing the crosspin at the rear quarter that retains the firing pin and the extractor in its groove at the front, trigger housing assembly flanked by the recoil pin and a trigger housing pin on the left, and the second trigger housing pin on the right.

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Above left: The T/CR22's bolt is shown tilted down at the front having been released from the operating handle and recoil spring assembly. The bolt is reinstalled in the same position, tail first and up. Above right: The major bits of the T/CR22 are shown, top to bottom: Operating handle/recoil spring and guide assembly, anodized alloy receiver with attached barrel, bolt assembly showing the crosspin at the rear quarter that retains the firing pin and the extractor in its groove at the front, trigger housing assembly flanked by the recoil pin and a trigger housing pin on the left, and the second trigger housing pin on the right.

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Below left: The forward end of the T/CR22 trigger housing is on the left, facing the forward end of a 10/22 trigger housing at the right. Note the extended, thinner T/CR22 ejector compared to the Ruger ejector, and the exclusive T/CR22 bolt hold open "duckbill" directly below the ejector, missing on the 10/22 assembly. Below right: Hex tip indicates the business end of the T/CR22 bolt hold open hook, which is in the engaged position as shown; the duckbill at the left is lifted by the hold open lever in the empty magazine and rotates the hold open hook to engage with the bolt face.

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Below left: The forward end of the T/CR22 trigger housing is on the left, facing the forward end of a 10/22 trigger housing at the right. Note the extended, thinner T/CR22 ejector compared to the Ruger ejector, and the exclusive T/CR22 bolt hold open "duckbill" directly below the ejector, missing on the 10/22 assembly. Below right: Hex tip indicates the business end of the T/CR22 bolt hold open hook, which is in the engaged position as shown; the duckbill at the left is lifted by the hold open lever in the empty magazine and rotates the hold open hook to engage with the bolt face.

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The bolt is reinstalled in the same position, tail first and up. and the T/CR22, maybe with a bit of fitting of the respective stocks. The T/CR22 bolt appears identical to that of the Ruger, as does the offset rodguided recoil spring assembly.

Some differences of the T/CR22 from the Ruger include a polymer trigger group housing instead of a powder coated cast alloy housing, an operating handle that's round, slightly tapered knurled metal for a positive grip, and a pinned extractor that is significantly longer and thinner than that of the 10/22, providing effective "into-the-nextcounty" ejection of empties. Another improvement is the manual bolt release that acts like a bolt release and does not require the fiddling of that of the 10/22.

The biggest departure from the 10/22 is that the T/CR22 offers a bolt hold open feature when the factory T/C magazine is used. It should be stated that any 10/22-compatible magazine is readily accepted by and theoretically functional in a T/CR22, except that the bolt won't stay open on an empty magazine. T/C redesigned its rotary magazine with a metal plunger/lever on the left rear side that activates the bolt hold open feature.

Note, to load a T/CR22 magazine, one must push that metal plunger/lever fully down before inserting the first cartridge. If this step isn't followed, the magazine jams on loading. Depressing the magazine hold open lever slightly rotates the magazine follower so that it is in proper position to accept the first car-

tridge. The remaining nine cartridges are loaded on top of the first, just as with any other 10/22 compatible magazine.

The reason for pressing the hold open lever to load the first round is because the magazine follower "overclocks" when empty to lift the hold open plunger/lever up to activate the pivoting bolt hold open hook to stop the bolt from closing. Depressing the plunger/lever "unclocks" and returns the rotary follower to its loading position.

The sintered powdered metal feed lip insert is thoughtfully equipped with a molded-in "billboard" message exhorting the shooter to "PRESS LE- VER TO LOAD." It's a little detail, but it's also direct evidence that it pays to read the manual instruc-

WORKING THE T/CR22 CONTINUED

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Far left: Screwdriver points to the bolt hold open lever in the magazine. The 90° tip of the lever engages the duckbill on the hold open hook in the upper left front of the trigger guard housing, rotating that hook to engage the bolt face. Note the admonition molded into the feed lip insert to “Press Lever to Load” the first cartridge. Failing to do so will jam the magazine! Left: The screwdriver blade is pressing the magazine hold open lever down, unlocking the magazine follower to the correct position for inserting the first round. Once the first round is loaded, the T/CR22 magazine can be loaded with the remaining rounds as with any 10/22-compatible magazine. When the magazine is empty, the follower spring overlocks the follower to raise the hold open lever against the hold open hook duckbill in the trigger housing.

