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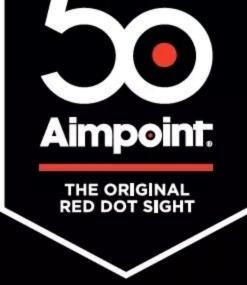




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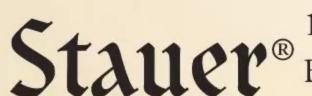
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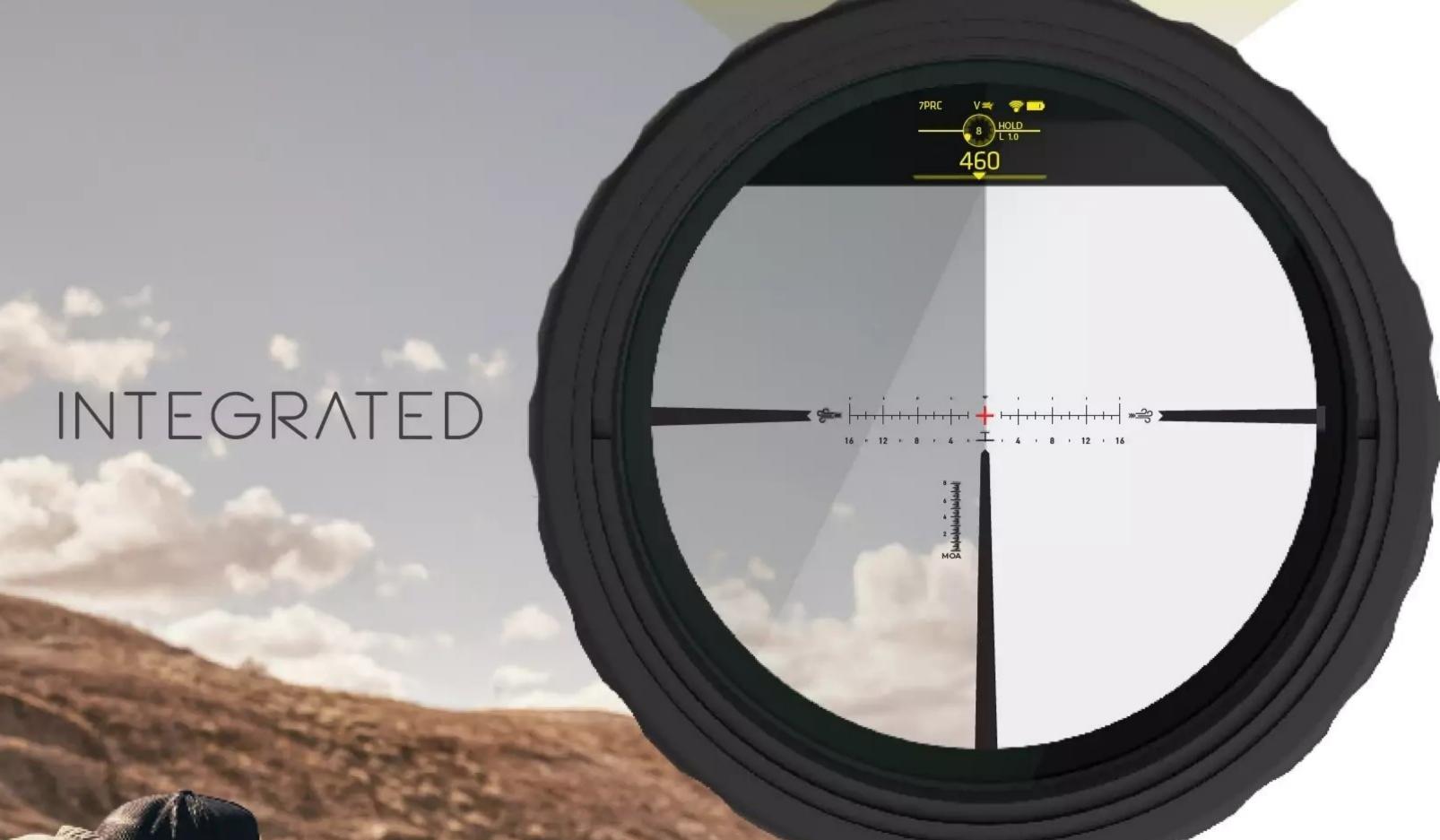
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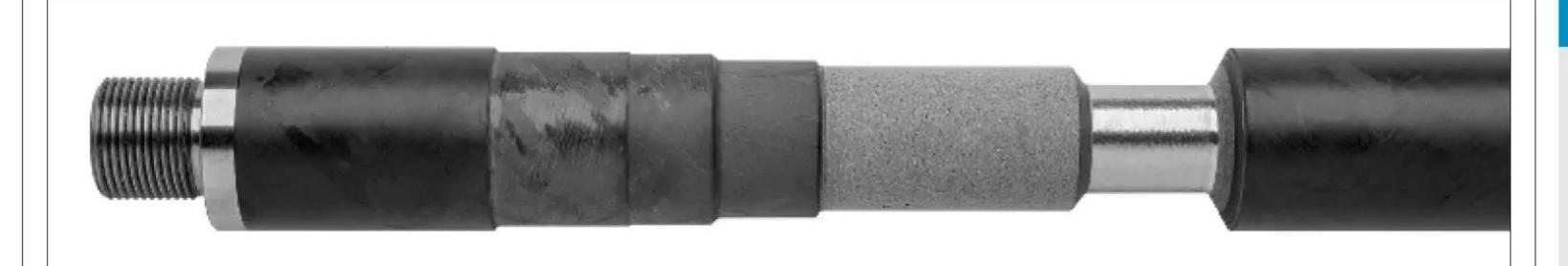


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READER BLOWBACK

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THERMAL INERTIA

In "Gun Tech" (May 2025), Richard Nance used a barrel supplied by Avient featuring a ceramic material in the middle designed "to quickly transfer heat from the steel bore." However, he didn't say where the heat goes. It seems that the only place for the heat to go is into the carbon-fiber layer. Since carbon-fiber has only about half the thermal conductivity of steel [.17 to 27 W/(m x K) versus 45 to 60 W/(m x K)], and considerably lower density — thus reduced thermal mass and reduced weight of the layered barrel — it follows that the steel liner in the layered barrel would get hotter compared to an all-steel barrel of similar profile. The outside of the layered barrel would remain cooler because of the same lack of heat transfer from the bore to the outside surfaces. Ceramics generally have a thermal conductivity between steel and carbon-fiber composites, so, without knowing the type or relative thickness, it is difficult to figure that in. Assuming the ceramic layer is thin relative to the steel liner and the carbon fiber, it would likely play only a small role in the heat transfer. Heat absorption by either the barrel from the combustion gases and bullet friction would mostly be by conduction; dissipation would mainly be by radiation and depend on the emissivity of the surface. My suspicion is that a rapid sequence of, say, 20 to 30 high-power rifle rounds through the composite barrel would not heat the outer surface much beyond ambient temperature, thus appearing deceptively cooler than a steel barrel after a similar session. The steel liner on the other hand would be an entirely different matter. Similar conditions could be had by wrapping a standard steel barrel in a similarly heat insulating jacket. The resulting assembly would also appear cool. I appreciate Nance's "Gun Tech" columns, and I look forward to them.

Dan MacDonald Long Lake, Minnesota

Yves Cordeau, senior research and develop-ment engineer at Avient Corporation, offered the following response to your well-thought-out comment.

— R. Nance

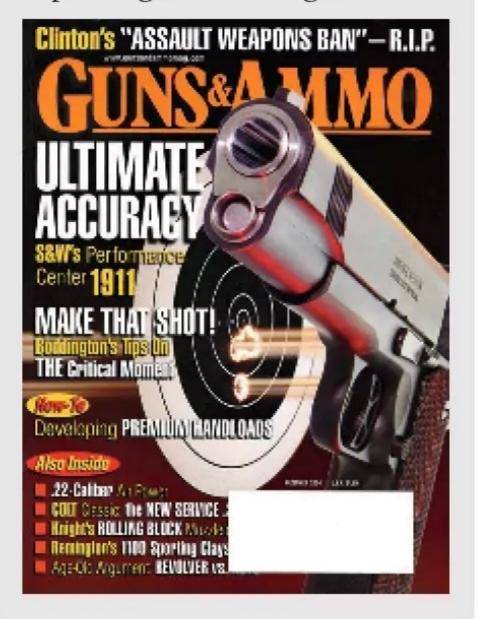
As Mr. Nance mentioned

in his article, "Keeping it Cool," Avient Corporation applied the concepts of thermal inertia with its Composite Heat Release (CHR) technology for barrels, as opposed to thermal conductivity. We recognize that while thermal conductivity

plays a role in cooling, it doesn't tell the whole story. Fundamentally, thermal conductivity depends on the mass of a material to draw heat, favoring heavier materials such as steel. This helps metals perform their job as heat sinks, conducting and absorbing heat away from its source. It does not, however, account specifically for the return to ambient temperature in applications where weight matters. Thus, Avient's emphasis on thermal inertia, i.e., the resistance of a material to change temperature. High thermal-inertia materials hold heat longer than low thermal-inertia materials of the same dimensions, independent of mass. Avient's CHR technology uses layers of proprietary, low thermalinertia ceramic and carbonfiber composite materials to optimize barrel weight without sacrificing performance. Therefore, a barrel can be large, stiff, very lightweight, and still cool throughout drastically faster than most steel barrel contours. This effect was witnessed firsthand when firing through barrels that incorporated CHR technology. The outer surface of the barrel was noticeably warmer after firing just a few rounds than other barrels; it then quickly cooled down as heat was released into the environment. This means the heat

DECEMBER '04

Editor-in-Chief Lee Hoots, Field Editor Tom Gresham and Washington D.C. Correspondent John Hay Rabb editorialized on the sunset of the Clinton-era Assault Weapon Ban (AWB). Hoots wrote, "I don't know how many times I've seen footage of the 1997 North Hollywood, California, shoot-out, in which the weapons used were already illegal long before the [AWB] was conceived. ... I'd like to see some honest news reporting for a change."



has been drawn from the bore, which was repeatedly proven by measuring the interior bore temperature. Avient's testing has shown that CHR-modified barrels consistently demonstrate lower peak temperatures and cool faster from the inside out than similar contour barrels of conventional materials.

— Y. Cordeau, Avient Corp.

1903A4 BARRELS

Mr. Emary, my boys and I enjoyed your series on World War II sniper rifles, particularly the June 2025 issue featuring the Model 1903A4. One reason for poor accuracy from these World War II-era rifles was that they were built on the A3, which had two-groove barrels. The original '03 had a four-groove barrel, which



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typically gave better accuracy. To increase production in later years, the A3 was fitted with two-groove barrels. I had my A3 fitted with a modern scope, and I still get 2.5 to 3 MOA accuracy.

Dave Nelson

Conesus, New York

BUDGET GUNS

Eric Poole forgot Taurus revolvers and semiautomatic pistols in his April 2025 "Editorial." I have some of both, like them and carry them. Roy Jensen Ramsey, Minnesota

I surveyed Taurus pistols and revolvers for that column. It started as a response to a reader letter asking, "Where are the articles on sub-\$300 guns?" I used that number as the threshold to define a "budget" gun. To keep all things equal — since retailers and manufacturers can discount, offer rebates, or advertise different sale prices — I used the "Manufacturers Suggested Retail Price" as the comparison. At the time, I found no Taurus handgun with an MSRP of less than \$300. As I write this response, I see that one pistol has been priced and would be added to that list: G2S (\$296, taurususa. com). The base model G2C is close to making the list at \$304, and the GX2 at \$310. Thank you for bringing this to our attention.

— E. Poole

FEELING LEFT OUT

Let me say, I'm glad Eric
Poole finally wrote a story on
"Budget Guns," April 2025. I
have several high-end guns,
but I also own a couple of
Hi-Points, which are great to
keep in a lock box; they are

very rust resistant, too. I'm writing, though, to mention the Diamondback DB9, which I purchased for around \$269. It's a micro 9mm that gets little mention, though it seems to be the smallest of all the 9s. I have carried a Gen 2 for many years, and it's a great gun.

David Curl Birmingham, Alabama

The Diamondback DB9 is on its fourth generation. It is currently priced with a \$305 MSRP, \$5 from making the list. Looks like you found a good deal. It measures 5.73 inches in length, with a height of 4.51 inches and .9-inch in width. A few models are smaller, a few are shorter, a couple are skinnier, but the DB9 is certainly among the smallest micro 9mm autos.

— E. Poole

BODDINGTON ON DEER

I saw an advertisement for "Top Deer Rifles & Cartridges" by Craig Boddington. In what issue will it appear? Clayton Paul Email

"Boddington's Top Deer Rifles & Cartridges" was developed for the website. You can find the entire article here: https://www.gunsandammo.com/edito-rial/boddingtons-favorite-whitetail-cartridges/522197. We do not have plans to publish it in the print edition. You will find additional online exclusives available at gunsandammo.com.

— A. Acitelli

GROUP SHOOTER

In Patrick Sweeney's article "Unlocked Potential" (June 2025), including a review of

Smith & Wesson's Model 36 Classic, I wondered if the accuracy chart had a typo. I question whether Mr. Sweeney (or anyone else) could shoot an average group size of just more than 2 inches with a 1.88-inch barrel and a grooved topstrap rear sight at 25 yards. While I have no doubt that his abilities exceed mine, I would be very happy to get consistent hits on a steel plate with such a gun at that range! Steve C.

Marion County, Arkansas

I, too, was a bit surprised by the results, but not a lot. I learned to shoot on revolvers, and I've had decades of practice. When I'm in flow, good things happen. I was in flow that afternoon. Short barrels can be accurate. I once did a TV segment with a 2-inch M15. In one take, I went six for six on a 100-yard silhouette, standing. Snubbies can surprise you.

— Patrick Sweeney

NEW CARTRIDGES

Concerning new cartridges, some say, "The .30-'06 works just fine" — and it does for most hunting applications. Many new cartridges try to answer a question: "How do I get the 7mm Mauser into a short action?" "How do get a .300 Winchester Magnum to shoot heavier bullets?" "What if the .264 Winchester Magnum was what we wanted it to be?" I think we should embrace new ideas and let the market figure out if it is an improved solution. In the 1950s, people looked at making bullets go faster but engineers discovered the forces can tear apart

the construction of a bullet. Fast forward 70 years and those of us saving money and vacation days for a hunt want the option to take a long shot while still making an ethical killing shot. The .300 Win. Mag. and .300 PRC are similar, but the PRC was designed by Hornady to shoot longer bullets farther. Some ideas are going to be winners, and some losers.

Brian McDonald

Brian McDonald Carson, California

NO THANKS

I hope Tom Beckstrand was well paid by Winchester for his five-page ad on its .21 Sharp cartridge (February 2025). It's an imposing challenge to convince readers they need something they don't. I had to turn off my B.S. detector to finish reading that article without interruption.

Van Baxter York, Nebraska

GOOD INFO!

James Tarr's article in the February 2025 issue on the Ruger RXM was the best review of a pistol that I have ever read. The photography by Michael Anschuetz was excellent, too.

Congratulations.

David Novoa

Sebring, Florida

CORRECTION

The Model 1904A4 reviewed in the June and July 2025 issues was improperly labeled "Springfield Armory." All M1903A4s were assembled by Remington, and all were roll-marked on the receiver "REMINGTON". A special thanks to longtime reader and subscriber Danny Arnold of Purcell, Oklahoma, for calling attention to this error.

— Eds



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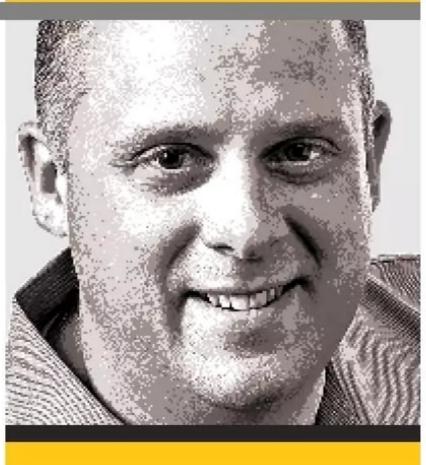
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EDITORIAL AUGUST 2025 G&A 13

An empowered woman inspired her son.



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MOTHER'S DAY

STANDING 5-FOOT-4 and a couple of pounds over 110, my earliest memories of Mom — Rhonda Poole — are of a God-serving woman who loved my sister Rachelle and I more than anything. "Dad," named Roy, was a police officer in Ridgecrest, California, when he rescued us from my biological father's abusive marriage. Roy married Rhonda on Christmas Eve, 1982.

Mom chose to be a home-maker, raising Rachelle and I on a small desert property with nearly 150 chickens, a few rabbits, a duck, and a couple of cats and dogs. She went from being a woman who didn't know anything about guns to someone who carried them for both defense and the enjoyment of shooting.

Several memories of Mom involve her wearing a gun, either a rimfire Colt Single Action Army or another chambered in .357 Magnum. On her hip, she carried a mixed cylinder of jacketed soft points and snake shot. Her reputation for fearlessly protecting the hen house against invasive snakes meant that she was occasionally called on by a neighbor to

assist with pests. We also experienced two home intruder situations. Once she had to hold a violent man at gunpoint with a Browning BDA until police arrived, and another involved a convict who threatened Dad for arresting him and putting him in jail. Perhaps he came to our property to intimidate our family, but I remember Mom telling us to go in the house as she let the man in his car watch her strap on her holster. Eventually, he chose to drive away instead.

Range days were a lot of fun. Dad would coach us at a defunct silver mine where we shot rimfires for accuracy. My younger sister, Rachelle, annoyed me with her irreverence while punching holes in all the targets I had set up with her magazine-fed semiautos. Dad often had a new gun to shoot, and it was usually too powerful for us to enjoy.

Still, he got a kick out of watching Mom shoot his favorites, including a Smith & Wesson Model 29 with 8%-inch barrel. Mom was usually content with her experience after a few shots, but sometimes Dad relentlessly urged her to continue until it wasn't fun. However, she was a crackshot. I told my friends that she was a "handgun sniper." When

challenged, she could walk up to the firing line, steady a pistol and skillfully press the trigger with perfect sight alignment. If a gun she was shooting was zeroed, she could score a 10X on any bullseye target while standing from 25 yards. In fact, this skill became the key to getting out of Dad's insistence for her to keep shooting hard-recoiling handguns. She'd ask, "If I hit the bullseye, I can be done, right?" Dad begrudgingly agreed.

It became something of a show for the rest of us. Mom took her time, made the shot and then put the gun down. I don't remember her analyzing a target, but the rest of us did. It was always a race downrange to see a bullseye within the 10-ring. As impressed as I

was, there was a lesson to be learned.: "Don't press your luck," she'd say. "Know when to stop."

Years later, Mom visited me during a parent's weekend at the Virginia Military Institute. I was on the Rifle Team, so she was excited to see where I spent my late afternoons.

"Wanna try it?" Coach Jim Thorp implored of her.

Given the chance to shoot one of the team's match pistols, Mom stepped up to bench with an eager smile. The range was quiet as she fired one shot, then follow-through.

"Shoot again!" someone said.

Without looking at the target, she safely cleared the pistol and put it away. The team was in awe at the center-punched bullseye. She held back her pride until she left.

Thank you, Mom. 🖎





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GUN ROOM

AUGUST 2025 G&A 15

"The engraving is ornate and quite competent, but the serial number does not jibe with Colt numbers for this model of pistol."

IDENTIFICATION & VALUES



GARRY JAMES

GARRY.JAMES@ OUTDOORSG.COM



ELABORATE 1911

Q: I inherited this 1911 .45 ACP from my father in 1990 and was hoping you could give me some information. The only marking on the pistol is the serial number, 144XXX. My father told me it is a Llama, and he acquired it from a friend in the mid- to late-1960s. It originally had white grips, which I believe were plastic. I do not know if the engraving is factory or not, but it was on the piece when he got it. The gun performs flawlessly, and I have personally fired thousands of rounds with this pistol. As a matter of fact, I just used it to qualify for my Maryland wear and carry renewal. I do not use it for concealed carry, but I am so comfortable with it that I wanted the confidence it gives me for the test.

S. S.

Delta, Pennsylvania

A: The engraving is ornate and quite competent, but the serial number does not jibe with Colt numbers for this model of pistol. The lack of Colt markings, and some other stylistic differences, certainly point to it being a Spanish Llama. However, it misses some of the nuances of

the Model IX and others. The engraving, too, does not have a Colt factory look. I'm sorry I can't be more specific on this one. I would need to have it in hand to give you a more definitive answer. Perhaps one of my readers has a similar piece and could enlighten us both.

MACHINISTS UNION 1894 WINCHESTER

Q: I have a Winchester Model 94 that I won from my local machinists' union about 30 years ago. I've enclosed some photos of it. If you could tell me what the value is, I would appreciate it.

T. E. S. Email

A: Three thousand International Association of Machinists and Aerospace Workers Winchester Model 1894 rifles were manufactured in 1998. The caliber is .30-30 Win. Like many of

these later Winchester commemoratives, the value is not lofty. Assuming your rifle is in unfired condition and includes the original box and paperwork, it would be worth approximately \$650.

SAVAGE 99 RARITY

Q: I'm a subscriber to Guns & Ammo, and I have a Savage M99 made in 1912 in .25-35 caliber. I have never seen another Savage 99 in this caliber. It is in very good condition and most likely in the 80-percent-plus range for its age. Any ideas on how many were made and the current value? I

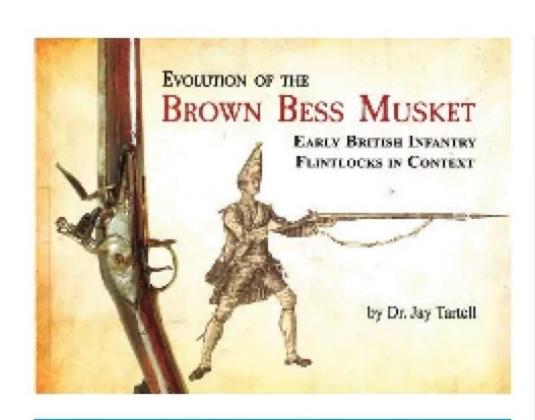
AUCTION BLOCK

An extraordinary Duane Weibe custom takedown Mauser 98 in .404 Jeffery realized an impressive \$15,000 at a March 23, 2025, Sportsman's Legacy sale. Built on a Model 1935 action, the rifle separates into two pieces with the operation of a lever on the lower forearm. Features include banded express sights and sling-swivel stud, quick-detaching mounts with a Schmidt & Bender scope, straight bolt handle, French gray finish, accent engraving, and a

superlative Turkish walnut stock with a leather-wrapped recoil pad. All mechanical aspects are flawless. Capacity is four plus one, and the extractor "snaps over" rounds dropped into the chamber. For more information on this and future sales, visit Sportsman's Legacy at sportsmanslegacy.com.







RECOMMENDED READS

"Evolution of the Brown

Bess Musket" by Dr. Jay

Tartell. Track of the Wolf, Inc., Elk River, MN, 2024. 168 pages. Hardcover \$42.99; softcover \$35.99. Few military arms are as iconic and important as Britain's Brown Bess musket. First appearing around 1730 as the "King's Pattern Long Land Musket," the piece — whose nickname "Brown Bess" was never an official designation — underwent a number of modifications during its century-long period of usage. As with other famous military weapons, the Bess did not spring fully formed from a designer's drawing board. It came into being as a result of an evolutionary process that began decades prior to its initial appearance. By means of superb photography, layout and scholarship, Dr. Jay Tartell traces the antecedents of the Long Land Pattern beginning with mid-17th century matchlocks and wheellocks through an extended lineage involving English lock and French-style flintlock muskets. The various models are clearly put into historical context by associating them with the reigns of the British monarch during which they were introduced and used, along with appropriate historical events. Astutely chosen period and modern supporting illustrations depicting soldiers, monarchs, ephemera and battle scenes add interest and elaboration. Unfortunately, space does not permit the reviewer to properly extoll the many other nuanced facets of this adept work. Suffice it to say, as a valuable readable reference, for those not only interested in the genealogy of early martial musketry as well as the casual reader, this work is highly recommended. "Evolution of the Brown Bess Musket" is available through retail book outlets or direct from Track of the Wolf (trackofthewolf.com). \$36 - \$43



have looked everywhere for the last 10 years and haven't found anything.

J. R.

Kimberly, Oregon

A: The Savage Model
1899H rifle, manufactured
from 1905 to 1915, was
offered in .25-35 WCF, as
well as .22 Hi-Power, .30-30
Win. and .303 Savage. A
takedown version of this
1899 variant was introduced
in 1909. The .25-35 caliber
does bring something of a
premium, as it was one of
the scarcer chamberings.
In 80 percent condition,
I'd value the piece in the
\$1,250 to \$1,500 range.

S&W NO. 1, THIRD ISSUE

Q: I have what appears to be a .22 Short top-break revolver. The top of the barrel is marked in small lettering "Smith & Wesson Springfield Mass. Pat Apr 3.55 July 5.59 Dec 18.60". On the frame at the bottom of the grip is the number 964XX. The finish on the gun is in very good condition, and the bore is clean. The pearl grips appear to be original. I can't find much information on this gun. Can you help me with some history and approximate value? S.B.

Email

Condition Smith & Wesson Model No. 1, Third Issue revolver. This late variant of the No. 1 tip-up was manufactured between 1868 and 1881. Some 131,163 were produced. Standard finishes were blue or nickel plating. The supplied photos indicate the gun is in at least 95-percent condition. This factor, along with the factory pearl grips, gives it a value of \$1,250 to \$1,500.

A: You have a very nice

RARE .30 WHITNEY REVOLVER?

Q: I have a fun little adventure on my hands. I inherited a pistol from my dad when he passed away a little more than

10 years ago. I've always loved the pistol because of the story behind it and how it became part of our family history. Then, my mom's current boyfriend came into the picture. He's a lovely man and a gun aficionado like l've never met before. I asked him to find out more about the pistol. He was baffled as to what it truly was, but he asked around on the forums he's part of. No one there had an idea, either.

The only lead he was able to share came through the Cody Firearms Museum (centerofthewest.org). A gentleman who looked at the pictures of the pistol said the revolver is likely a Whitney Rimfire Breech Loading Model No. 1, .30-caliber variant. This model is one of the rarest. It is estimated that fewer than 100 were made. "Flayderman's Guide to Antique American Firearms" and the "Blue Book of Antique American Firearms and Values" both state, "The rarity of this revolver pre-



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> 6.8"LONG 1.35" DIAMETER 6.7 OZ

7.16" and 8.6 oz with Micro Booster Attached

AVAILABLE IN DIRECT THREAD AND MICRO BOOSTER CONFIGURATIONS

The BANISH 9 is a full-size 9mm suppressor for handguns and pistol-caliber carbines constructed from titanium and aluminum, 14 baffles, up to 34DB sound reduction, user serviceability, and BANISH's new Micro Booster. Multiple mounting options available, includes lifetime warranty.

LENGTH	6.8"
DIAMETER	1.35"
CALIBER	9mm
LIFETIME WARRANTY	YES

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cludes accurate pricing. An evaluation by an antique firearms appraiser would be the best way to value this firearm."

There was a gun show in Dillon, Montana, and I took my son along. My goal was to spend time with him and see if I could get any leads on an appraiser, or find someone who could tell me more about this pistol. I've had a run around trying to find an appraiser. I felt that making a human connection would prove better than trying online. I spoke with two gentlemen who suggested I contact you. We found plenty of examples that were Model No. 1½, but nothing that was a "Model No. 1." I would love to know more about it. At this point, it has been an enigma.

A. P. Email

A: Your photos indicate it's a decent example of a fairly scarce gun. However, it's one that doesn't have much collector interest. I ran this by Tim Prince of College Hill Arsenal (tim@colleghillarsenal.com) who estimated the value would be in the \$300 to \$500 range. However, he was also concerned that it might

have been misidentified; it could be one of the more common 1½-inch guns. A quarter-inch variation in barrel length between identical model guns is not unusual for Whitney. Prince speculated whether the information in "Flayderman's" is correct, or if they unintentionally created a model that didn't really exist.

REWORKED MODEL 92 WINCHESTER

Q: My dad bought this rifle at the Amarillo, Texas, gun show in 1965 just as you see it. It was the first rifle I fired that was bigger than a .22. I was 10 years of age. It shoots well and accounted for countless jack rabbits. Can you please tell me the date of manufacture and its value, if any? It has been changed from firing .25-20 to .32-20

Winchester, and it has lots of plating and other modifications.

J. H. Email

A: Your dad's Winchester Model 92 was heavily reworked and rechambered, so it has little collector interest. According to its serial number, it was manufactured in 1915. Some 33,177 were built that year. Its principal worth is as a shooter. I'd price it between \$850 and \$1,000.

COLT MILITARY 1911

Q: I was hoping you could share information regarding the attached photos of a Colt Model 1911. My parents moved into a home in 1968, and my father found this in the basement ceiling joist when they were unpacking. I've looked

on the Colt website and it appears to be from the early teens. Any information you can share regarding condition, collectability, value, etc., would be appreciated. I took it to a gun show where a vendor offered \$2,500. I'm not the greatest photographer, so if you need better pictures, please let me know.

S. W.

5. W. Email

A: Your pictures are just fine. They show you have a good, honest Colt military issue Model 1911 manufactured in 1918. Although the finish is a bit worn and the grips have been mildly abused, it is still a solid piece. From what I can see, the \$2,500 offer wasn't totally out of line, though, as prices on these guns have accelerated recently; another \$500 to \$750 would not be unrealistic. The accompanying holster also appears to be quite sound; it is worth \$75 to \$100. **C**A





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PARTIE

ZOB H





The American Legend

WINCHESTER USA

FULL METAL JACKET

provides positive functioning and no expansion

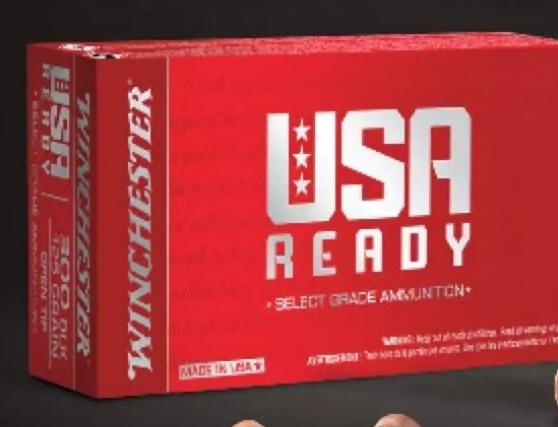
CONSISTENT ACCURACY
is ideal for shooters of all skill levels

READY FOR ANYTHING

TARGET & PR/

223 REM 55 GRAIN FMJ

200 ROUND





MATCH GRADE PRIMERS

Built to exacting specifications for trusted reliability

LOT CONTROLLED

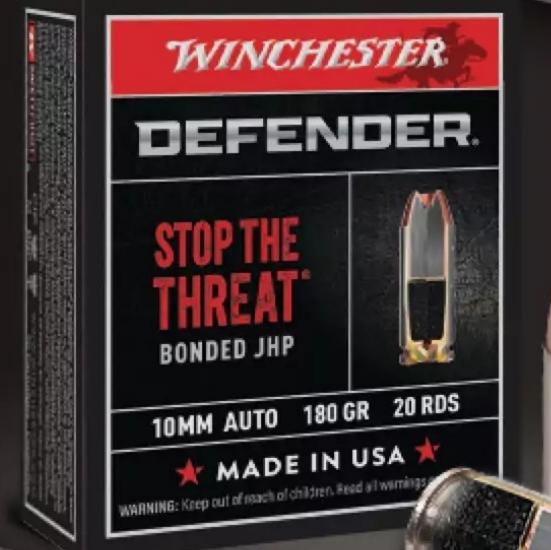
Ballistics data for each lot published online at Winchester.com/usareadyinfo

A DEFENCE GRADE AMMANITON & DEFENCE AM



HEX-VENT™ RIGID INSERT

Shields hollow point from obstruction while channeling material flow for positive bullet expansion



DEFENDER

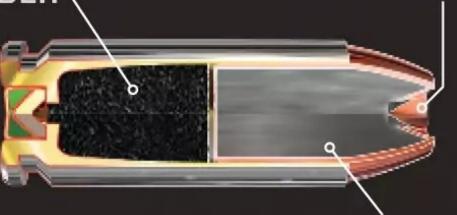
STOP THE THREAT

LOW FLASH POWDER

allows easier target acquisition for follow-up shots in low light settings



expands up to 1.5X the original diameter resulting in maximum stopping power



PROPRIETARY BONDING PROCESS

welds jacket to lead resulting in improved penetration and retained weight



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HANDGUNNING AUGUST 2025 G&A 21

Does magazine length and girth affect your defensive shooting performance?



JAMES TARR

EXTENSIONS

THE IMPETUS FOR THIS COLUMN followed a discussion concerning my review of the Rost Martin RM1S in Guns & Ammo (April 2025). The RM1S includes one flush 12-round magazine and one extended 15 rounder. In that article, I mentioned how the extended magazine provided more control because I could get my entire hand around the grip. The only

downside was that the longer mag was tougher to conceal for carry. I preferred shooting the RM1S with the extended magazine in place, but that's not surprising. Almost without exception, I prefer the feel of the extended magazine, too, not just in my hands, but while

shooting.

got into this business from the competition side, so I generally approach new

firearms from a that perspective. But how hard is it to make a gun do what I want?

From decades of shooting, and thousands of hours of practice, training and matches, I've learned that the more control you have of a

pistol, the faster and more accurately you

can shoot it. This is not groundbreaking information, but I don't think most people consider how crucial grip length is. The only downside to a longer grip is that it is less concealable. I made peace with that fact a long time

ago; I'm willing to dress around my carry gun.

As an aside, I think concealment and speed are the main considerations that lead people to appendix inside-thewaistband (AIWB) carry. Many share the same conclusions. Guns with larger and more comfortable grips are easier to shoot accurately and quickly. The most effective way to conceal a larger handgun at your waist is with appendix carry, where even a sizable firearm can disappear under an untucked t-shirt.

Everything is interrelated, though. I always carry a full-size handgun, but not because of barrel length. It's because a longer grip allows me to get my entire hand on the gun, all the way down to the heel of my palm. That feels more comfortable and allows me to shoot up to whatever my current skill level is. I don't fight the

> gun, I run it. The ability to grip the entire gun is why we are seeing upsized versions of popular sub- and micro-

> > compact pistols, specifically with longer grips: Canik Mete, FN Reflex XL, Kimber CDS9 and R7 Mako, Ruger Max, Shadow Systems CR-series, SIG Sauer P365 X-series, Springfield Armory Hellcat Pro, and Taurus GX4, to name a few. Short-gripped pistols are easy to conceal but

hard to shoot. This is one reason for the popularity of odd-proportioned pistols, such as the Glock 45.

The G45 is one of a number of modern pistols that pairs a longer or full-length grip with a compact slide. If you're looking at these guns in a vacuum, they are backwards in terms of traditional thought on carry.

The grip often determines how concealable a gun is. Whether the slide is long or short, it's usually concealed inside the pants. A gun for concealment often has the grip designed as short as possible with a longer barrel for increased velocity and — for those of us

still running iron sights — a longer sight radius.

However, until recently, few built guns like that. Why?

Two reasons: A shorter grip means fewer fingers grasping the gun and less control. No matter how hard you grip a gun, you can't eliminate recoil and muzzle rise, but you can

manage it. You want the front sight to rise up during recoil, then drop down to the exact same spot for quick, accurate and easy follow-up shots. Second, there is less reciprocating mass, meaning lower felt recoil. This is why competition guns have a lot of weight cut out of the long slides, and it's why modern pistols with full-length grips and compact slides are so popular. (Ex.: Walther PDP Pro-series.) Shorter slides produce less reciprocating weight, which equals less felt recoil and muzzle rise when shooting. Pair that with a full-length grip or

an extended mag with a plus-capacity basepad and you'll wrap your entire hand around the gun with a chef's kiss.

I'm not rewriting Jeff Cooper's "Modern Technique" with these statements. I'm just sharing a few conclusions based on experience and observations that some might

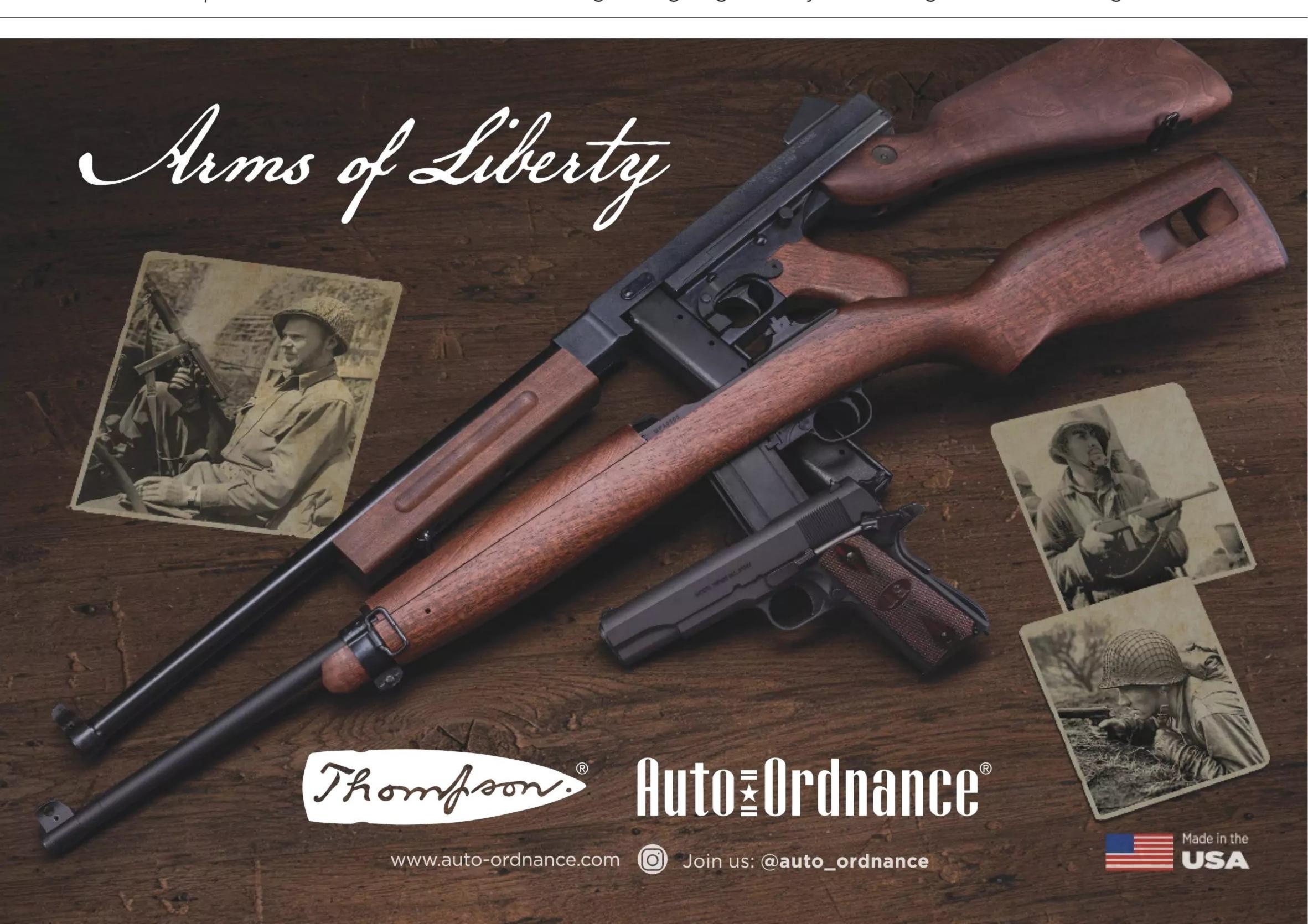


Walther is a brand that offers full-length grips with shorter slides, albeit sometimes with compensated muzzles. The PDP F-Series Pro 3.5- and 4-inch barrel models includes three 18-round mags. \$929

not have picked up on yet. I haven't addressed the most obvious benefit to shooting pistols with longer grips and magazines: Capacity. Compared to previous decades, modern carry guns are clown cars stuffed with never-ending rounds of ammo. Today, if your micro-compact doesn't hold more than 10 rounds, you're carrying an old model or live in a restricted jurisdiction. Other consumers won't even consider a gun that carries fewer than 10 rounds. Are they wrong?

As the cliché goes, "There's no such thing as

having too much ammo on you unless you're underwater or on fire." Nobody in the midst of a gunfight wished for fewer rounds. I've found that in terms of defensive shootings in America — whether it be citizens or police — the gunfight usually lasts as long as the ammo in a gun.



AN HEIR & SPARE

Let's consider the spare magazines most companies include with their pistols. Whether the magazine in the gun is a flush or extended type, having access to a spare magazine is important. You should always carry one. The chances of needing to reload in a defensive shooting are small, but never zero. If a gun is going to malfunction, the most likely cause will be the magazine. A spare magazine is an immediate fix.

I've explained before that gun companies can play fast and loose with words. A so-called "micro-compact" pistol is whatever they say it is. "Small" is also a relative term. I've shot with many "small-statured" adult men and women with tiny hands. It's not that their grip strength was compromised; they never really had much. I noticed that even standard compact pistols looked too large in their hands. Those were a challenge for them to carry, much less shoot. If you're one of those people, don't let someone tell you what size gun to buy. Being able to get your entire hand around the pistol will give you the most control of it. Therefore, my best advice is to try several and pick a gun that you can run — not one that runs you.

FLUSH VS. EXTENDED

While I've had many subjective impressions through the years, I've never done an objective side-by-side test of

this topic. To address that, I went to the range with the RM1S, the provided standard-length and extended magazines, and my electronic timer. I shot controlled pairs and hammers, Bill Drills — firing six shots as fast as I can keep hits inside the A-zone of an IPSC target at 7 yards — and transition drills, or swinging between targets.

While I wasn't more accurate when shooting with the extended magazine, I was faster. Not a lot, though. Overall, my results demonstrated an average between 5 and 8 percent improvement in speed. The "why" I shot faster or slower was interesting to me. It wasn't that I had less control of the gun with the short grip. It felt as though I had less control of the gun during its recoil cycle, which caused me to slow down and verify the sights were where they needed to be for follow-up shots. The reduced control of the gun due to the short grip was both real and perceived. Comparing the numbers-result of both styles indicated that I shot a bit slower to make sure impacts on target stayed consistent.

While the experiment was subjective — and solely an indicator of what I found for me on that day with that specific gun — I'm not an outlier. People who shoot their carry guns will continue to move from the micro subcompacts to the slightly upsized versions with longer grips, and magazines with extended basepads. For us, the benefits are increased control and increased capacity. It's a win-win.



THE CARRY RIG

The **fanny pack** is back!







VERTX S.O.C.P. TACTICAL

RECALL, FOR A MOMENT, the iconic trends of the 1980s. For five seasons, "Miami Vice" was among the most popular TV series. The mullet was the hairstyle of choice, which was often accompanied by a pair of Oakley shades. As all things fashion, what is old becomes vogue, and both mullets and Pit Vipers are popular in the U.S. Another trend has returned from the '80s: The fanny pack.

While it's hard to understand why the mullet returned, the practicality and utility of fanny packs such as the Vertx S.O.C.P. Tactical is clear immediately. It's an obvious solution for everyday carry (EDC) during the summer months when many leave the house in gym shorts and a t-shirt, which cannot even secure or easily conceal a lightweight micro-compact pistol. With the Vertx S.O.C.P. Tactical fanny pack, you have a solution that's ready to complete any attire and most activities; it's the fanny pack's greatest feature. There is no thinking or adjusting your EDC loadout for a given day. Just grab it and go. The gear doesn't need to change. In addition to its always-ready status, consistency of carry can give you the edge in a defensive fight.