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Far left: Screwdriver points to the bolt hold open lever in the magazine. The 90° tip of the lever engages the duckbill on the hold open hook in the upper left front of the trigger guard housing, rotating that hook to engage the bolt face. Note the admonition molded into the feed lip insert to “Press Lever to Load” the first cartridge. Failing to do so will jam the magazine! Left: The screwdriver blade is pressing the magazine hold open lever down, unlocking the magazine follower to the correct position for inserting the first round. Once the first round is loaded, the T/CR22 magazine can be loaded with the remaining rounds as with any 10/22-compatible magazine. When the magazine is empty, the follower spring overlocks the follower to raise the hold open lever against the hold open hook duckbill in the trigger housing.

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Below: The two recessed black button-head capscrews hold the barrel channel insert in the T/CR22 stock. Remove these screws and the insert to open the barrel channel for 10/22 “bull” barrels.

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Far The 90° tip of the lever engages the duckbill on the hold open hook in the upper left front of the trigger guard housing, rotating that hook to engage the bolt face. Note the admonition molded into the feed lip insert to “Press Lever to Load” the first cartridge. Failing to do so will jam the magazine! Once the first round is loaded, the T/CR22 magazine can be loaded with the remaining rounds as with any 10/22-compatible magazine.

When the magazine is empty, the follower spring overlocks the follower to raise the hold open lever against the hold open hook duckbill in the trigger housing. tions, because automated telephone attendant menu options are not the only things that change. Takedown of the T/CR22 is another déjà vu experience. There’s a single captive brass-bushed screw in the underside of the stock that’s removed to separate the stock from the barreled action.

Once the screw is loosened, make sure to center the safety pushbutton to clear the trigger guard slot in the stock, or else the stock gets hung up on the safety on one side or the other, possibly damaging the stock depending on the force applied. With the barreled action out of the stock, next push out the two trigger housing pins to separate the trigger housing from the receiver. If the larger bolt stop

pin hasn’t already fallen out of the receiver/trigger guard assembly, it probably will shortly.

Just listen and watch for the pin drop; this is one you can hear. With the trigger housing assembly and bolt stop pin out of the receiver, next remove the bolt by inverting the barreled action and pulling back on the operating handle as far as it will go, then reaching in to the receiver. Remove these screws and the insert to open the barrel channel for 10/22 “bull” barrels. and hooking a finger or two onto the bolt face and lifting up and out.

The operating handle is captured on the recoil spring / guide rod assembly and can be withdrawn diagonally through the ejection port. Barrels are readily exchanged just as with the Ruger, by removing the two screws and gib that hold the barrel in place, removing the barrel, installing the new one and re-installing the gib and retaining screws after ensuring the barrel is properly clocked for the extractor slot and for the front sight (if present) being plumb.

As mentioned, the T/CR22 stock has an insert in the barrel channel that is held fast with two screws; remove those screws and the channel insert can be taken out to allow clearance for a heavy barrel. The monolithic fiber optic front sight base is held in place by

a hex inset flathead screw. Removal of the screw permits the entire front sight to be separated from the barrel. Further disassembly of the trigger group is primarily as with the 10/22, if fire control group parts are desired to be changed or upgraded.

The trigger group is simple to work on, and rather than cover its disassembly with words and a snapshot or two, I’ll refer the reader to any of many excellent Interwebz videos on the subject. Note that the extendedlength T/CR22 ejector is held fast in the trigger housing by a fixed pin, and does not rotate about an axis pin further back in the trigger housing in the manner of the 10/22 ejector.

Thompson/Center has an excellent tutorial video on their website describing disassembly and reassembly of their proprietary and unique T/CR22 magazine; see TCarms.com/tcr22. The T/CR22 isn’t going to replace the 10/22, but it’s a value-added and handy 4.4-pound alternative that has attracted and will continue to attract buyers interested in the T/ CR22’s unique features.