ON- OR OFF-BODY CARRY?

A philosophical question arose when Guns & Ammo's editors considered whether a fanny pack should be classified as an "on-" or "off-body" type of carry. Though it shares similarities with a small backpack, i.e., "off-body," the fact that the user has to buckle it on to carry means that it's more akin to on-body carry. Whether standing, sitting, running or anything in-between, the S.O.C.P. Tactical fanny pack stays on your person. Is it all that different from a traditional outside-the-waist (OWB) hip holster in function, then?

This brings us to how to carry a fanny pack. Thinking back to the 80s, fanny packs were worn as the name implies. Today, an assortment of fanny packs exist, some worn in the cross-sling fashion across the chest. Wearing it across the chest is quite comfortable, and may become your preferred method to carry the S.O.C.P. Tactical. Of course, it can be worn around the waist, too, where it can be easily carried toward the strong-side hip and be familiar to those who have worn a traditional OWB holster. Worth noting, the S.O.C.P. features a zipper instead of a snap button for retention.





VERTX S.O.C.P. TACTICAL FANNY PACK		
CARRY TYPE	Fanny pack, on-body	
RETENTION TYPE	Level II, friction internal holster & zippered containment	
ADJUSTABILITY	Extendable waist strap	
MSRP	\$105	
HANDGUN FIT	Full-size pistols or smaller; Walther PDP, Springfield Armory Hellcat RDP (tested)	
PRIMARY POCKET DIMENSIONS	11 in. x 7.5 in.	
POSITIONS TO CARRY	Cross chest, around the waist	
AVERAGE TIME TO ATTACH	3 seconds	
COMFORT RATING	5/5	
AVERAGE DRAW-TO-FIRE TIME	2.54 seconds	
MANUFACTURER	Vertx, 844-932-7889, vertx.com	
Draw-to-fire time is the average of five clean draws producing an A-zone hit on a		

PREMIER BODY ARMOR

stationary target positioned at 21 feet.

In collaboration with Premier Body Armor (premierbodyarmor.com), the S.O.C.P. Tactical features a compartment for an optional Level IIIA soft body armor insert, measuring 8½ by 5½ inches. G&A previously tested a Premier Level IIIA Backpack Insert, which is identical to the S.O.C.P. insert, just larger. Level IIIA armor is rated to stop handgun rounds up to .44 Magnum. G&A's sample stopped an assortment of +P 9mm, .45 ACP, .357 Magnum and 10mm, and it did so with edge-to-edge protection. The insert for the S.O.C.P. Tactical Fanny Pack is just

large enough to cover the heart and a small area of the lungs when worn over the shoulder and across the body. Is that enough coverage to make a difference in a defensive handgun fight? Handgun-caliber gunshot wounds are statistically quite survivable, but there is not much a doctor can do for a direct shot to the heart. The Premier Armor insert stops handgun calibers. The armor is an additional \$75, which is not too expensive for a potentially life-saving upgrade to a fanny pack that you'd be wearing either way.

45-DAY CARRY

An advantage to the Vertx S.O.C.P. Tactical Fanny Pack is its ability to support full-size handguns. To evaluate this, I





carried a Walther PDP, which is easier for big guys like me to grip and shoot effectively than a micro-compact pistol. The only downside to carrying a full-size handgun is the added weight, which increases with each additional 18round magazine stowed in the accessory pocket.

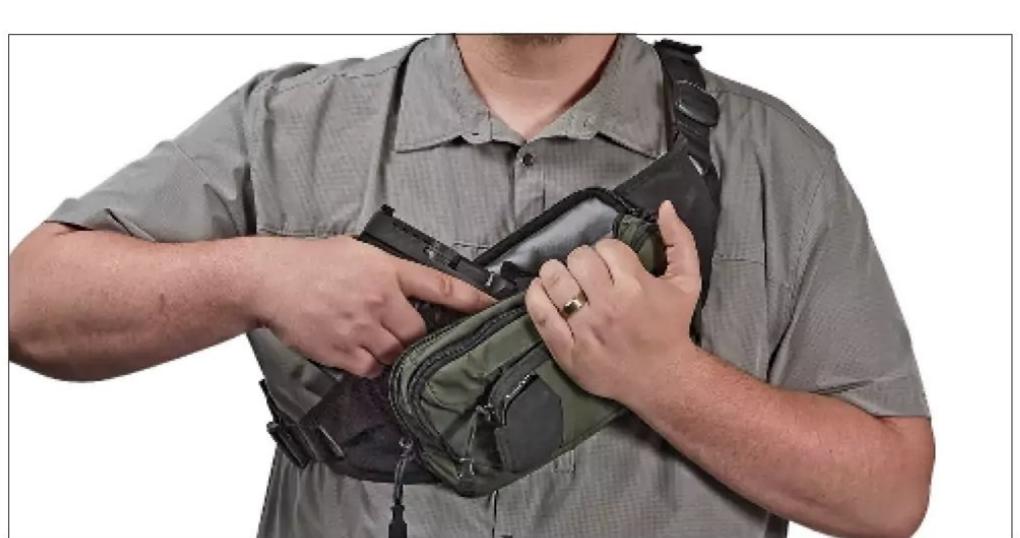
To split the difference, the 45-day evaluation also

involved a Springfield Armory Hellcat RDP. The Walther PDP was featured in photos to illustrate how much room is available in the carry pocket of the fanny pack for similarly large handguns, should that be your preference.

In addition to the large carry pocket, the S.O.C.P. has a large, central admin pocket for EDC essentials and accessories. During the evaluation period, extra gear included one 13-round mag for 26-plus-one rounds available, SureFire Stiletto Pro II, knife, tourniquet, QuikClot bandage, wallet and phone. The total weight was less than 5 pounds, and it carried comfortably. Worth noting, the smartphone pocket in the front

folds out for operation in a water-resistant pouch should you need to read your phone in wet weather.

As with all carry methods, we look to balance draw time, comfort, retention, concealability and fit. The Vertx S.O.C.P. Tactical Fanny Pack proved to be a one-size-fits-all option that completely conceals most EDC pistols. Retention was excellent, and it was always comfortable to carry in any environment. As expected, this came at the cost of a slightly reduced draw time, but I could still access the pistol, establish my grip and fire in a reasonable amount of time. When worn across my chest, the optional armor over my chest was comforting. I was impressed with this unique carry option. The fanny pack is back, and for me it's here to stay. — J. Oller





Innovation shapes the future, but heritage anchors the past.









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RECOIL REDUCTION

Save your shoulder. The RXD30Ti reduces recoil by over 40% versus bare muzzle due to the integration of E-Brake features directly printed into the suppressor.



COTS TOOL FEATURES

No proprietary tools required. The RXD30Ti and its subcomponents were designed to incorporate tool features that will accommodate most Commercial Off-The-Shelf (COTS) tools.



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Stronger and Lighter. The RXD30Ti is manufactured using additive manufacturing, otherwise known as 3D Printing, which yields an ultra-strong and lightweight suppressor.



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The RXD30Ti is compatible with all HUB (1.375-24 TPI) accessories on the market for direct thread or quick disconnect applications.



R-SERIES FAMILY

Compatible with all Dead Air R-Series front caps and accessories.



DIRECT THREAD BRAKE MOUNT

Easy installation. The RXD30Ti ships with the all-new Direct Thread Brake Mount that yields direct thread performance with minimized blast baffle erosion and increased performance.



LEARN MORE

Dead Air Silencers and Ruger Firearms are two of the most respected names in the shooting sports industry. These great brands came together to create an entirely new and exciting product line: RXD Suppressors. Dead Air developed this line of performance-driven suppressors and accessories to complement Ruger's innovative firearms designs. RXD products are not reskins - they represent a new standard for suppressor design, performance, and maintainability.





FIND WHAT MATTERS



FULLFIELD

A 50 year legacy that defined hunting optics now offers a new generation of riflescopes. From the modernized design to advanced reticle options, the Fullfield delivers performance you can trust.

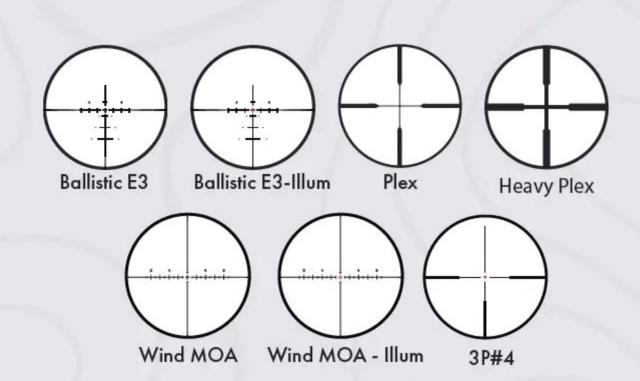












GUN TECH AUGUST 2025 G&A 29

Streamlight TLR-1 HP-X



RICHARD NANCE

RAILMOUNTED BRILLIANCE

PISTOL-MOUNTED LIGHTS ensure you can illuminate your environment whenever your gun is in hand. Well-designed lights such as Streamlight's TLR-1 HP-X enable reliable activation while supporting a two-hand shooting grip to best manage recoil. The TLR-1 HP-X sports customizable rear activation via paddle switches that operate the light from either side, with either hand.

The TLR-1 HP-X is compatible with most pistol rails. The package includes one rail key

installed and several others. If the factory-installed key doesn't fit your pistol rail, select a key that will. A compatibility list is available at streamlight.com. Changing the rail key is simple using the supplied multi-tool. The process is detailed in the product instructions.

After ensuring the TLR-1 HP-X is configured to mount to the rail of your pistol, it's time to decide if the high or low switch works better for you. This depends on the size of your hands, length of your fingers,

can be easily swapped using the push-pin feature on the multi-tool. Whichever switch you choose, activation is intuitive.

The TLR-1 HP-X has three modes:
Momentary, constant and a userprogrammable strobe. Strobe mode is disabled from the factory, but it can be enabled
by tapping either switch rapidly nine times followed by holding it down on the tenth press until

the light turns off. For momentary use, press and hold either switch. When you release, the light turns off. For constant-on, tap and release to turn the light on or off. When enabled, strobe mode is achieved by pressing either switch twice within a quarter second.

As intuitive as a pistol light may be to operate, it doesn't do much good if it isn't bright. Fortunately, the TLR-1 HP-X is plenty bright. When powered by SL-B9 lithium batteries, it produces 1,300 lumens (77,000 candela) at 607 yards with a





The Streamlight TRL-1 HP-X is a long-range, rail-mounted

rechargeable Streamlight SL-B9 lithium-ion battery packs

loading battery compartment and a secure rail clamp that

handgun light that is powered by either two USB-C

or two CR123A lithium batteries. It features a front-

can be mounted without risking your hand in front of

the muzzle. The TLR-1 HP-X has three modes: Momen-

tary, constant and a user-programable strobe. The light

is activated by bilateral, customizable paddle switches.

Assembled in the U.S., the machined aluminum-bodied

TLR-1 HP-X includes a limited lifetime warranty. \$375



To access the battery compartment, press the small button in front of the mounting screw on the left side of the unit. This releases the disconnect lever on the right side of the unit. Rotating the lever opens the front of the housing to access the batteries without removing the unit.

runtime of one hour. With CR123A lithium batteries, power is 1,000 lumens (53,000 candela), reaching 503 yards with a runtime of an hour and a half. Either way, the light is powerful enough to not only illuminate, but also disrupt an adversary's vision.

The front-loading battery compartment means a battery change without the need to remove the light or place your hand in front of the muzzle is possible. This feature is both convenient and safe.



The textured activation switches are enduser-customizable for high- or low-finger index points.

The Streamlight TLR-1 HP-X is 3.7-inches long and weighs 5.43 ounces with SL-B9 batteries, 5.2 ounces with CR123A batteries. It's constructed from aircraft-grade aluminum alloy with a black anodized finish. It incorporates a polycarbonate lens with a scratch-resistant coating.

The unit is IPX7 waterproof rated, meaning it can withstand submersion in 1 meter of water for up to 30 minutes. The TLR-1 HP-X has an operating temperature



The Streamlight TLR-1 HP-X USB is available with two SL-B9 rechargeable batteries and a USB-C power cord. The SL-B9 batteries are necessary to achieve the unit's maximum 1,300-lumen output.

of -4 to 120 degrees Fahrenheit with SL-B9 batteries and -40 to 120 degrees Fahrenheit with CR123A batteries.

The TLR-1 HP-X retails for \$375. The TLR-1 HP-X USB, which includes two SL-B9 battery packs and a USB-C charging cord, retails for \$402. The TLR-1 HP-X is assembled in the U.S. and is backed by Streamlight's Limited Lifetime Warranty.

For more information, visit steamlight.com.





The all-new Kuna[™] pistol from Springfield Armory[™] is a PDW built to deliver exceptional performance in a portable package. Featuring a roller-delayed operating system and precision manufactured for optimal fit and function, the Kuna is chambered in 9MM with 30-round magazines. The small profile, nimble handling, and prolific capacity make it a fierce personal defense platform. The Kuna from Springfield Armory – ready to roll.

MORE BANG



No gun bunnies, tacticool influencers, or epic marketing speak needed. Just the facts: The optic-ready, 9mm SAR9 SOCOM is built to military standards, tested in real conditions, and priced for regular people and true professionals.



BULLET BOARD

AUGUST 2025 G&A 33

Disproving myths and finding facts about primers with modern science.



DAVE EMARY

PRIMED & READY

THERE IS A VAST AMOUNT OF INFORMATION available on smokeless powders, including burn rate charts, reloading manuals, and propellant profiles by experts such as Ken Waters. Just about anything a shooter or reloader might want to know about propellants — relative speed, appropriate cartridge use, performance for uniformity and accuracy — is all well documented.

Not so when it comes to primers. About all that is readily available is what size they are and whether a primer is "standard" or "magnum." Some are marketed as "match" primers, but there is little objective data revealing whether these more expensive primers really achieve better performance versus standard primers.

What are the real differences between primer types and brands? How do they perform relative to each other? How should a reloader decide which one to use? This is information that is not easily accessible.

After conducting extensive research, finding several good tests that were done on primers, and my own observations as a ballistician across a 30-year career, I'd like to present this data showing the differences in primer performance. I'll explain what these findings mean, and hopefully offer some guidelines to help make decisions about which primer to use.

I'd like to credit the people whose data I'll be presenting in this article, and whose work my recommendations are based on. The first is "High-Speed Measurement of Rifle Primer Blast Waves" by Michael W. Courtney, Ph.D., and Amy C. Courtney, Ph.D.

The second source is work done by "Jim" — last name withheld — of CabineTree LLC (casting-stuff.com), which has been published on several forums. Both of these works provided extensive data on primer output and uniformity relative to each other from very different test techniques. With the preliminaries out of the way, let us dive deeper.

PRIMER FOLKLORE

There are many ideas about primers that are taken at face value. "Match primers give better results," for example.

Such-and-such primer is "hotter" than another, whatever that means. "Small rifle primers give better performance than large rifle primers." I could go on. How much of this folklore is true, and what is it based on? I will attempt to address some of this with actual data.

PRIMER TESTING

The test conducted in "High-Speed Measurement of Rifle Primer Blast Waves" employed a high-speed piezo electric transducer, just like those used in ammunition test guns, and a high-speed data acquisition system. The test utilized a .308 Winchester-chambered Remington Model 700 action with a 22-inch barrel. The transducer was mounted flush with the muzzle of the barrel, and cartridge cases with both large and small rifle primers were fired. The resulting blast pressure at the muzzle was recorded, and test results were based on 10-shot sample sizes. Conducted by CabineTree LLC, this test used a short tube that held a fixture containing the

with a weight on a pivot, equipped with a pointer that stayed at the high point of deflection. This was a well thought out and executed ballistic pendulum test. The test can't be used to determine anything quantitative about primers, but it provided a good means to measure the relative output and uniformity of output of each

primer. The muzzle end of the tube fit flush

relative output and uniformity of output of each primer relative to the other primers used in the test. The test also used a large sample size with a minimum of 50 primers evaluated with most tested 100 times.

THE RESULTS

Table 1 shows the results from the first test for peak pressure, as well as the uniformity and standard deviation of each primer based on a 10-round sample. It's interesting to note that this test verified that all primer lots are not the same, even within the same brand and type. For example, two different lots of Federal 205 Match primers showed substantial differences in both output and uniformity. It supported the axiom that when you find a primer lot that works well, buy as many as you can find!

PRIMER	PRESSURE	OUTPUT
AND UN	JIFORMITY	

AND UNIFORMITY			Table 1
PRIMER	PEAK PRESSURE (PSI)	SD (PSI)	SD (%)
Federal 210 Match	421.7	32.4	7.7
Federal 215 Match	552.7	27.8	5
CCI 200	371.4	39.2	10.7
CCI 250	520.3	58.6	11.3
Federal 205 Match (lot 1CW306)	176.5	20.4	11.6
Federal 205 Match (lot 13X416)	208	15	7.2
Federal 205	213	15	7.1
CCI 450	232.3	15.1	6.5
Remingtom 7½	334	27	8.1

Another common axiom is "Remington primers are the hottest." However, the data from this test does not support that claim. The Remington 7½ primer produced significantly less output than CCI 200 or Federal 210 primers. The data also suggests that match primers seem to have more uniform performance than standard primers, although as I mentioned, you can't assume this will always be the same from lot to lot. Figure 1 shows a sample of pressure traces from these tests that highlight the comparison of the different primers' output. Each successive primer was shifted .002 sec for clarity.

We all assume that each primer we take out of a sleeve will be exactly the same. Results from the first

test show that this is not the case. Further tests of primers were done weighing the unfired primer and fired primer to determine the explosive pellet weight. In 10-round samples, there were noticeable differences in the pellet weight. Table 2 shows the results of this test. The slope mentioned in the table is the experimentally derived change in pressure per milligram (mg) of explosive mix.

Figure 2 shows a graph of total primer weight (before firing) versus pressure output for the Federal 210 Match primer. In a 10-round sample, the total weight variation is about 4 milligrams (mg).

Figure 3 shows the same data plotted for explosive pellet weight versus pressure. Notice that the weight variation of the pellet is essentially the same as the total primer weight variation, about 4mg. This shows that pellet weight

variation accounts for the weight difference in primers and therefore primer output variations. The slope, or output, versus pellet weight is determined from **Figure 3**.

This data confirms there is a variation in pellet weight and an associated difference of output. However, a closer look at the data points reveals that output still varies within the same pellet weight. The conclusion that can most readily be derived from all this is that primers can be weighed to improve the uniformity of their performance, but you will never be able to get uniformity better than what the slope of the output curve versus pellet weight is. (Note: Sorting primers by weight requires a quality scale capable of weight to 1mg sensitivity. The Hornady Precision Lab

Scale (\$430, hornady.com) meets this requirement, and other capable models are available online and in retail stores. The scale should be placed in a temperature-stable environment and protected from any air currents.)

As stated, the second test used a different method for measuring primer output. The method features essentially a ballistic pendulum to measure total primer output energy. You can't determine anything quantitative, but the qualitative comparison of primers under the same test conditions is meaningful. Table 3 shows the results of this testing for large rifle primers. It shows the scale used in the test for total output and uniformity of the output.

This data also supports

that match primers seem to be more uniform than standard primers. It's also worth noting that the Winchester Large Rifle Magnum (WLRM) lot showed high levels of uniformity. That would've been a good lot to stock up on. The results also confirm that Remington primers are not the hottest or most energetic, contrary to popular belief.

Table 2

PRIMER PRESSURE OUTPUT Figure 1 600 500 **FED 210M** URE (PSI) 900 **FED 205M** 300 PRESSU 00 100 0.001 0.001 0.001 0.001 0.002 0 0.003 TIME (SEC)

PRIMER TOTAL WEIGHT VARIATION

PRIMER	TOTAL AVERAGE MASS (MG)	SD (%)	PSI/MG
Federal 210 Match	354.2	0.5	10.6
Federal 215 Match	363.3	0.6	9.3
CCI 200	371.4	0.5	18
CCI 250	337.5	0.6	18.8
Federal 205 Match (lot 1CW306)	236.3	0.7	9.1
Federal 205 Match (lot 13X416)	234.9	0.5	8
Federal 205	239.5	0.3	14
Remington 7½	229	0.9	8.5
Remington 7½	334	27	8.1
Large rifle primers contained 33mg to 40mg of explosive compound. Test sample size			

Large rifle primers contained 33mg to 40mg of explosive compound. Test sample size of 10. Small rifle primers contained 12mg to 16mg of explosive compound.

OTHER CONSIDERATIONS

In the quest for uniform primer performance, primer seating can play a significant role. I have done many thousands of primer sensitivity tests. There are some definite trends that showed up from this testing. The first was that sufficient firing-pin strike must be achieved. As the firing-pin strike degrades, the sensitivity and output of the primer becomes erratic. Make sure your gun has a clean firing pin



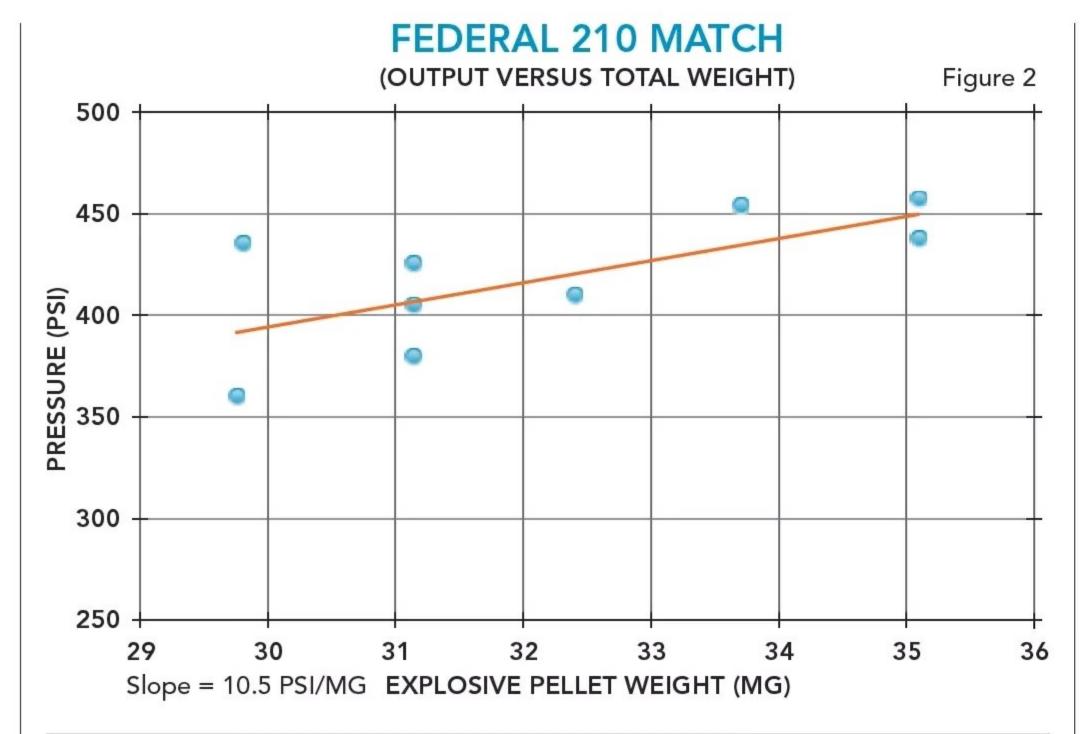
Lightweight and compact, yet robust and rugged enough for duty use as well as for concealed carry applications

Tactile, ambidextrous switching allows for intuitive activation in both momentary-and constant-on modes

550 lumens / 7,200 candela of tactical output powered by a single 123A battery, utilizing a Hybrid beam pattern, perfect for handgun applications

We've taken 45 years of SureFire innovation and proven reliability and distilled it into the new standard in duty-grade compact handgun weaponlights. The XC3 delivers unmatched performance, durability, and switching in a form factor that fits numerous holsters already commercially available. Consider it the little brother of our X300.







For maximum consistency, the primer pocket should be cleaned and the flash hole deburred, especially for high-performance loads.

channel in the bolt, and has at least .060 inch of protrusion from the bolt face with a firing-pin spring in good shape.

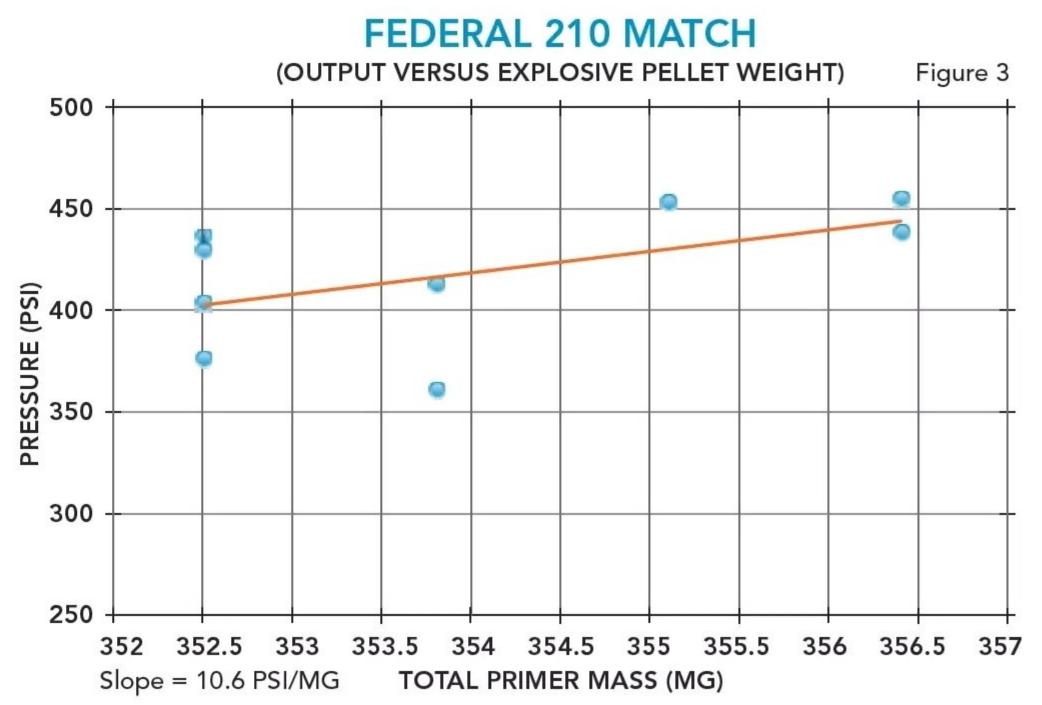
What also became apparent was that excessive seating force resulted in erratic sensitivity and output. My theory is that with excessive seating force on the primer the explosive pellet starts to crack, which will compromise the primer performance.

In the quest for uniform primer performance, it's important to make sure that each primer is seated exactly the same way. In that endeavor, it's important to deburr flash holes and uniform primer pockets to get the diameter and

depth as identical as possible. It can also be helpful to use Lee's Ram Prime system. These priming systems use a fixed ram that goes into the ram of the reloading press. This, in turn, seats the primer when the ram is run to the top of the stroke. The seating depth or seating pressure is controlled by screwing the shell holder fixture in or out of the press head. By using this, an exact seating pressure from primer to primer can be achieved because it is only dependent on a fixed mechanical system rather than a "by feel" pressure on the handle. Figure 4 shows an image of an RCBS flash hole



Figure 4: RCBS makes affordable, manual tools to deburr and cut the primer pocket. Electric-powered models are also available.





The difference is subtle, but even this much variance in seating depth can lead to inconsistencies when shooting.

deburring tool and primer pocket uniforming cutter. Figure 5 shows a picture of a Lee Ram Prime System. My Ram Prime is the original, older SKU 90106 model which works in nearly any press (\$22, leeprecision.com). The newer one doesn't work in all presses. There are often a number of the older ones available on ebay, too.

PARTING SHOTS

Let's review what we determined from all the data considered in this column.:

1. There are definite differences in primer output and

uniformity from different brands of the same size and type of primer.

- 2. The tests verified that the same primer type does not perform exactly the same from lot to lot. If you come across a lot that gives you particularly good results, buy a large number.
- 3. The data lends credence to match primers providing more uniform performance than standard primers. Point two still applies, though. There can be variance between lots in match primers, too.
- 4. Even within a single sleeve, primers will not perform exactly the same. Even primers with the same weight will



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Α

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MICRO RED DOTS



Figure 5: The Lee Ram Prime System can ensure identical seating depth in primers from load to load. \$22

have some variation. Weighing primers will improve the performance variation, but it will never make them all perform exactly the same.

5. If you want to experiment with a .308 Win. case using a small rifle primer to see if it gives you improved performance, use the tables in this article to establish a basis for trying different primers. (Caution: I don't recommend use of small rifle primers with hard-to-ignite propellants such as Ball powders and deterred, slow-extruded propellants.)

BALLI	STIC	PEND	ULUM
PRIMI	ER OI	JTPUT	(RIFLE)

PRIMER OUTPUT (RIFLE)				
PRIMER	POWER (AVG.)	RANGE	SD	
Federal 215 Match	6.12	5.23 – 6.8	0.351	
Federal 215	5.69	5.2 – 6.5	0.444	
CCI 250	5.66	4.5 – 7.4	0.483	
Winchester WLRM	5.45	5.1 – 6.0	0.204	
Remington 9½ Mag	5.09	3.5 – 6.75	0.664	
Winchester WLR	4.8	4.1 – 6.0	0.430	
Remington 9½	4.75	3.7 – 6.25	0.568	
Federal 210 Match	4.64	4.0 – 5.6	0.330	
Federal 210	4.62	3.7 – 5.5	0.400	
CCI BR2	4.37	4.0 – 5.0	0.246	
CCI 200	4.28	3.8 - 4.8	0.322	
5 1 1	F0 .		00.	

Based on a minimum of 50 tests; most were 100 tests.

BALLISTIC PENDULUM PRIMER OUTPUT (PISTOL)

PRIMER OUTPU	Table 4		
PRIMER	POWER (AVG.)	RANGE	SD
Remington LP	4.47	3.2 – 5.6	0.517
CCI 300	3.18	2.7 – 3.5	0.241
Federal 150	3.11	2.6 – 3.5	0.209
Federal 150 Match	3.05	2.6 – 3.7	0.23

This article has covered a large amount of material, but how can you use some of this information? There are circumstances where a softer ignition might help performance. The data tables can help you decide what to look for when wanting to experiment with different primers. The uni-

formity data can also guide you in what to look for when trying different primers for a new load. If you are forced to use a primer different from what you have been using, this data will give you an idea of how the primers' output compares to make appropriate adjustments in your load. The bottom line is you will have to load and test different combinations to arrive at what works best for you. Using the data in the tables can give an idea of the first primers to experiment with to get a desired outcome.







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QUIET TIME

Shadow Systems HS923



SILENT SHADOW

SHADOW SYSTEMS is widely known for its premium pistols. It focuses on enhanced ergonomics, innovative design and engineering that sets its products apart. These principles guided the design of its first entry into the sound suppressor market, the HS923, a dedicated 9mm suppressor. Shadow Systems has a distinct style to its offerings, and the HS923 echoes these features and performance, mak-

ing it an excellent addition to the product line.

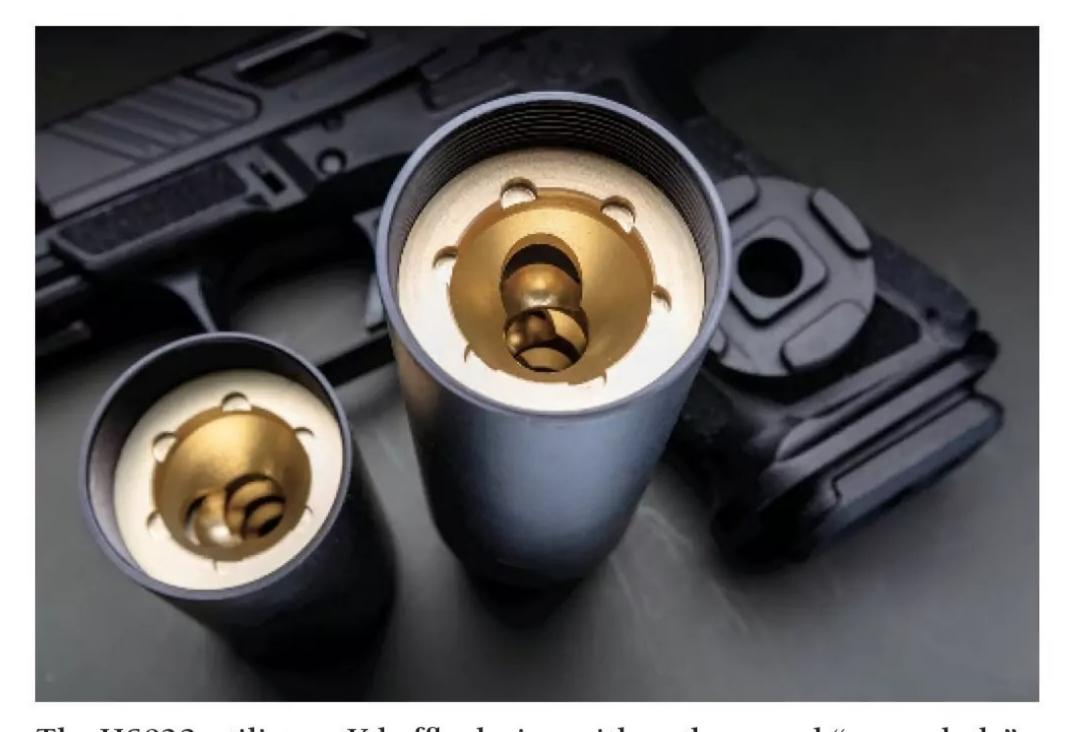
The HS923 is a twopiece modular suppressor
consisting of what Shadow
Systems calls a "primary
module" with a removable
extended module. The
design allows the user
to tailor the suppressor's
length to a specific mission,
from either a short and
maneuverable 5.33 inches
to the full-length 8.18-inch
configuration. Users can
swap between the two

lengths in minutes without additional tools. Shadow Systems claims the short configuration provides a 24 decibel (dB) reduction, and the long configuration provides a 33 dB reduction. Since an unsuppressed 9mm pistol meters around 155 dB, a long-configuration HS923 should reduce that sound pressure to a pleasing 122 dB.

To keep weight to a minimum, the HS923 uses 7075

aluminum for all components, except for the titanium blast baffle, piston and spring. The reduction in weight helps reduce downward pressure on the pistol's barrel during operation, easing the burden on tilt-barrel designs. The full-length configuration weighs 12¼ ounces, while the short version weighs only 9½ ounces.

The full-length configuration has seven baffles. The primary module contains a



The HS923 utilizes a K-baffle design with aptly named "mousehole" cuts to each baffle. The baffles are welded together.



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Shadow Systems developed the endcap to match the dimensions of the underside of a Shadow Systems pistol slide. This clever design helps remove the endcap without specialized tools. Plus, the endcap can be removed using the slide without separating the slide from the frame.

total of four baffles, comprising of a blast baffle and three K-type baffles. The extension module has three K-type baffles. To ensure proper fit, all baffles are welded in-place at the factory. Each baffle has a notched rear with an opposing mouse hole cut into the forward cone. The design helps to generate turbulence within the suppressor, slowing down gasses. By doing so, sound is reduced. K baffles are inherently strong and center easily during assembly, guaranteeing a straight bore line. The HS923's blast baffle is titanium, designed to withstand the punishing high pressures at the muzzle. The remaining baffles are 7075 aluminum and clear anodized to give them a bronze color and additional corrosion resistance. The module sections and front endcap are finished in black Cerakote, providing resistance to corrosion and wear. The piston housing and retaining cap are Type III hardcoat anodized to resist the abuse that could result from ultrasonic cleaners. (Such cleaners could damage Cerakote.)

The HS923 ships with a $\frac{1}{2}$ x28-threaded piston assembly,

commonly called a "Nielsen device." It aids in the function of tilting-barrel handguns. The piston assembly consists of four parts: Housing, piston, spring and retaining cap. The assembly threads into the rear of the primary module and can be disassembled for routine maintenance without the need for tools. While the housing and retaining cap are lightweight aluminum, the piston is stainless steel, with a bronze titanium-carbonnitride (TiCN) coating for improved operation, and to allow for easier cleanup. Fans of Shadow Systems will be pleased, since it's the same bronze TiCN coating used on many of its pistol barrels. The piston glides centered and smoothly on a high-temperature O-ring located inside the retainer cap.

Shadow Systems also makes a 13.5x1 left-land (LH) piston for those with European-standard threads. Also available from Shadow Systems are direct-thread mounts in ½x28 and 13.5x1 LH, as well as a tri-lug mount for those running subguns (SMGs) or pistol-caliber carbines (PCC). These options replace the entire piston housing assembly, reducing the

overall length by about an inch.

A unique feature of the HS923 is the patentpending endcap design. The face of the endcap features purposefully engineered slots that match the underside geometry of a Shadow Systems' pistol slide. This approach eliminates the need for additional tools when reconfiguring the suppressor at the range. With the pistol's slide locked back, connect the suppressor's endcap against the slots underneath the slide and rotate to loosen or tighten the cap. The tool-less capability

shows Shadow Systems' creativity and focus on innovative creations. Several manufacturer's pistol slides also worked successfully during our testing, so odds are that it will work to support your choice of pistol, as well. It's a smart feature to get stubborn endcaps off at the bench, or to tighten it if needed.

Shadow Systems sent Guns & Ammo one of its MR920 pistols for testing with the HS923. The 1.37-inch diameter body of the HS923 is nearly flush with the top of factory iron sights when obtaining a sight picture. While still technically useable, it was not optimal for testing, so we opted to install a Trijicon RMR HD reflex sight to the slide and went to the range with a sampling of 9mm ammunition.

Using Federal American Eagle 9mm 115-grain ammunition, the full-length configuration was noticeably quieter than the short version. Both were acceptable with the long version being hearing safe. While shooting the pistol with and without the suppressor, the point of impact (POI) change wasn't noticeable to 50 feet. Surprisingly, neither was the POI shift when going from long to the short version. All rounds landed in a 2½-inch group. The system ran without a malfunction all day, regardless of the load. The balance felt great, too. Overall, the HS923 was a true pleasure to use.

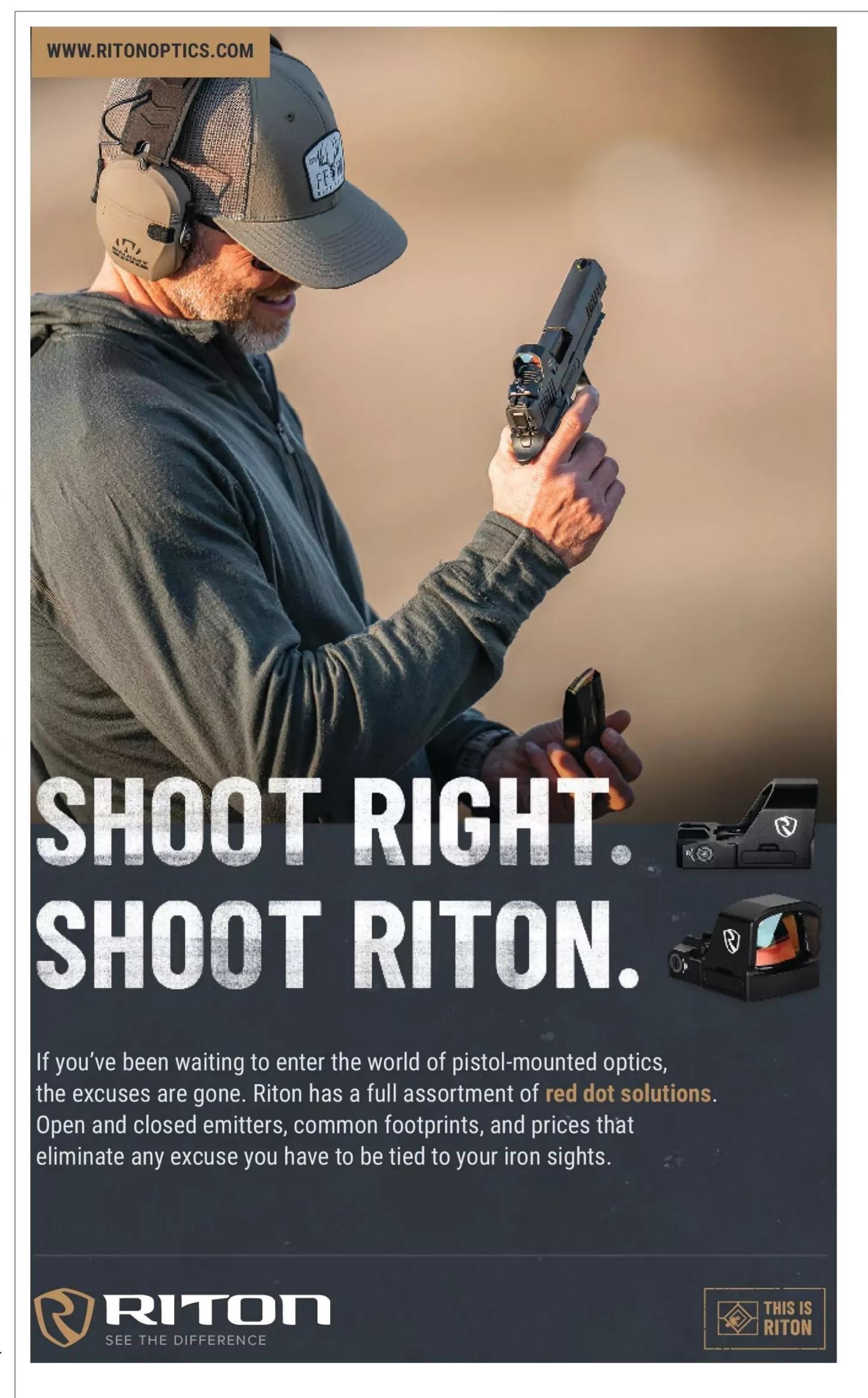
The modularity, construction and innovative toolless design of the HS923, make it an easy choice for owners of Shadow Systems pistols wanting an effective sound suppressor, but it would also be a great suppressor for any 9mm firearm. We look forward to more quiet things coming from this company.

— M. Fingar



The HS923 includes a piston assembly for use with tiltbarrel-design semiautomatic handguns. It's a fine value-add.





RANGE BAG

Munch on this snack alternative at the range.

Tactical Snacks are a healthier alternative compared to high-sugar candy bars and snacks with artificial food dyes. These gummies are available in several flavors, along with protein-enhanced options.

Box of 6: \$20



TACTICAL SNACKS

"LICK-EES" AND "CHEW-EES."

Snacks of this nature are highly coveted during a long day afield. Anyone who has served in the military probably spent considerable time on training exercises where they'd be visited by the colloquially named "gut truck" or "roach coach." Civilian entrepreneurs would often load these trucks with the worst junk food options one could imagine, selling them to captive soldiers, sailors and Marines on military installations. Seemingly hated by first sergeants everywhere, they were always an immediate distraction. Yet, small-unit leaders knew the value of a morale-boosting treat when the only meal troops could look forward

to was prepared by field kitchens or in an MRE.

Snacks aren't just applicable to servicemembers, though. Hunters in a treestand or blind and shooters spending long training days at a civilian firearms courses experience the same distracting hunger as energy depletes. The mental and physical benefits that come from a good treat go a long way to boost morale. Allow us to introduce Tactical Snacks, a more gut-friendly alternative to the rolling convenience store.