Despite the 10/22-style rifle having a lot of DIY appeal and Interwebz video and forum support, they may still end up on gunsmith benches when professional services are required. AG

MAINTENANCE & REPAIR

Cleaning—The Complete Story

It may be boring but it's always necessary. Some gunsmiths find gun cleaning a component of their service. Here's how to establish standards for your shop.

BY ROBERT K. CAMPBELL OCTOBER 2022

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I made an offhand comment to a gunsmith friend not long ago, saying I was surprised to find he was so busy cleaning guns. Folks should be able to clean their own guns! But then, I don't do the pet's hair and nails myself and I sometimes have the car detailed. I let those experienced in the field do their job. My friend has considerable investment in ultrasonic cleaners and makes money every week cleaning guns.

Not to mention all the dirty guns that come in for repair and really need to be thoroughly cleaned before repair work can begin. A good cleaning is an ideal first step for every repair and it may be the fix. Sometimes a good cleaning frees a stuck sear and reduces other malfunctions. A fast rule I've used for many years has been to clean it first. From the typical gummed up .22 caliber rifle to a stuck sear in a High Standard revolver, a simple cleaning often cures complaints.

Within the week I cleaned and lubed a Glock and the result was a much better trigger action. I also carefully cleaned a Savage 29B rifle, which I admit was a joy and a privilege. Far Folks buy guns to shoot, not to clean. Some firearms do better than others without cleaning. A Ruger 10/22 will function far longer than a 1950s era self-loading .22 rimfire without cleaning but it is abuse to fail to clean the firearm until it malfunctions. All of us have different standards of clean. I have no military experience.

My son is a Major in the National Guard and his idea of clean is way above most—I would not wish to endure one of his inspections! Although, I have when he opened my gun safe... When I worked industrial security my friend Leo and I sometimes discussed cleaning. Some among his crew didn't really know how to clean effectively and the same goes for many gun owners. Gunsmiths don't often receive carefully cared for

CLEANING—THE COMPLETE STORY CONTINUED

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firearms that receive a lot of routine maintenance. We get basket cases of solidified oil and gunk. I call it a “hard varnish” even if that may not be chemically correct, however, that descriptor certainly suits the looks of a neglected gun. A well maintained firearm functions as designed and certainly holds its value. But quite a lot of our customers, well, are keeping us in business without resorting to hard learned gunsmithing when a routine cleaning solves the problem.

Ultrasonic cleaners are good and can be a wise investment. But I don’t have one. I use hot water, a pick, and hard brushing. It’s worth noting that ultrasonic cleaners can sometimes remove coating. Not good quality blue or chrome but they will remove Bar-B-Que grill paint or similar high heat paint pretty easy. A degreaser with phosphoric acid can be rough on a finish. Don’t purchase your supplies at Walmart but use Brownells for gun-specific uses and you will prosper.

I hate to have to mention it but never use kerosene or gasoline to clean guns. Not to insult your intelligence, but it’s certainly possible your customers may use this stuff. I still

see this every year. I think that dirty as a dirt road is the lowest order of clean at which a firearm still functions. Next up is the guy who shoots it and then wipes it off afterward. He may spray the gun with some type of aerosol cleaner, letting the grit get slogged around and simply settled somewhere other than where it was.

Next is clean and functional. The barrel is free of lead and copper deposits, the action may have a film of powder ash on the moving parts but there is no powder ash and debris in large quantity. The bearing surfaces are lubed. This is what is needed for personal defense and hunting. Such a level of maintenance gets the gun ready to go.

Another step up, usually reserved for storage, is to disassemble completely and then carefully soak and clean every piece of the firearm with the moving parts packed far with a preservative grease. Finally, white glove clean, which is rumored to exist in the U. S. military. I have never experienced this clean and probably will not except possibly in my son’s gun safe. Cleaning by Type The proce-

dures needed in cleaning firearms are different for each type and special concerns exist for each.

Revolvers will malfunction and it isn’t always easy to catch. Revolvers suffer from excess leading in the barrel and forcing cone. Simple old elbow grease and a lead removal tool are needed. As an example, when I worked at a city police department decades ago more than one Model 19 or Model 66 357 Magnum suffered a cracked forcing cone. That agency used the softest lead bullet they could get away with in the training load, a 148 grain wadcutter at 750 feet per second loaded on a Star loading machine.