Tactical Snacks' gummies are a sweet — pun intended — choice to satisfy those hunger cravings when dinner is still a few hours away. Available in three different flavors — Raspberry Recon, Breach Peach, and Watermelon Over-







watch — the names describe the flavors well. These standard flavors are also available in a protein-enhanced offering, upping the calorie count from 55 to 95, but you get an

count from 55 to 95, but you get an additional 8 grams of protein. G&A staff noticed that the protein-option gummies were slightly tougher to chew, but the flavor profile was similar as the standard fruitful-tasting gummies.

Tactical Snacks are convenient to toss into a range bag, and they are certainly a healthier alternative to candy

bars and bags of chips. Notably, the ingredients list does not include any of the red dyes that we now know are not good for us. For example, instead of Red 40 synthetic dye, you'll find red radish for color, and tapioca syrup for sweetener rather than high-fructose corn syrup.

Tactical Snacks are available for bulk purchase from tactical-snacks.com, and individual purchase, costing about \$20 for a package of six at aimcise.com. Discounted pricing is available for bulk orders. Next time you're thinking about what to take to the range or with you on a hunt, Tactical Snacks should be a consideration.



The Holosun **AEMS PRO X2** is a premium sight designed to enhance the renowned AEMS platform with cutting-edge features that improve accuracy and versatility in a wide range of environments. With an advanced optical system that reduces parallax by 50%, the AEMS PRO X2 ensures precise targeting, allowing you to hit your mark with greater consistency and confidence. Whether you're in tactical operations, competitive shooting, or outdoor adventures, the Holosun AEMS PRO X2 is engineered to provide unmatched performance, durability, and adaptability.

- Multi-Reticle System™; 2 MOA dot & 65 MOA
 Circle; 2 MOA Dot; 65 MOA Circle
- Forward-Facing Light Sensor for a Smarter Auto Mode
- Anti-Reflective Device to Minimize Light Glare and Reflections
- Newly Designed Four-Post, Lower 1/3 Co-Witness Mount









The HUSH barrel is made by BSF Barrels and features a carbon fiber sleeve that lightly jackets the barrel for air flow.

LEVER-ACTION RIFLES continue to enjoy increased popularity, presenting today's riflemen with more choices than ever. With those choices comes nuance and performance. A fun rifle that advances the modern lever action is the Special Products Division (SPD) Henry Ultimate Suppressor Host (HUSH). The SPD HUSH combines classic lever-action design with cutting-edge materials and accessories to give the lever-gun enthusiast a light yet fully featured rifle.

PARTY UP FRONT

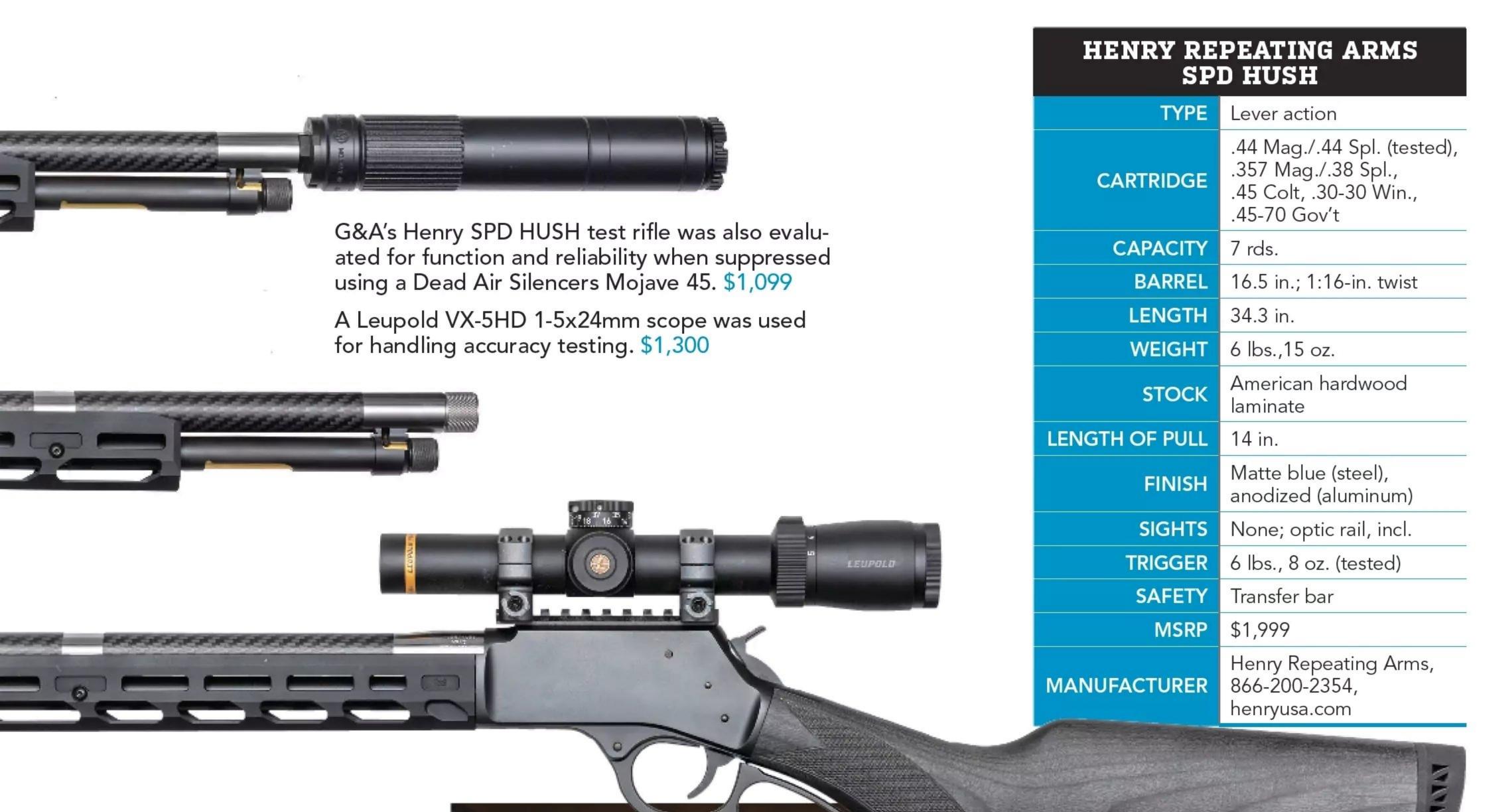
The SPD HUSH is Henry's best effort at creating a leveraction rifle ideally suited to suppressor use. When viewed through that lens, the components used in this configuration make a lot of sense. The short carbon-fiber barrel cuts weight out front because a suppressor adds both weight and length. Henry decided it might as well get in front of the challenge by trimming as much weight and length



The M-Lok forend is slim and light. It has attachment points to accept preferred accessories without overwhelming the profile.

from the barrel as possible. Also unique to the SPD HUSH is the M-Lok aluminum forend. It is light and hugs the barrel contour, keeping the forend's girth to a minimum. The resulting combination is a rifle that feels heavier in the buttstock without a suppressor attached. Install a suppressor, though, and it balances like a traditional rifle.

The barrel on the SPD HUSH is made by BSF Barrels (bsfbarrels.com), a Wisconsin company that specializes in carbon fiber. Shooting a bunch of rounds quickly through a carbon-fiber-wrapped barrel results in a lot of heat, as any other. The concern for years has been that the difference in thermal expansion between steel and carbon fiber could, or would, lead to the carbon fiber delaminating from the steel. I think this problem was solved long ago because I've never seen a carbon-fiber-wrapped barrel from a quality manufacturer delaminate, even at shooting matches where barrels go through several hot/cold cycles across several days.



BSF doesn't wrap carbon fiber around the barrel as other manufacturers do, but instead uses a carbonfiber sleeve that barely touches the barrel. BSF preferred to leave internal channels and cavities that allow air to flow around the steel while also using their sleeve like a tensioner. I like the idea of giving the barrel a better chance to breathe, but what I really like about BSF barrels I've tested in the past was their accuracy. I think BSF barrels lasts as long as every other carbon fiber barrel, but it's less expensive and is as accurate in the three or four models I've used. I think the BSF barrel was a wise choice for the Henry rifle because it doesn't drive the price sky-high. It's accurate and shaves a lot of weight from the muzzle end of the rifle.

These are all great contribu-

As the model name suggests, the SPD HUSH is ready for use with suppressors. Threads are 5/8x24 for this Henry rifle.

tions for a rifle that is meant to host a suppressor.

The BSF barrel on the SPD HUSH is also unique because it has a steel band midway down the barrel that allows for attachment of the M-Lok handguard. This requires the bar-

rel to have two tensioning sleeves, but accuracy was still excellent for this rifle. G&A's test gun was chambered in .44 Special/.44 Magnum and had a muzzle threaded at 5/8-24. Henry uses a 5/8-24 thread on all of its HUSH rifles, simplifying the suppressor attachment effort by using the most common thread pattern.

The M-Lok handguard is made by TAPCO and shows fine workmanship. For those who are decisively into middle age or older, this is not the TAPCO of 15 years ago. Today's TAPCO has a narrow and focused product portfolio with an official name of "The American Parts Company." When

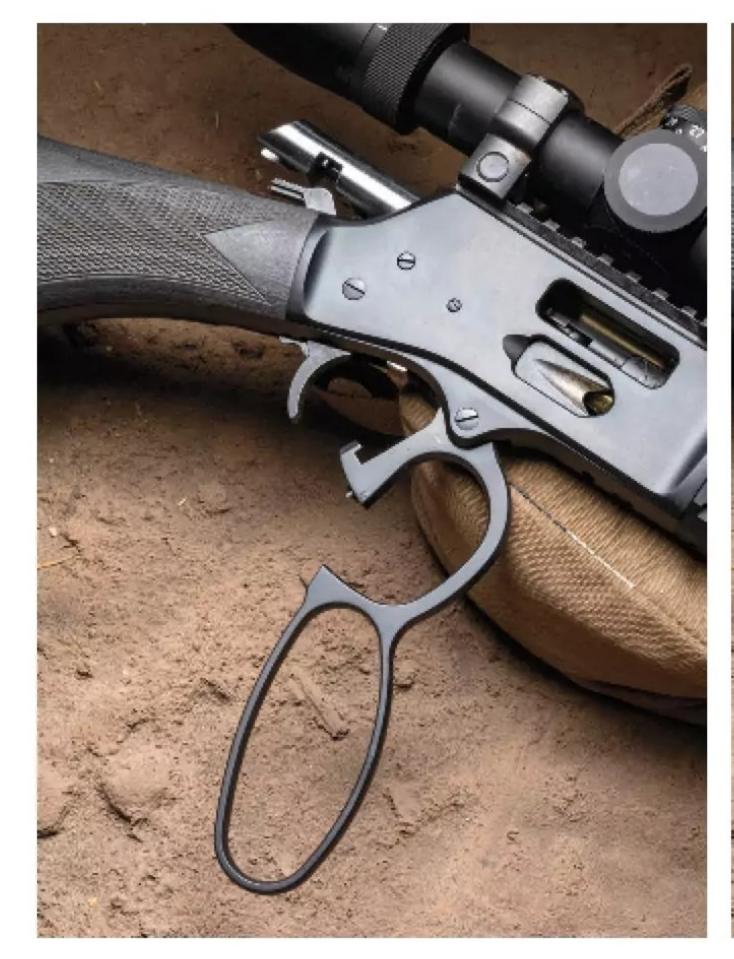
testing various handguards for the SPD HUSH, Henry sampled nearly all forends. TAPCO reportedly beat the competition by a wide margin. The TAPCO handguard fits the rifle well, allowing users to attach sling mounting points







The HUSH can be loaded from the loading gate or the loading port in the magazine tube. The magazine holds seven rounds of .44 Spl./.44 Mag.





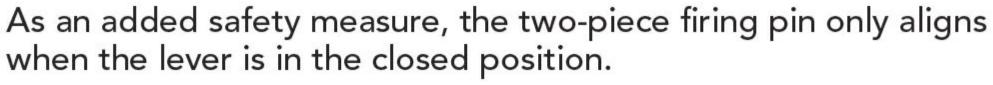


The Henry SPD HUSH hammer does not have a half-cock position, though it does utilize a transfer bar for safety.

or lights where desired. It is also comfortable in the hand and exhibits excellent machining with no sharp edges. The handguard is lighter than Henry's polymer handguard, and was selected for its ergonomics, rigidity and light weight.

There will undoubtedly be the temptation to attach a bipod to this forend for accuracy testing, a practice that I discourage on any lever-action rifle. Leveraction rifles shoot best





when the entire forend is supported by a bag, spreading the load evenly across its length. Using a bipod puts a point load near the muzzle of the barrel, making consistency difficult from one shot to another. I've had a lever rifle struggle to group well with a bipod but shoot just fine once the bipod is removed.

BUSINESS IN THE BACK

Everything from the receiver on back is traditional Henry

manufacturing. The receiver is machined from forged steel and incorporates all of the best practices seen in lever-action rifles through the decades. The receiver is enclosed up top and uses a round bolt to create as strong an action as possible.

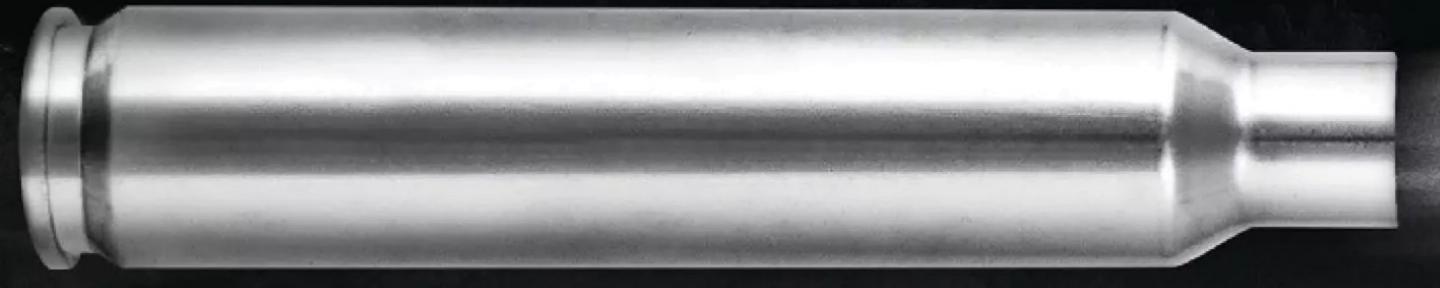
The receiver design, material, and forging all

The receiver design, material, and forging all combine for a robust rifle. Henry chambers some of its rifles with this receiver type in .360 Buckhammer,

which has a maximum chamber pressure of 50,000 pounds per square inch (psi). While this specific receiver is too short for the Buckhammer cartridge, it has the same materials and design, and is capable of handling similar pressure. Any factory-loaded .44 Special of .44 Magnum ammunition is likely going to be fine in the SPD HUSH, to include the offerings from Buffalo Bore, Double Tap and Grizzly. I don't think anyone is loading .44 Magnum ammunition above 50,000 psi.

THE MOST ADVANCED TO COMPANY OF THE MOST ADVANCED TO COMPANY O

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The trigger on the SPD HUSH is on par with most lever-action rifles. G&A's test rifle produced a 6½-pound trigger on a Lyman gauge.



PERFORMANCE

placed adjacent to the muzzle.

Safety is also a priority for the folks at Henry. The twopiece firing pin only aligns when the lever is fully closed, preventing an outof-battery discharge. Henry was thoughtful enough to do away with unsightly and unnecessary crossbolt or tang safeties, abominations in the eyes of our ancestors

but a common scourge in today's lawyer-fearing society. Instead, Henry used an internal transfer bar safety that prevents firing unless the trigger is held down the entire time the hammer falls. There is no half-cock on the SPD HUSH.

Like other Henry levers, the SPD HUSH can be loaded through the loading gate or through the underbarrel magazine tube. I like the idea of easy unloading and would prefer loading through the tube on lengthy range days. The loading gate worked well, but it took more deliberate effort to use the gate than the tube.

The test rifle was chambered in .44 Magnum/.44 Special, and it cycled loads in these two cartridges with equal ease. Accuracy was excellent and akin to other premium lever-action rifles.

When I called Henry to discuss this rifle's provenance, I



An American hardwood laminate wooden stock finished in grey features a slightly hollowed-out core to reduce the weight in the rear.

also inquired about the quality control. Henry rifles receive some inspection before being boxed up and shipped off. However, SPD HUSH rifles have an additional detailed inspection of the barrel and bore where critical dimensions are checked. The forend also receives additional verification. When these steps are complete, the individual doing the inspection stamps the rifle's paperwork with a unique mark. The mark confirms who checked the parts, should the rifle ever need factory service.

I spoke with George Thompson, Henry's director of products, when gathering information for this review. One observation he mentioned that bears sharing is how significantly manufacturing has changed in the last 10 years,

which allows rifle manufacturers to craft details consistently that were not possible before. The SPD HUSH is a prime example. Even if we overlook the advanced BSF barrel, and all the complex shapes of the handguard, we still have a rifle made from precision-machined parts that is far more consistent

LOAD	VEL. (FPS)	ES	SD	BEST GROUP (IN.)	AVG. GROUP (IN.)
.44 SPECIAL					
Black Hills 125-gr. Honeybadger	1,605	49.7	15.3	1.78	2.08
.44 MAGNUM					
Hornady 225-gr. FTX	1,793	37.5	12.3	2.58	2.91
SIG Sauer V-Crown 240-gr. JHP	1,679	37.1	12.7	2.59	2.98
Notes: Accuracy is the average of five five-shot groups at 100 yards from a rest. Velocity is the average of five shots measured using a Garmin Xero C1 Pro chronograph					

ed dailig a Garmin Melo CT 110 Chronograph

and smoother than hand-fit lever guns of yesteryear. This means the rifle found in the local gun shop will likely perform identically to the one seen on these pages.

The SPD HUSH from Henry is a unique rifle designed for today's suppressor and rifleman. It's a growing demographic. The lever-action rifle offers fast follow-up shots while still remaining as quiet as any bolt-action rifle when suppressed. All of the chamberings in the HUSH are available with factory-loaded subsonic ammunition, making this a fast-shooting and nearly silent rifle. When unsuppressed, it is a light lever gun that puts most of the weight in the rear and close to the shooter's body. That makes it easy to shoot offhand. While excelling in the niche for which it was designed, the SPD HUSH is a high-tech rifle at home in any lever-action enthusiast's hands.







VISITING THE MASS PRODUCERS OF THE WORLD'S AFFORDABLE IMPORTED FIREARMS.





lengthen meals of seasoned steak, lamb, and chicken placed on colorful plates of fruit and vegetables, some pierced by skewers with tallow.

— both religions have a historical

presence in this region. Though busi-

hours, we gathered in the evenings to

exchange culture and celebrate each

other's company using the shared

understanding of a few words to

ness was conducted during the waking

At times, a TV in the background was set to world news, soccer or a game's highlights. This had little interest to me given that I didn't understand the broadcasts beyond the weather and had to look at our hosts to determine who was winning the games. Despite the language barrier, every day ended late in a mutual reluctance to depart, with

guests, one by one, into an embrace, connected by touching head-to-head or cheek-to-cheek. I struggled to remember the etiquette — right side first and then left — but I was quickly reminded that I had made friends for life, was always welcome to return, to stay with them, and encouraged to do

so sooner rather than later.

Post, hooded (front);

aperture drum (rear)

Mertsav Savunma

sdsarms.com

Sıstemlerı, İstanbul, Türkiye

SDS Arms, 865-604-6894,

\$1,295

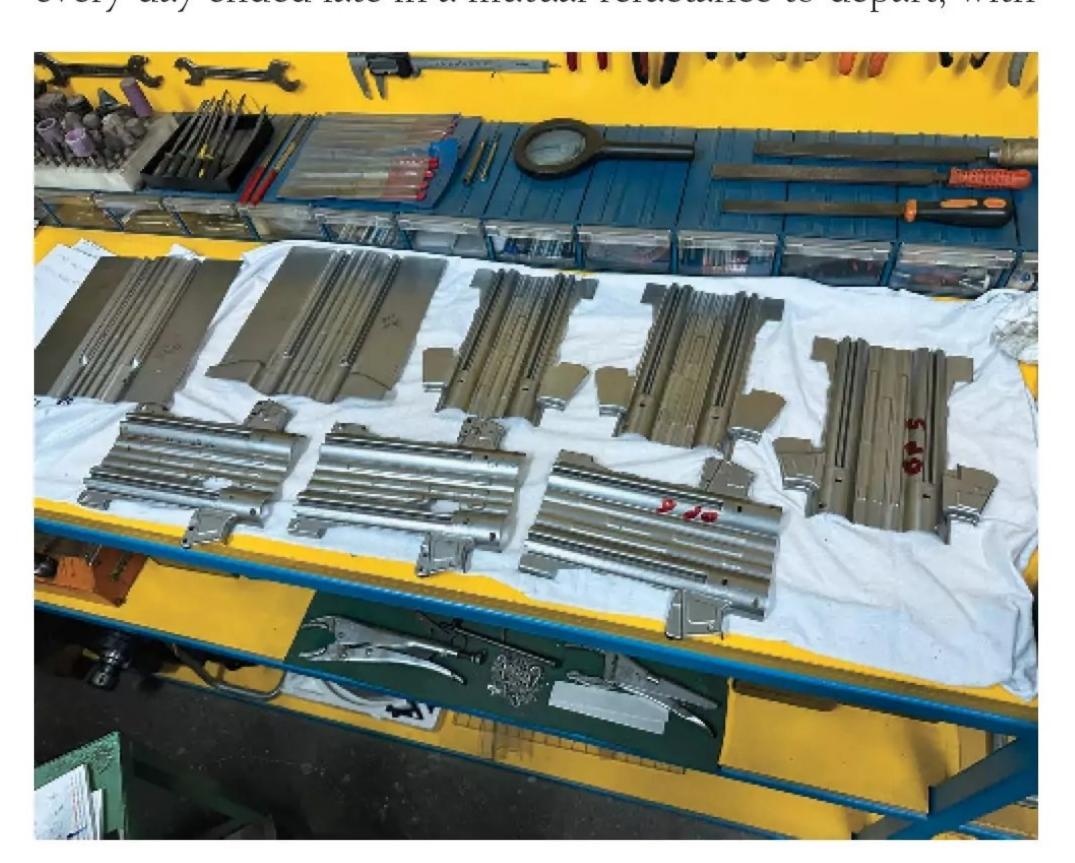
SIGHTS

MSRP

IMPORTER

MANUFACTURER

By invitation, I visited firearm manufacturing facilities in Istanbul, the Beyşehir region in Konya, and Trabzon. There were certain similarities regardless of brand: Cool marble floors and walls cut from the local mountains, chocolate on conference tables surrounded by comfortable chairs. Some offices were smoke-filled, featuring ice breakers in the form of pictures, trophies and awards, and multiple Turkish flags



These receivers illustrate the multiple stages of stamping and die-cutting MAC 5-series receivers before they are folded over tooling and fitted with a barrel, sights and subassemblies.