Cleaning the barrel just a little wasn’t enough. Fire a few 357 Magnum 125 grain jacketed hollow points at 1400 fps with a forcing cone that is obstructed and you may crack it. I have seen two. Years later I also saw an Astra double action revolver with a cracked forcing cone. It may have been due to the steel in the latter case as the bore wasn’t overly leaded. So, be certain the bore is carefully cleaned and free of lead.

METALWORKING

Reader Forum

BY AMERICAN GUNSMITH EDITORS OCTOBER 2022

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As for material, in some cases I find that the larger pores in cast steel and stainless steel don't take lubricant as well. Forged steel is still the best handgun material in my opinion. Use a quality lubricant such as Ballistol and you will be in good shape. Once clean, if the gun is going into storage, place the firearm where there is no exchange of air. Lightly lubricate the firearm and store it muzzle down.

If the firearm is to be stored long term, then clean and dry as possible is good with a thin layer of lubricant to prevent corrosion. AG for software updates. "At Tormach, we design our equipment to be user installed, user serviced, user maintained, and user upgradable," he says in the video. "I think in this day and age, it's almost criminal that some manufacturers charge thousands of

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READER FORUM CONTINUED

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dollars for software updates to their controls.” One example of Tormach’s customer repair policy is, if a Tormach CNC machine requires a spindle replacement, users can buy the spindle directly from the website and replace it themselves, with technical support and documentation readily available from Tormach at no cost. Other machine tool companies not only charge for the part, but also require it be installed by a factory-authorized service person.

This service fee typically costs thousands of dollars and in some cases, takes multiple weeks of downtime to schedule the service call.

With the ability to repair one’s own machine, users not only save on cost, but can gain flexibility and autonomy in the process. “This is how Tormach has operated since its founding,” said Lori Morrison Bufalo, Tormach’s Marketing Director. “Our machines are approachable and can be serviced by owners, and we help them by making detailed technical documentation, videos, free software upgrades, and free technical support readily available.” Tormach Assembly Services: For shops that want it, Tormach is now offering assembly services for its line of machines, including the 1100M/MX & 770M/MX CNC Mills, the PCNC 440 Mill, and the Slant- PRO 15L.

By default, Tormach ships its machines unassembled to its customers to keep costs down, however, they’re now offering assembly for a fee in a tiered system. Customers can choose the specific accessory or upgrades they would like to have preinstalled before the machine ships, such as an Automatic Tool Changer or Power Draw Bar, or they can opt for full machines assembly.

An in-house Tormach professional will install, align, and test all pre-installed components (if partial assembly is chosen) and major systems to the machines for full assembly.

This allows customers to speed up the time to commission their new machines quickly at their shop once they arrive. “We heard from many customers that they would prefer it if we would provide our machines fully assembled or assist in installing major accessories, and the additional cost was well worth it to them,” said Lori Morrison Bufalo, Tormach’s Marketing Director. “We have decided to add this service as away to make life easier for our customers and much like our philosophy with machine design, every customer has different needs, so you have the ability to pick and choose what you’d like installed by our technicians.” Examples of some of the items Tormach can assemble on its machines include Automatic Tool Changers (ATC), high performance servo motors, motorized 4th axis rotary tables and fixed vises, high-performance spindles, coolant systems, enclosures (dependent upon shop door dimensions), Path Pilot operator consoles, and machine stands.

Tormach also is offering on-site installation services at customer locations. “A Tormach technician will schedule time at a customer’s facility once the machine arrives, and they will get it up and running,” said Bufalo. “Every step, from stand and enclosure assembly to accessory install and dialing everything in, this is a premium service that gets you making chips really fast.” In addition to their new facility in Madison, Wisconsin, Tormach has signed an agreement with CNC Machine Tools Ltd. (CNCmachine Tools. co.uk) in Snetterton, Norfolk, England.

CNC Ltd. will be Tormach’s exclusive distributor in the UK and Eastern Europe and will offer machine assembly services, training, and leasing and financing options. In addition, a UK demo showroom will soon be available for customers and prospects to see Tormach equipment in person. It will feature Tormach’s PCNC 440, 770M, and 1100MX CNC milling machines for in-person machine demonstrations. Meanwhile, virtual demonstrations will also be available. AG

SEARCHABLE ISSUE RECORD

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Precision Arms Workshop

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