Receivers and barrels are welded with sight bases, magazine well, and a block for reinforcement at the rear. The 5.8-inch barrel indicates these will be MAC 5K models.



ornamenting the surrounding walls. An assistant entered the meeting early to serve hot tea sweetened with sugar or a miniature cup of thick ground coffee

or espresso. Glasses and cups were refreshed every 10 minutes, empty or not. Through our translator — Operations Manager Altan Ateş of SDS Arms — small talk initiated a discussion of each company's history and capabilities, followed by a trader's discussion to negotiate quantities, price, payment and delivery schedules. Then came the plant tour.

Except for the manufacture of specialty parts such as springs, companies are proud of their labor and machining, always looking for ways to make processes more efficient. Whether it

be shotgun, pistol, rifle or air gun, any detail is possible. The American importer only has to ask. Business is simple economics. The list of features is negotiated to a price that the importer believes will create a good value proposition for their customers. The manufacturer attempts to secure a certain percentage up front to cover wages, materials and overhead, while trying to sneak in some profit. The ATF came up in every conversation, including questions about current approval times for Form 6s, tariffs, estimated delivery times and balance payment schedules. Much of it was speculative.

My invitation to see Turkish manufacturing came through SDS Arms of Knoxville, Tennessee, a business owned by four investors, including Military Armament





The MAC 9 DS series features a double-stack (DS) polymer grip module. The "Comp" model adds a functional compensating port atop the barrel and slide.

Corporation (MAC), Tisaş USA, Tokarev USA, Spandau and Inglis. Under a "quality made affordable concept," CEO Chris DiCenso joined me,

> escorted by Gaines Davis, a widower, professional engineer and 3-Gun competitor who now spends half his year living in Beyşehir and consulting with clients on manufacturing, quality control, and American design trends. SDS Arms is the only company I'm aware of that has three employees living and working in Türkiye to ensure America's demand for quality are met. Davis deserves large credit as to why products such as the MAC 5, DS 1911s, and its sporting and tactical shotguns turn out as dependable and accurate as they are. SDS

Arms products are generally spec'd to order rather than conceived and built by the Turkish maker, and all of its firearms are backed by a lifetime warranty. Davis' end-user insight, scrutiny of manufacturing, eye for detail and relationships contribute to the performance of these products. His bridge to the companies was best described when he said, "I have more close friends here in Türkiye now than I have in the U.S."

I visited nine companies during my February 2025 tour, but there are hundreds of companies producing firearms for the world. The size of Turkish firearm manufacturing was surprising. In fact, Türkiye is the largest exporter of shotguns to the U.S. and the second-largest overall exporter of firearms, according to the annual statistical



Introduced in 2025, the TT-12 Profeatures a competition-style layout with distinctive controls. Spare 5-, 10- and 20-round T-1919 mags are available at tokarevusa.com. \$20 - \$30

ATF report "Firearms Commerce in the United States." In 2020, Turkey exported 415,180 handguns, 29,450 rifles and 1,045,621 shotguns. Austria was second with 1,279,123 handguns imported that same year, and Brazil third with 1,016,630 total firearms. Of the Turkish importers, SDS Arms is one of the top three importers of firearms into the U.S. Other Turkish importers include Canik with a factory in Samsun and headquarters in Ankara, the capital of Türkiye; SAR of Sarsilmaz, Beyköy, outside of Istanbul;

Tisas in Trabzon; Tokarev in Beyşehir; Huglu in Huğlu; Stoeger in İstanbul; and Century with products purchased from MKE and Canik.

What follows are company overviews and manufacturing highlights experienced during Guns & Ammo's exclusive visit.

MERTSAV, İSTANBUL

mertsav.com.tr

SDS Arms sources its MAC 5 and MAC 5K pistols from Mertsav, a company that has operated in support of the defense industry

since 2006. Its product portfolio includes machine guns, infantry rifles, sniper rifles, rifle-mounted grenade launchers and multi-shot grenade launchers. Notably, it has also developed a bolt-action chassis system featuring a three-lug bolt design.

"Mertsav has a long history of collaboration with military tenders," said Davis. "They now have interest in reaching the commercial market. They are our newest vendor and now have the top-selling product." DiCenso added, "We're very excited to be working with the preeminent manufacturer of military small arms, to be making our MAC 5 and MAK 5K roller-block series and

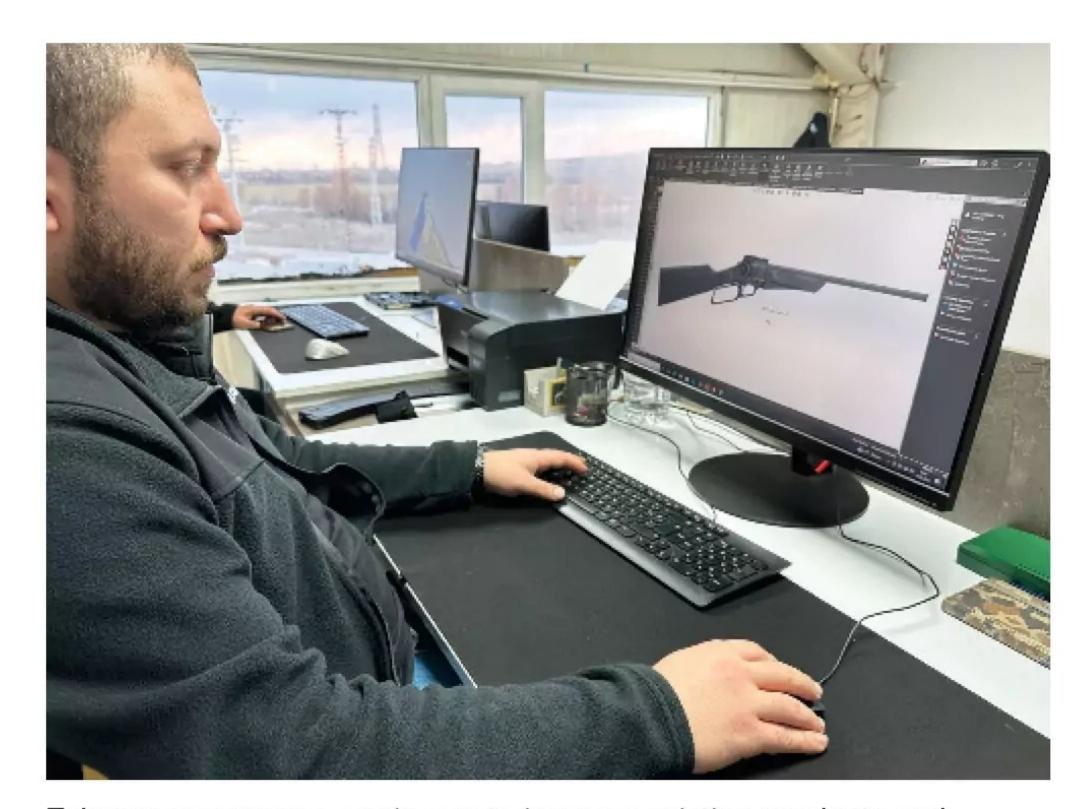
proliferation of well-known models coming soon."

TOKAREV TT-12 PRO

11-12 PRU		
TYPE	Gas piston operated, semiautomatic	
CARTRIDGE	12 ga. (2¾ in., 3 in.)	
BARREL	18.5 in.	
LENGTH	38 in.	
HEIGHT	9 in.	
WIDTH	3 in.	
WEIGHT	8 lbs., 9 oz.	
FINISH	Chromate (steel), anodized (aluminum)	
SIGHTS	Flip-up, adj. post (front), aperture (rear)	
MSRP	\$487	
NUFACTURER	Tokarev, Beyşehir, Konya, Türkiye	
IMPORTER	Tokarev USA, 865-604-	

6894, tokarevusa.com

MA



Tokarev encourages engineers to improve existing products and develop new concepts. This engineer is working on a lever-action revolving carbine that's near completion.

TOKAREV, BEYŞEHIR, KONYA

tokarevarms.com

Tokarev is a family-owned business that grew from producing garments to buying, selling and manufacturing firearms within Türkiye under the Salvador brand. Co-owners Süleyman Alaboğa, president, and Fahruk Tutal, CEO, purchased the Tokarev brand in 2019. Though they could (and have) manufactured the TT-33 most associated with the name, Tokarev has responded to America's demands for its bullpup shotguns, 500-inspired pump-actions, A300-pattern semiautomatic shotguns, AR-15-style shot-

guns and lever-action Model 1894-style rifles.

In my observation, the manufacturing process flowed well through the facilities. With space available for expansion, Tokarev employs experienced masters and young engineers to ensure firearm knowledge is passed down to secure its future. Kadir Yıldırım, head of engineering, has worked at Tokarev for seven years and has studied electrical engineering for 12 years in Konya. Yıldırım is called "Usta," meaning that he has earned the title "Mas-

ter." The strategy to secure its future is also present in its executive leadership through Seyit Mehmet Alaboğa, son of Süleyman.

The gunmaking tradition in the Beyşehir region was started 40 kilometers away in the village of Gencek. In the 1940s, a veteran learned how to repair guns in the military. Starting with single-shot shotguns, a gun-making tradition was created. Gaines noted, "Tokarev is eager to take all of the technical and manufacturing advice SDS Arms can give



12 ga. (2¾ in., 3 in.)

Benelli Mobil chokes

18.5 in.,

30.25 in.

7 lbs., 4 oz.

Chromate (steel),

aperture (rear)

Tokarev, Beyşehir,

Konya, Türkiye

anodized (aluminum)

Flip-up, adj. post (front),

Tokarev USA, 865-604-

6894, tokarevusa.com

8.5 in.

3 in.

\$244

CARTRIDGE

BARREL

LENGTH

HEIGHT

WIDTH

WEIGHT

FINISH

SIGHTS

MSRP

MANUFACTURER

IMPORTER

Most of the shotguns made in Türkiye are made in or near Konya. Among them is the company's latest TT-12 Pro, which is an AR-style 12gauge shotgun developed for serious 3-Gun Open Class competition where fast reloading is required. Its rival at the range is the Rock Island Armory VR80, which is made by Derya Arms in the Beyşehir industrial park.

"Tokarev has been a reliable and consistent partner," said DiCenso, "They are easy to work with — flexible and responsive." Browning and Kalashnikov are familiar names in the firearm manufacturing business, and they are globally produced brands. Similarly, Tokarev has helped SDS Arms gain a significant share of the shotgun market since 2022.

TAYFUN	ÖZERBAS	MAKINE.	BEYŞEHIR,	KONYA
	OELINDAY.	1717		NOITIA

typhoonsilah.com

"Özerbaş," also known as "Typhoon," was started by Tayfun Özerbaş in 2011. Typhoon is a sophisticated, multilevel, and modernized manufacturing facility containing

thousands of square feet of CNC manufacturing, robotics, development labs, and an indoor range. Known for its sporting shotguns, the company also manufactures pistols and AKstyle firearms not currently imported into the United States. However, it is SDS Arms' source for the awardwinning MAC 1014 semiautomatic shotgun. More than 10,000 M1014 shotguns are produced annually. In fact, it has become so popular that a turkey-hunting version of the platform is being considered.

the price is right. \$244

Typhoon is also making the Spaundau S2 and the Agency M2/M4 Tradesman. In the case of the Tradesman, Agency Arms (agencyarms.com) designed the accoutrements made for this platform. These guns were based on the legendary M1014 and M2 shotguns. The internals of the M1014 are gas and inertia operation, while the M2 is



G&A Editor Eric Poole smiles after evaluating the Tokarev TAR 120DG semiautomatic shotgun in 12 gauge, a favorite among 3-Gun competition shooters. \$350



Özerbaş' Typhoon Defence Industries operates multiple floors of CNC machines, robotics and injection molding stations, as well as an assembly area and indoor range.



inertia-operated only.

During the tour, Typhoon was proud to claim the best engineer in the region: Ömer Sayın. Sayın's father was also a shotgun manufacturer who worked at several facilities. He was the initial designer of the MAC IX and worked on perfecting MP5 tributes.

"[Typhoon] is flexible and responsive, said DiCenso. "They have great expansion capability, too.

As SDS Arms continues to seek potential business opportunities and partners, we drove across the industrial park to visit Reximex.

REXIMEX, BEYŞEHIR, KONYA

reximex.com

Reximex owner and President Raif Sütçü is the brother of Mustafa Sütçü. Together they own and operate Kral Arms, a successful maker of rifles, pistols, shotguns and air rifles, some of which are imported to the U.S. by other brands. Raif maintains a small ownership stake in Kral Arms but is no longer participating in board meetings. Founded in 2015, Reximex is a comparatively young company created to manufacture air rifles, pistols

and shotguns. It has also developed new bolt-action rifle designs with a short 60-degree bolt lift. Knowledge of the Turkish firearm manufacturing industry, combined with the latest in CNC machines and equipment and a youthful labor force means that Reximex is flexible to respond and quickly develop specific configurations of its products for its clients. It already produces high-quality over/under and semiautomatic shotguns and competition air rifles, but

AGENCY TRADESMAN 1014		
TYPE	Gas piston operated, semiautomatic	
GAUGE	12 (2¾ in., 3 in.)	
BARREL	18.5 in.	
LENGTH	39.8 in.	
HEIGHT	8.3 in.	
WIDTH	2.6 in.	

WEIGHT

8 lbs., 5 oz. Chromate (steel), **FINISH** anodized (aluminum)

Blade, white (front), **SIGHTS** ghost ring, adj. (rear)

\$1,277

MSRP

MANUFACTURER

IMPORTER

Tayfun Özerbaş Makine, Beyşehir, Konya, Türkiye

SDS Arms, 865-604-6894, sdsarms.com



this brand is one to watch for its new sporting rifle designs.

KRAL ARMS, AÜZÜMLÜ, KONYA

kralarms.com

Established in 1997, Kral Arms is known internationally for its air guns, pistols, semiautomatics, AK47 varieties and for making the first pump-action shotgun in Turkey. Staffed by nearly 200 employees, it operates more than 130 CNC machines to manufacture 150,000 air guns, 100,000 shotguns,

> and 54,000 9mm pistols in 2024. To increase manufacturing capabilities, a new facility was under construction in the Beyşehir industrial park during my visit. At the time, 80 additional CNC machines were already there. In the U.S., Kral Arms is known for making more than 50,000 pieces for TriStar. Though scalable exports to the U.S. are difficult, Kral has 72 partners worldwide including Air Venturi for its air guns. "You dream, we do," is the company's motto.



Surrounded by hand tools and working over a vise, a long-time employee at Huğlu sands and blends a wooden stock to a shotgun receiver with careful attention to detail.

HUĞLU AV TÜFEKLERI KOOPERATIFI, HUĞLU, KONYA huglu.com.tr

Huğlu — pronounced "Hoo-loo" — is one of the largest and well-known firearm manufacturers in Türkiye. Other than springs, Huğlu manufactures all its parts from material, including plastic and wooden components. It even does its own heat treatment and coatings. Of the



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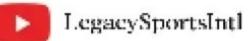




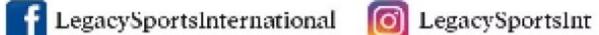




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The Spandau Arms S2 is manufactured by Özerbaş, and is the same gun as the tactical MAC 2. The sporting S2 is available in several Mossy Oak and Realtree hydro-dip patterns.

550 employees working two shifts, more than 230 are professionals with engraving or woodworking skills. Forty are hand engravers. Its shotgun-making history started in 1914, although Huğlu Corporation was established in 1962. The company began with making a single-shot shotgun before adding a side-byside, over/under and semiautomatic shotguns to its offerings. For the past 42 years, Huğlu has been a partner of CZ-Colt, which owns the Huğlu name in the U.S. It also supplies Mossberg. In addition to those shotguns, Huğlu manufactures select-fire and semiautomatic 9mm pistols and is working on a bolt-action rifle for SDS Arms.

AKUS SILAH SANAYI VE TICARET A.Ş, BEYŞEHIR, KONYA

akus.com.tr

Akus was founded by the father of Fahti Akus and his brother, Halit. The company makes high-quality, handmade, bespoke shotguns in low volumes. The staff are few but are seemingly all skilled artists and craftsman. In one corner of the facility, a 20-foot-high stack stretching 40 feet in length on two sides of an aisle contained the highest grades of walnut — with some blanks worth more than \$10,000 each. The over/under and side-by-

side shotguns made here are all hand-fit and hand-engraved. During my tour, I observed four women hand-checkering full-figured wooden stocks. I also made the acquaintance of Engraver Fahri Ağır, who shared techniques while polishing and creating a relief of a field scene that canvased the receiver, triggerguard and hardware.

Akus makes Spaundau Premier Target and Premier Field over/under shotguns, which are imported through SDS Arms. Though Akus could make custom-order products,

SPANDAU ARMS S2 MOSSY OAK BOTTOMLAND Inertia operated, **TYPE** semiautomatic CARTRIDGE 12 ga. (2¾ in., 3 in.) 24 in. or 28 in.; vent rib; **BARREL** Benelli Mobil chokes **HEIGHT** 7 in. **WIDTH** 2 in. **WEIGHT** 6 lbs., 7 oz. Hydro-dip (Mossy Oak **FINISH** Bottomland) Fiber-optic bead, red; SIGHTS brass mid-bead, optic ready **MSRP** \$558 Tayfun Özerbaş **MANUFACTURER** Makine, Beyşehir, Konya, Türkiye Spandau Arms, **IMPORTER** 865-604-6894, spandauarms.com



Produced by Akdaş, the MAC IX 9mm demonstrated excellent accuracy and flaweless reliability at the range. An SMG-style pistol is offered by the Military Armament Corp. \$833

the U.S. options are currently limited to barrel lengths of these models.

AKDAŞ SILAH A.Ş. AND AKDAŞ OUT-DOOR, HUĞLU, KONYA

akdassilah.com

Selim Akdaş, CEO and owner, started Akdaş in 1998. Today, more than 110 employees work 9,500 square meters of manufacturing real estate. With its indoor and outdoor firing ranges, the property spans 15,000 square meters. Akdaş Outdoor is operated by Selim's brother, who makes sporting shotguns for brands such as SKB in the U.S. The Akdaş brand is a family-owned and

-operated company who has been in the business of gun making for 77 years.
Akdaş is the only company manufacturing defense products for the Turkish army in the Beyşehir. Its first was the MG3 German machine gun, a design derived from the World War II-era MG 42.

"We are always seeking innovation," Akdaş told me. "[For example,] our government started a new project requiring a grenade launcher in 2019. We made it, as well as the grenades,

for the Turkish army. It was the first launcher for the Turkish army, and we delivered more than 14,000 units."

In addition to its sporting shotguns, Akdaş also manufactures AR-pattern rifles and semiautomatic shotguns and carbines. Among them was the SA-9 semiautomatic submachine gun (SMG)-style pistol in 9mm, which will be imported by SDS Arms as the MAC IX. The quality of these products is shocking, as was the full-auto controllability and reliability of the SA-9. The SMG market is about to heat up.



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TISAŞ, TRABZON

tisasarms.com

Tisaş was founded in 1985 in a garage to manufacture boutique firearms.

Located on the Black Sea, there are cultural differences between Tisaş and the manufacturers in the southern Mediterranean regions of Türkiye.

Hence, the areas that SDS Arms sources products from provides a

diverse perspective between manufacturing practices.

Business between SDS Arms and Tisaş began in 2016. The primary point of contact is Ergin Akyüz, who is the international trade manager. Most manufacturers have an international trade manager who speaks English, and Ergin was that person for us. However, he not only helped with translations but also in the understanding of cultural differences and mediating between companies.

Previously, Tisaş only had

business with TriStar. Of the five largest Turkish exporters, Tisaş is number five. Unlike companies in the Beyşehir region, Tisaş makes more rifle products than shotguns. It has a tender with the Turkish government for 30,000 guns, including the new PX-9. Tisaş is a privately held, multiple family brand. Unfortunately, Chairman of the Board Ahmet Alemdaroğlu passed away during my visit. The company is now in the hands of his sons and the members of the board.

The manufacturing and modernization are efficient. In addition to some 300 CNC machines, several state-of-the-art five-axis machines, and robotic cells are operating as well. Since 2023, Tisaş has more than doubled the size of its manufacturing capacity.

The PX-9 frames are outsourced by a molding com-



INGLIS



The Inglis L9A1 is a historically correct configuration that serves as a tribute to the Hi Power issued to British forces between 1962 and 2013. \$575

The Inglis GP-35 is manufactured by Özerbaş. The design is a faithful tribute to the Hi Power, but is available in a variety of finishes and grips, including color-case steel and Turkish walnut. \$757

pany in Ankara. Tisaş' strategy is to manufacture the large components while maintaining control of small parts produced by Furkan CNC, also in Trabzon.

In addition to the polymer (PX) series — which includes the PX-9 and PX-5.7 — SDS Arms imported 84,999 1911s from Tisaş, to include single- and

double-stack (DS) models, plus the Military Armament Corporation (MAC) line. Tisaş employs more than a dozen engineers, who helped quickly develop variations of the Model 1911 and make SDS Arms one of the largest vendors of the 1911 platform. The Night Stalker series is an example of that collaboration.

"With more than 105,000 guns a year, Tisaş is the largest partner to SDS Arms," said DiCenso.
"With them, SDS Arms has become the number two

seller of 1911s in the U.S. in terms of volume."

AMERICAN CONCERNS

Türkiye earned its independence in 1923 and is a strategic ally to U.S. interests. In the last decade, it has integrated modern manufacturing standards to rival all other firearm companies in the world. As parts are precision cut and shaped, the machines at these factories don't care where they operate. What makes products offered by SDS Arms different is that the company has employees in country, helping these partners focus on improving their processes and adapt to America's changing interests and economy. There are nearly 200 firearm manufacturers in the Beyşehir region, but those working with SDS Arms are better off. Manufacturers such as

PURSUE YOUR LE GACY™

SON,

It's going to be hard. Never quit.

There will be mornings you question what you're doing out there. Keep going. It's not just about the final shot. It's about the miles before it, the silence that surrounds it, and the responsibility you carry with it.

The land teaches you in small, quiet ways. It teaches you to pay attention. To slow down. To respect what you can't control. One day you'll look back and realize this wasn't about hunting. It was about growing into the kind of person who shows up even when it's hard. Especially when it's hard.

Pursue your legacy.

I trust you'll do it well.

Love, Dad







TISAS 1911 DUTY RAIDER Recoil operated, hammer **TYPE** fired, semiautomatic **CARTRIDGE** .45 ACP BARREL 5 in., hard-chrome steel LENGTH 8.62 in. **HEIGHT** 5.3 in. **WIDTH** 1.41 in. WEIGHT 2 lbs., 4 oz. **FINISH** Cerakote, FDE (steel) The Tisas 1911 Duty Fixed, three dot; post is a continuation of **SIGHTS** (front), ramp, notch (rear) the Raider Series 70 **MSRP** platform chambered \$656 in .45 ACP. It is a **MANUFACTURER** Tisaş, Trabzon, Türkiye tribute to the M45A1 Tisas USA, 865-604-6894, formerly issued to **IMPORTER** tisasusa.com U.S. Marines. \$656

U.S. partner. It continues to bridge relationships around the world, hosting meetings between world leaders.

With more than 300 firearm manufacturers, how do companies compete? On price and quality. There is an atti-

> tude of "frenemies" between competing brands, but each respected and referred us to visit other companies.

What about supporting "Made in America" policies? It's always good to buy American, and SDS Arms is an American company whose business is to import firearms from Turkey. When you think of top firearm manufacturers, who's on that list? There are a lot of non-U.S. manufacturers because the arms market is an international one. Few exclusively manufacture every component in the U.S.

The PX-9 represents a great value in any configuration. The PX-9 Duty includes trending features such as optic ready and compensated slides, extended mags, and an excellent trigger.

offers a service department at its Tennessee location. Every product sold by SDS Arms is backed by a lifetime warranty. If a problem can't be repaired or replaced,

Reximex are seeking out the

attention of American engi-

neers such as Gaines Davis

to steady its business.

imports from several

Though SDS Arms

Turkish manufacturers, it

employs a gunsmith and

they'll offer an option for a new firearm. It's a no-

questions-asked policy.

What about intellectual property rights or patent infringements? These products are all tribute guns. As patents expire, this is what happens. (How old is the MP5 design?)

Do these employees get paid a minimum or living wage? Yes. Turkish firearm manufacturers are not exploiting anyone. Companies such as Özerbaş even offer employees two meals a day, time off for prayer and health insurance. I did not observe a sweatshop. Thousands of lives depend on these businesses to survive, while 35 employees in the U.S. depend on SDS Arms.

Does Turkey stand up to terrorism? Though politics did not come up, Turkey is a NATO-member country and a

PARTING SHOT

During a 3-Gun competition, I was staged with two competitors faced with an array of steel targets. One was armed with a \$2,500 custom shotgun tricked out with oversized buttons and a bright anodized receiver. The other was a shooter competing for the first time who had purchased a MAC 2 Tactical 3 Gun model for less than \$500 — \$461 to be exact. They were evenly matched. Every target received a hit and there were no malfunctions or fumbled reloads. Most importantly, the sport gained a new participant, and that's something we all can root for.



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caused by weary eyes? No, rather the effect came from tiny flecks of silver glinting in the sun.

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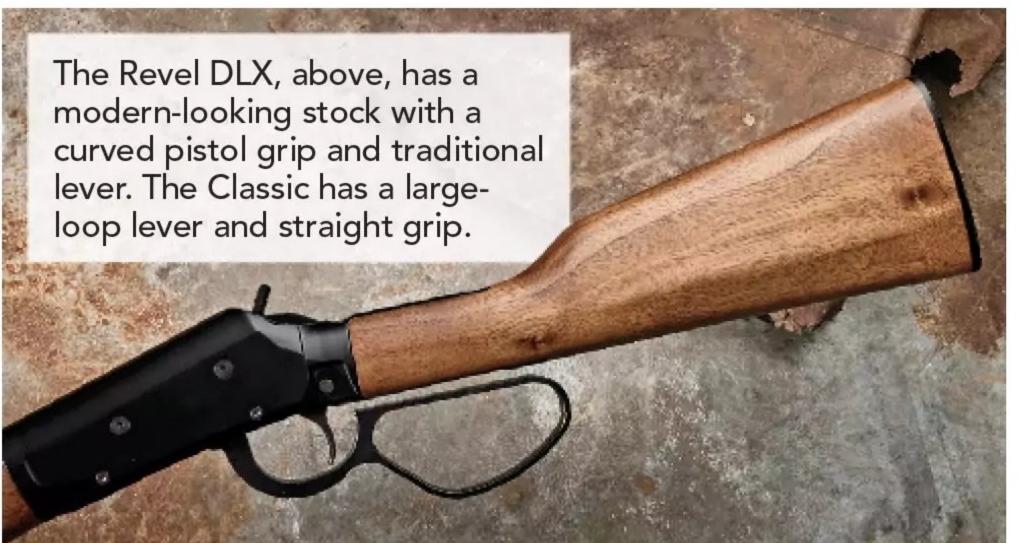
Arthur Savage's Model 1895/1899/99 was produced for a century, with nearly a million made. Throughout most of the 20th century, the Savage 99 was a nasty thorn in the side of Winchester's lever-action business. The 99's internal box magazine housed spitzer bullets, and its strong action could handle higher pressures than competing tubular-magazine lever actions. As scopes came into common use, the Savage — with its side ejection and solid-top receiver — was readily adaptable to conventional scope mounting. In the early 1950s, the lever-action Savage 99 became the first American production rifle drilled and tapped for scope mounts across the line.

Lever actions eventually became costlier to produce, and therefore more expensive to buy than bolt actions. Also, bolt actions are more easily engineered to handle a wider range of cartridges and are generally more accurate. Savage started as a lever-action company but was out of the lever-gun business for 25 years. In 2025, it returned with a new rimfire lever-action, traditionally styled yet thoroughly modern — and amazingly affordable.

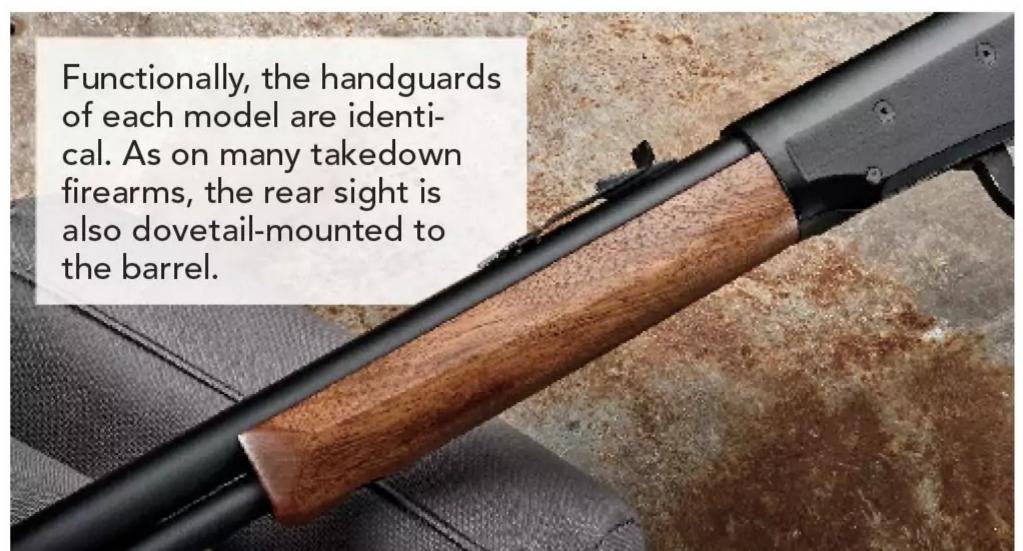
The Revel (that's "lever" spelled backwards) was initially released in .22 LR, the chambering of Guns & Ammo's test rifles, with .22 WMR and .17 HMR soon to follow. All are tubularmagazine rifles with the tube under the barrel. With rimfire cartridges, there is little downside to tubular magazines since the nose of one cartridge bears on the center of the case ahead of it, not on the rim where the priming is.

One thing I loved about the Savage 99 was its internal rotary magazine. At the end of production, they lost me when Savage switched to a detachable magazine. It's just one more thing to keep track of. That's a fundamental problem I have with many modern rifles of various action types: A detachable magazine is an extra piece that can be dropped or forgotten. Yes, there's a trade-off; it takes extra seconds to unload a tubular magazine, unlike popping a mag in and out. Whether the tube is in the stock or under the barrel, I like tubular-magazine rimfires, and the tubular magazine is the most traditional in lever-actions.









The Revel is manufactured in Savage's Ontario, Canada, factory, so it's a North American product. It's stocked in Turkish walnut, too. The wood on G&A's two test rifles wasn't fancy, just good, straight-grained walnut. Turkey is one of the last and best sources on Earth for good gunstock walnut. Even there, it's getting scarcer and pricier.

The .22 LR-chambered Revel is offered in two grades: Classic and DLX, with respective retail prices of \$439 and \$539. At either price, it's an excellent value for a lever-action stocked in nice walnut. Factory iron sights are traditional lever-action style: Blade front, buckhorn rear. The rear sight has a typical wedge for elevation and is drift-adjustable for windage. The top of the receiver is flat and level, drilled and

tapped for fourscrew bases or a rail strip.

Operation is lever-gun simple. As one might expect, the exposed hammer is two-stage, with a crossbolt safety low and rear on the receiver, above and just behind the trigger. The action is wonderfully smooth and fast. One of the lever-action's historic problems

SAVAGE ARMS REVEL CLASSIC			
TYPE	Lever action		
CARTRIDGE	.22 LR		
CAPACITY	12 rds.		
BARREL	18 in., 1:16-in. twist		
LENGTH	36.3 in.		
WEIGHT	6 lbs., 2 oz.		
STOCK	Turkish walnut		
FINISH	Cerakote, black		
TRIGGER	2 lbs., 10 oz.		
SIGHTS	Bead on blade (front), adjustable notch (rear), drilled and tapped		
MSRP	\$439		
MANUFACTURER	Savage Arms, 800-370-0708, savagearms.com		

is creepy, heavy triggers, so endemic as to seem a function of design — not on the Revel! I'm not sure how Savage broke the code, but the Revel trigger is light and crisp. The factory suggested it was a $2\frac{1}{2}$ -pound trigger pull, but our test rifles measured just more than advertised.

TAKEDOWN TAKEAWAY

Another pleasant surprise is that all Revels are takedown models, with the operation as simple and goof-proof as I've seen on a takedown lever-action. Start with the action open, lever extended all the way, safety engaged. The two takedown pins are at the bottom of the receiver. Start them from left side to right with a punch or pen, then pull them

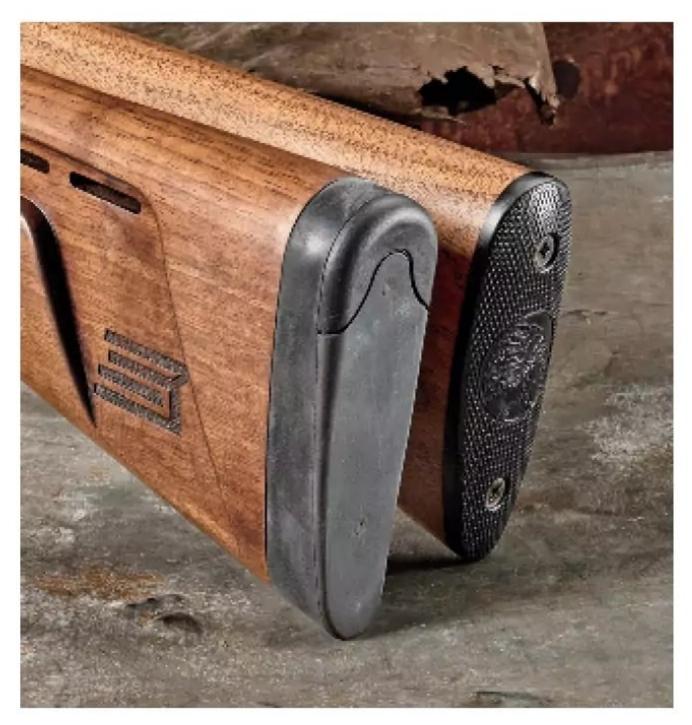
SAVAGE ARMS REVEL DLX			
TYPE Lever action			
CARTRIDGE	.22 LR		
CAPACITY	12 rds.		
BARREL	18 in., 1:16-in. twist, threaded ½-28		
LENGTH	36.3 in.		
WEIGHT 6 lbs., 1 oz.			
STOCK Turkish walnut			
FINISH Cerakote, black			
TRIGGER 2 lbs., 10 oz.			
SIGHTS	Hooded blade (front), adjustable notch (rear), drilled and tapped		
MSRP	\$539		
MANUFACTURER	Savage Arms, 800-370-0708, savagearms.com		

out as far as they go; they're captive and can't get away from you. The upper and lower receiver groups then separate smoothly and easily. Reassembly is the reverse. Being less than a mechanical genius, I admit I had to hold my mouth just right to get it back together. After a couple of times it got easier.



The Savage Revel DLX and Classic models share the same notched rear sight. The rear sight is adjustable for elevation.

The business end of the Revel DLX (above, right) differs in the ferrule securing the magazine tube to the barrel, and the DLX has a hooded front sight. Also, the muzzle is threaded for use with a suppressor.



Contrasting the differences between models, the DLX features a rubber buttpad while the Classic has a metal buttplate.

CLASSIC OR DLX?

The Classic is, well, classic. Unadorned, straight-grained satinfinished walnut stock and forend, straight pistol grip with oversized lever loop. The Revel Classic is a plain, simple rifle that looks like a traditional saddle gun, complete with a black buttplate bearing the Savage logo.

Since I had both the Classic and DLX in .22 LR for testing, a comparison seemed essential. The \$100 price difference between the two is not dramatic, but it is nearly a 25 percent upgrade. The Revel DLX is not fancy. However, instead of unadorned wood, the pistol grip is stippled, with matching relief carving and through-and-

through ventilated cutouts on both the forend and stock, sort of a modern touch.

After my wife, Donna, and I had returned from a range session shooting these rifles, I laid them on my desk to

discuss the differences between them. She looked at the DLX stock and instantly said, "Wow, that looks cool." Funny, to me, it's just cosmetics. Unabashed Western fan that I am, I'm happy with the traditional style of the Classic.

Beyond aesthetics, there are



The Revel Classic takes advantage of an oversized lever loop, which is good for use with gloved hands.



From left: .17 HMR, .22 WMR, .22 LR. The Savage Revel will be offered in each of these cartridges by late-Summer 2025.

differences between the two, both subtle and significant. The DLX has a curved pistol grip. The lever loop is also oversized, large enough for gloves but not as big as the Classic's lever. It has a thick, black rubber buttpad. Whether .22 LR, WMR, or .17 HMR, we don't need it for recoil. However, this little touch can be significant. Operating a lever-action from the shoulder starts with the downward motion of the lever. A hard buttplate can slip; a rubber buttpad will not.

The rear sights are identical; the front sights are not. The Classic has an exposed bead-on-blade foresight, while the DLX has a square-topped blade-on-ramp with a front sight

hood. Both are visible and functional. Since my days of head-shooting squirrels with open sights are over, I don't have a preference, although the hooded front sight on the DLX is superior. The ferrules securing the magazine tube



The narrow-loop lever on the Revel DLX is quick to use and shaped to complement the contour of the pistol-style grip.

to the barrel are also different. On the DLX, it's a Figure 8, encircling both barrel and tube. On the Classic, the ferrule is dovetailed to the bottom of barrel, encircling only the magazine tube. Again, I don't have a preference.

At the muzzle, there is a distinctive difference.



Loading the 12-round tubular magazine is a simple process. Start by twisting and removing the magazine's guiderod.



Ammo should be loaded through the loading port. Don't load ammo beyond the loading port or load from the muzzle.



The Savage Revel DLX includes a ½-28 threaded barrel for use with rimfire suppressors. With a static bolt, it's quiet to shoot.

The DLX has a threaded muzzle, ½-28 threads with a knurled thread protector. For those who shoot rimfires with suppressors, this is obviously an important difference. The cost of having a Revel Classic threaded should factor into one's choice.

There's another contrast that seems subtle, but may be the most important of all. The Classic comes up just perfect with iron sights on target, as a good saddle gun should. The DLX has a slightly higher comb; it's okay with iron sights, but the DLX allows for a better cheekweld when used with a scope.

AT THE RANGE

I did some plinking with the Classic; it was fast and fun. Out of the box, the windage was perfect, but elevation was a bit high at 25 yards, fixed by dropping the rear sight wedge a couple notches. To see how a rifle groups, these days I need an optic. Using a rail strip and Weaver rings, I mounted a Riton Primal 3-9X scope.

Before shooting, I needed to make sure I knew how to operate it. If you're new to lever-actions, or like me, more familiar with lever-actions made a century ago, read the instruction manual. Thr Revel has a three-position hammer: Fired or rebound, half-cocked and fully cocked. Normal and standard for exposed hammer lever-guns. Now,

we introduce a two-position crossbolt safety. Present in some current lever-actions, absent in millions of older guns. In the Revel, the half-cock hammer position is not considered an alternate safety.

With the magazine loaded, drop the lever to release a cartridge onto the loading ramp, then bring the lever back up to bring the bolt forward and feed the cartridge into the chamber to start shooting. The crossbolt safety must be fully moved into the "ready to fire" position to work the lever and feed a cartridge. With the empty. (2) You can re-engage the safety (left to right) and choose not to fire. (3) Controlling the hammer with your thumb, you can manually move the hammer to half-cock and re-engage the safety. The trigger will not function with the hammer at half-cock. However, to move the hammer from half-cock to full, the safety must be in the ready to fire position.

Absent an exposed hammer, the old Savage 99 always had a bolt-locking manual safety, initially in the trigger-guard, later on the tang. Since the specter of product lia-

chamber loaded, you now have three choices.: (1) You can

fire, work the lever, and continue to fire until the tube is

had a bolt-locking manual safety, initially in the trigger-guard, later on the tang. Since the specter of product liability loomed large in our society, many exposed hammer lever-actions were redesigned with a manual safety, some with a crossbolt, others with a tang safety. It's important to understand they don't all operate like the Revel, whereby the safety must be in "ready to fire" in order to feed. Even veteran lever-gun guys like me need to do the unmanly thing and read the instructions, plus spend time on the range acquiring muscle memory. With all that figured out, shooting groups was simple and fun, greatly aided by the Revel's excellent trigger and smooth action.

The three loads I had on hand in adequate quantity were Federal's 40-grain Auto-Match, Remington's 36-grain Golden Bullet and Winchester 36-grain ammo. The latter

two, both high-velocity loads, are loaded with copper-plated hollow-points. The Riton scope came into zero in three or four shots. Accuracy exceeded expectations, easily in line with what one might get from a good .22 sporter in any action type.

Federal 40-grain Auto-Match averaged just a hair less than an inch for five five-shot groups at 50 yards. The Winchester 36-grain hollowpoint, a favorite tree squirrel and varmint load, ran just behind at a 1.264-inch average. It's worth noting that the Winchester load produced the single



Savage leans toward more safety in its designs, so the Revel features a cross-bolt safety unlike most traditional lever guns.



HENRY'S ULTIMATE SUPPRESSOR HOST

The Henry SPD HUSH Series is a bold evolution in leveraction rifle design, purpose-built to be run suppressed. Developed by the Henry Special Products Division—our new R&D initiative focused on forward-thinking innovation—this inaugural release reimagines what a lever gun can be in modern hunting and shooting applications. Offered in five time-tested calibers—.45 Colt, .357 Magnum/.38 Spl, .44 Magnum/.44 Spl, .30-30 Win, and .45-70 Gov't—the HUSH Series strikes the perfect balance of traditional feel and modern performance.

Lever actions already offer excellent balance and speed, with the added suppressor-friendly benefit of a closed action

during firing. Our HUSH Series takes this a step further. Every component forward of the receiver is optimized to minimize weight, keeping the rifle's natural center of gravity intact—even when a suppressor is mounted. The result is a no-compromise suppressor host that retains the instinctive handling and quick follow-up shot capability that lever guns are known for.

The SPD HUSH Series is the debut release from Henry's Special Products Division and represents our commitment to innovation without compromise. Each one is built and finetuned in Rice Lake, Wisconsin, backed by a Lifetime Warranty, and comes with our 100% Satisfaction Guarantee.







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best five-shot group of .665 inch. For whatever reason on this day, the Remington Hi-Speed hollowpoints lagged a bit behind, yet still delivered a 1½-inch average. Basically, the Revel shot "minute-of-squirrel's head" to 50 yards with all three loads, which is the way I judge .22 accuracy. In my thick Kansas woods, I usually can't see a squirrel much farther.

It's worth noting that all three loads were

bulk-packaged and inexpensive, the kind of .22 ammo I suspect most of us shoot. Not necessarily because we're cheap, but because that's what we can most easily find and lever-action and misfeeds will happen. purchase. Extreme spreads (ES) were significant and resultant standard deviations (SD) unimpressively high, which made the Revel's accuracy even more impressive.

Between grouping, plinking and playing, I put about 400 rounds through the rifles — probably a two-thirds/ one-third split between the scoped DLX and the Classic.



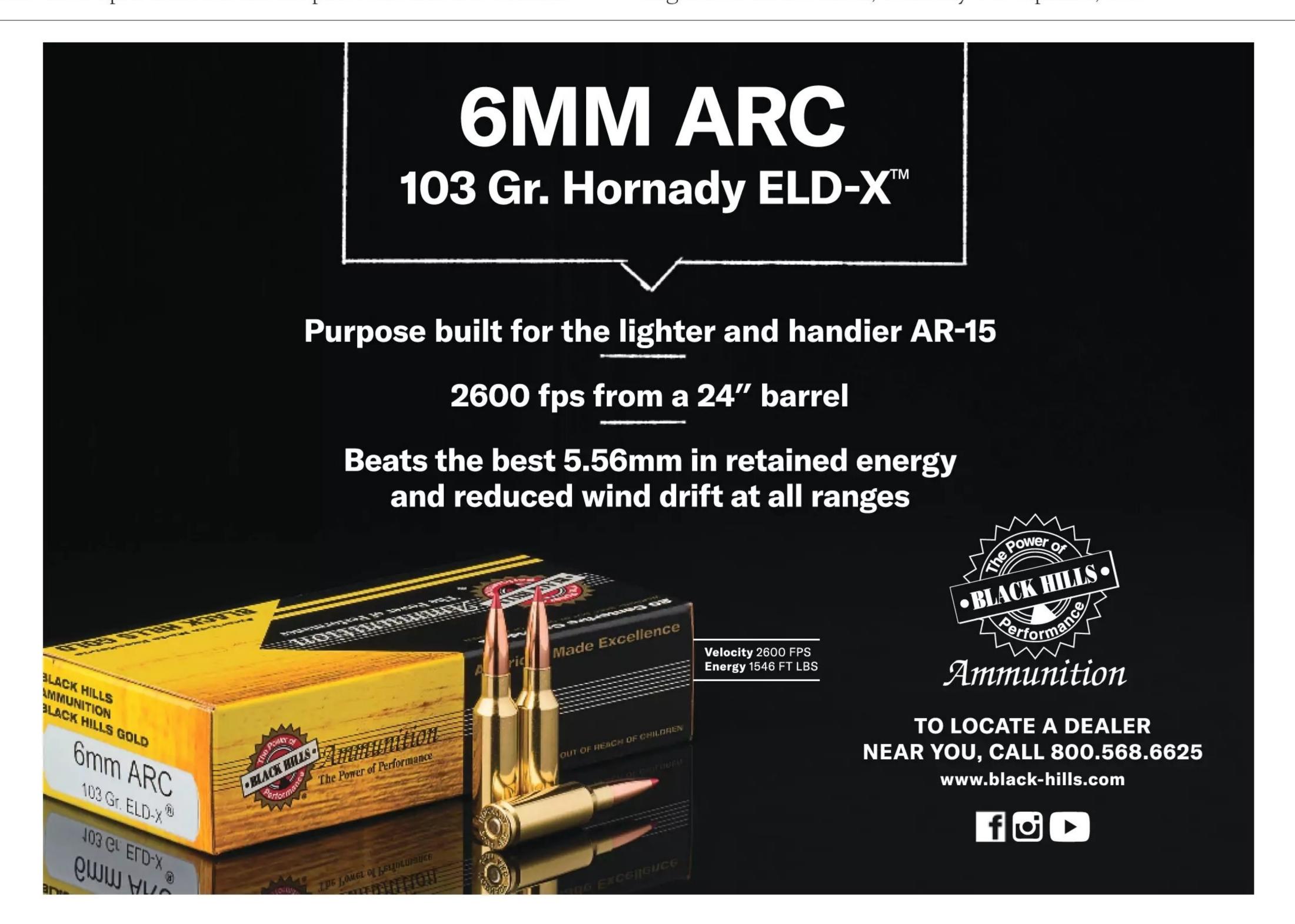
Savage Revel lever-actions are takedown rifles, handy for trail and backpack use. At the bottom of the receiver, above the trigger, the left-toright captive takedown pins are visible. To disassemble or reassemble, the lever must be down, bolt open and safety engaged.

The actions were slick, smooth, positive and fast. In total, I experienced maybe four jams. Some were my fault. While shooting off sticks with the Classic, the hard buttplate slid off my shoulder a couple of times, so I stuttered while working the lever. With leveractions, it's important to work the lever fully and completely. One consistent motion all the way down, followed by

a second motion all the way back up. With practice, this becomes one smooth, continuous motion. Stutter-feed a

A couple of jams were probably caused by bad cartridges. Bulk-packaged ammo is inexpensive for a reason — it's not the best any manufacturer produces. Cartridges rattle around in packaging, leading to dented cases or partially unseated, skewed bullets.

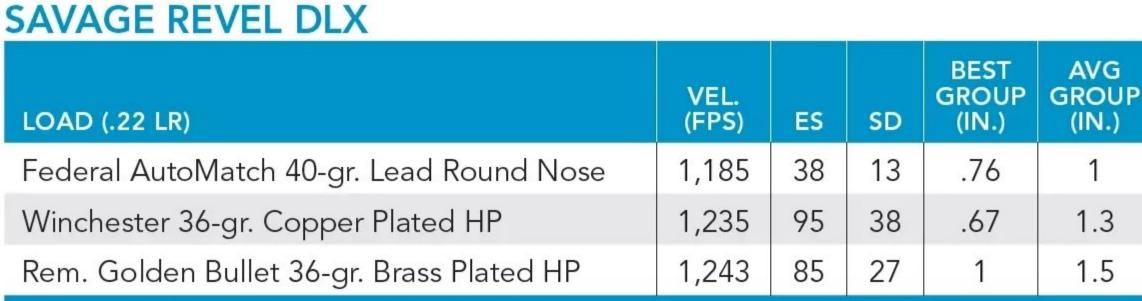
Regardless of the cause, with any .22 repeater, one



misfeed per 100 rounds is a great performance. However, when it happens, the Revel's small ejection port doesn't offer much room for clearing. With a fired case stuck in the chamber, and a fresh round trying to double-feed, I needed a small tool to get in there and push the live round down on the follower, and either the same small tool or a cleaning rod to clear the fired case over it. I had both in my range bag; maybe check yours.

At 6.1 pounds unscoped, neither Revel is light. The walnut stock adds weight, and the

barrel is mostly steel. It has good heft and feel, and I was delighted to find the balance point just behind where the forend joins the receiver. At this juncture, the bottom of the



Notes Accuracy is the average of five five-shot groups at 50 yards, fired over sandbags with a Riton 3-9X scope. Velocity is the average of five shots measured by a Garmin Xero C1 Pro chronograph.

The best 50-yard group average was obtained with Federal Auto-Target 40-grain lead, followed by Winchester 36-grain copper-plated hollowpoint. Remington's 36-grain high-velocity hollowpoint lagged just behind, all "minute of squirrel's head" at 50 yards, excellent accuracy for any sporting .22 LR.

receiver has an inch of rounded surface. That's where the balance point is, offering a comfortable grip to carry the

Revel in one hand. The mounts and scope I put on the Revel DLX added weight but didn't change the balance.

LAST ROUND

I can conclude by saying that Savage's Revels are accurate. They are smooth functioning, sweet shooting, and a joy to carry. At its price point, it's hard to ask for more.









Though there were many worthy candidates for inclusion in this article, we'll limit the field to a selection of examples offering innovative and varied designs to give the reader a feel for the vibrant, influential French cartridge revolver development of the mid-19th century.

LEFAUCHEUX

When Eugene Lefaucheux premiered his revolver in 1854, the idea of a self-contained cartridge was really nothing new. It made its first important appearance as early as 1814 with an ingenious brass-cased round designed by Swiss arms-maker Samuel Johannes Pauly. His formative concept worked reasonably well but was somewhat fragile. It was soon eclipsed by other designs, notably the pinfire round contrived by Pauly's assistant, Casimir Lefaucheux.

Initially employed in shotguns, the pinfire was ingenious and relatively robust. It consisted of a paper or copper/brass round containing powder, bullet and an internal percussion cap, which was set off when a firearm's hammer struck a pin protruding at a slight angle from the top-rear of the case. In 1854, Lefaucheux took his design to a new level by mating it to a revolver with a bored-through cylinder.

His revolver was initially accepted by the French military

and was tested by several other nations, including the United States. In addition to military models, pinfires were produced for decades — well into the centerfire era — in civilian versions with calibers ranging from 5mm to 15mm.

Service revolvers were normally 12mm (.44) and followed a basic design: Single-action with no-topstrap. The hammers, which dropped downward to strike the cartridge pins, often had generous spurs to allow for ease of cocking. Loading was achieved through a frame-mounted side gate with the cartridge pins projecting through small slots at the top of the chambers. Ejection of spent cases was performed one-at-a-time by means of a simple push rod mounted on the front right side of the frame.

Due to the projecting pin, it's obvious that the risk of accidental discharge with the pinfire was greater than that with the contemporary centerfire and rimfire rounds. However, studying period pinfire military evaluations indicate that this was a consideration but did not deter many thousands of these handguns from seeing military service on both sides of the Atlantic.

At the beginning of the Civil War, the United States Ordnance Department ordered some 12,649 Lefaucheaux 12mm pinfire revolvers and hundreds of thousands of rounds of ammunition. It is not uncommon to see photographs, primarily of Yankee troopers, proudly displaying these revolvers.



Confederate soldiers also availed themselves of pinfires when they could. For instance, Thomas Jonathon "Stonewall" Jackson carried one. However, purchasing and supply issues — along with difficulty obtaining ammunition — considerably limited Rebel usage.

In addition to France and the United States, Lefaucheaux revolvers saw service with the militaries of Sweden, Denmark, Italy, Egypt, Spain, Russia and Norway.

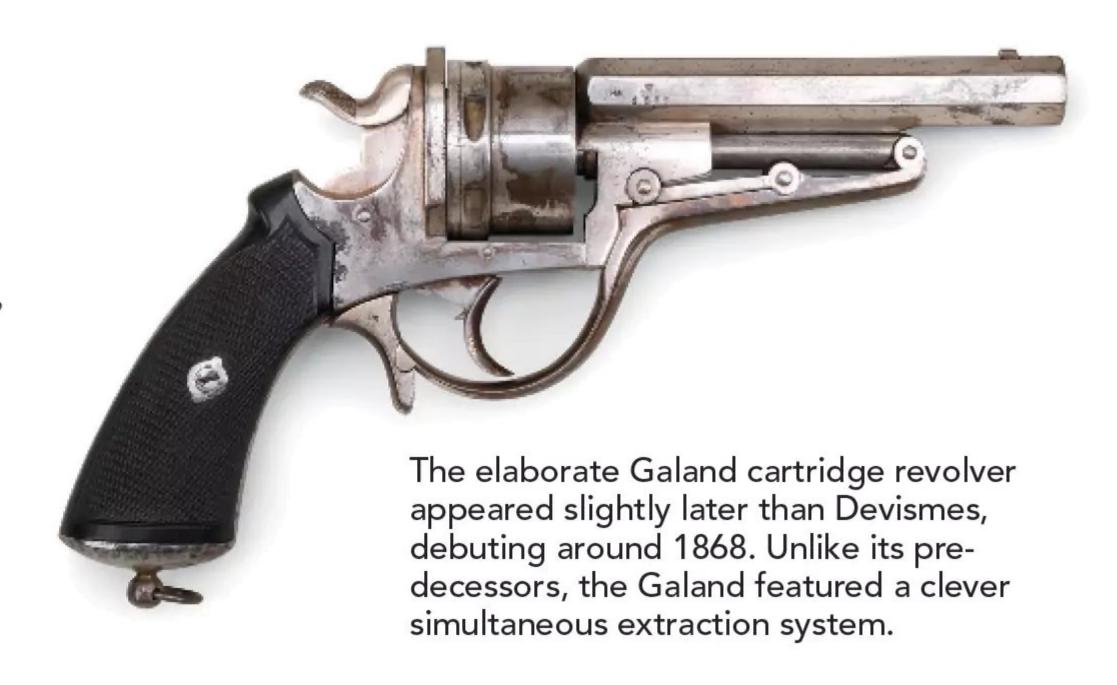
The French had several variants of the 12mm Mle 1854 Lefaucheaux, generally differing only in minor details. By the time Lefaucheaux patented his revolver, advances in ammunition were already rendering the pinfire obsolete. French ordnance (circa 1870) later "transformed" some of its Model 1858 Naval revolvers from pinfire to centerfire by the simple modification of the revolver's hammer and slight chamber alteration.

DEVISME

About the time Lefaucheaux was debuting the pinfire sixshooter, French gunmaker Louis-Francois Devisme was examining his own line of percussion revolvers with the intention of modernizing them to take advantage of the self-contained centerfire cartridges, which were making initial appearances. As he had no particular proprietary interest in the pinfire, his company was free to develop its own, more efficient system.

The first Devisme revolvers were percussion models. (See the article "The Enigmatic Devisme," Guns & Ammo, January 2021, for a full treatment of these guns.) Initially appearing around 1854, they have been called by modern enthusiasts "Model 1854" or "Model 1855." Even though these guns, along with the later Model 1858 hinged-frame cartridge revolver, were not termed as such during the period of production. For convenience, though, we will use those designations.

By the mid-1850s, various self-contained cartridges were



already being marketed or were at least in their embryonic state. Later, the works of Hiram Berdan, Stephen Vincent Benet and Edward Boxer would become prominent, but earlier centerfires, though often underpowered and somewhat complicated, were becoming increasingly popular and beginning to threaten the percussion system.

Such was the situation with the Devisme. By 1858, the firm had embraced a practical centerfire round and was confident enough in its efficacy to modify earlier percussion M1854 revolvers to handle it. This proved to be sound judgment, and shortly thereafter, the business introduced a new, hinged-frame revolver that was easier to manipulate. (The converted percussion model had to be disassembled to laboriously load cartridges and eject spent cases.) The caliber was 12mm. Both 1854 and 1858 revolvers exhibited distinctive, ergonomically sound, fluid Gallic styling.

Quality was excellent and, especially with the 1858, mechanisms were clever and serviceable. Though both the 1854 and 1858 were produced alongside the other for a time, the latter arm was more suited to its task with a clever latching system and bottom hinge opening. To load



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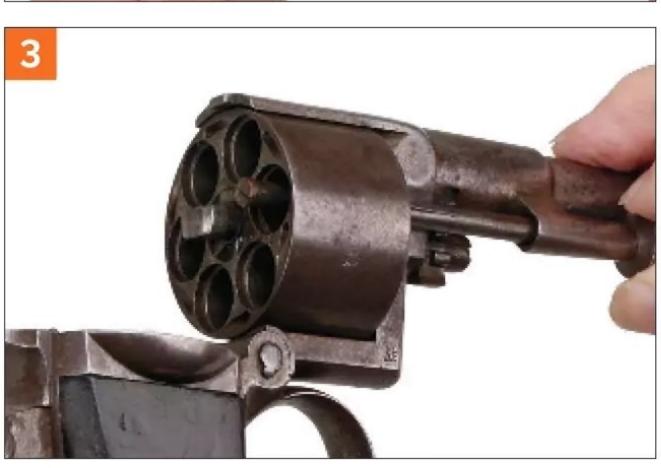
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The Model 1858 loading mechanism is unique to this revolver, involving a forward mounted lever [1] which, when turned, releases the gun's cylinder arbor from its keyway [2], allowing the revolver to be opened for loading and individual extraction of cases using a rod [3].

a '58 piece, a shooter simply pushed a generous underlever situated at the forward part of the frame to the left. This cammed the cylinder arbor 45 degrees, freeing a set of dual lugs from a rectangular hole in the face of the recoil shield. At the same time, the ejector rod rotated upwards to the right, where it was properly positioned to push out spent cases. It was clever, fast and efficient.

Both the Model 1854 and 1858 received considerable attention on the Continent, however, they apparently didn't catch on all that well in America or Britain. Belt-sized revolvers, as well as pocket models, were manufactured by Devisme and under contract by others, such as Liege, Belgium, and maker Auguste Francotte, in several calibers. These enjoyed good domestic civilian sales.







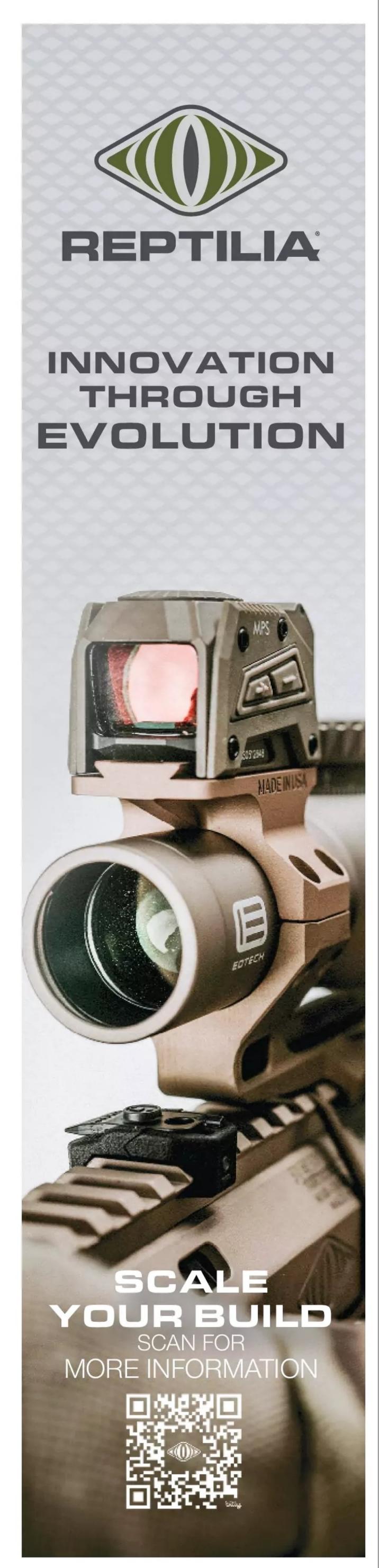
To load a Model 1854, the shooter lowers a side lever [1] that disconnects the barrel assembly from the frame [2]. The cylinder may then be removed and cartridges inserted, and empty cases removed using the cylinder arbor [3].



What appears to be a side hammer on the Model 1854 is actually a cocking lever that operates a firing pin located in the top, center of the revolver's recoil shield.

Curiously, unlike the rivals Raphael and Perrin, they were either unable or unwilling to take proper advantage of the hunger for arms during the U.S. Civil War. As a result, contracts were not sought, or their applications were simply ignored. Probably Devisme's highest profile during the war was in

















The Galand's triggerguard serves double duty of an operating lever [1]. When lowered [2] it moves the barrel assembly away from the frame [3], at the same time activating a captive circular extractor that pulls spent cases free and allows them to be shaken loose [3].

the guise of a fine sporting rifle, which fired an explosive bullet, taken from Confederate President Jefferson Davis when he was captured by Union forces. Another notable piece was a magnificent presentation sword given to Confederate General Robert E. Lee by "a Marylander" in 1863.

PERRIN, RAPHAEL

Despite limited procurement, by process of elimination, two of the most successful French revolvers received on American shores during the Civil War were the Perrin and Raphael.

The Perrin revolver — ultimately made in three types, two with open top frames and one with a topstrap — was designed by Louis Perrin of Paris and patented in 1859. They were spurless and largely differentiated from one another by redesigned loading gates and some internal refinements. These 6-shot revolvers were designed to take an interesting, rather involved

thick-rimmed, internally primed cartridge. Calibers included 9mm, 11mm and 12mm, with the latter being most common in military-grade arms.

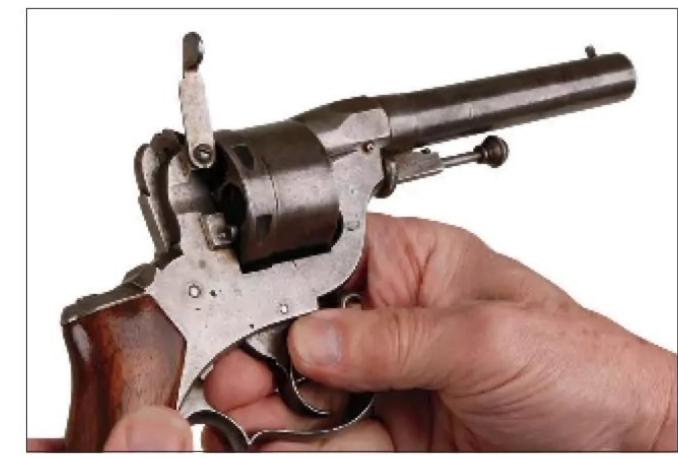
Due to Perrins having no hammer spurs, a clever arrangement was built into the design whereby when one pulled the trigger slightly to the rear, a safety spring would snap into position and hold the hammer in an abbreviated half-cock to permit cartridge loading and empty case ejection.

The cartridge designed for the guns was similar to — but not exactly the same as — the later Galand round. The Perrin was among the earliest types of self-contained centerfires, leading the way for later improved designs. Generally, they worked just fine. Because of the attenuated length, rather elaborate internal centerfire apparatus and relatively deep seating of the bullet, space within the case for powder was considerably reduced. This resulted in rather mediocre stop-











The main difference between the Type I and Type II Perrin revolvers is the robustness of the revolver's loading gates. The Type I has a thin gate that rotates to the side [1] while the Type II loading gate moves rearward [2]. Both varieties use a side-swinging rod for single case ejection [3].

ping power.

Perrins were well made and reliable. At the beginning of the Civil War, the United States contracted for 1,000 Type I and Type II Perrins along with a quantity of ammunition. However, distribution of the guns was haphazard, so it's difficult to determine how many, if any, ever saw combat prior to the rescission of hostilities in 1865.

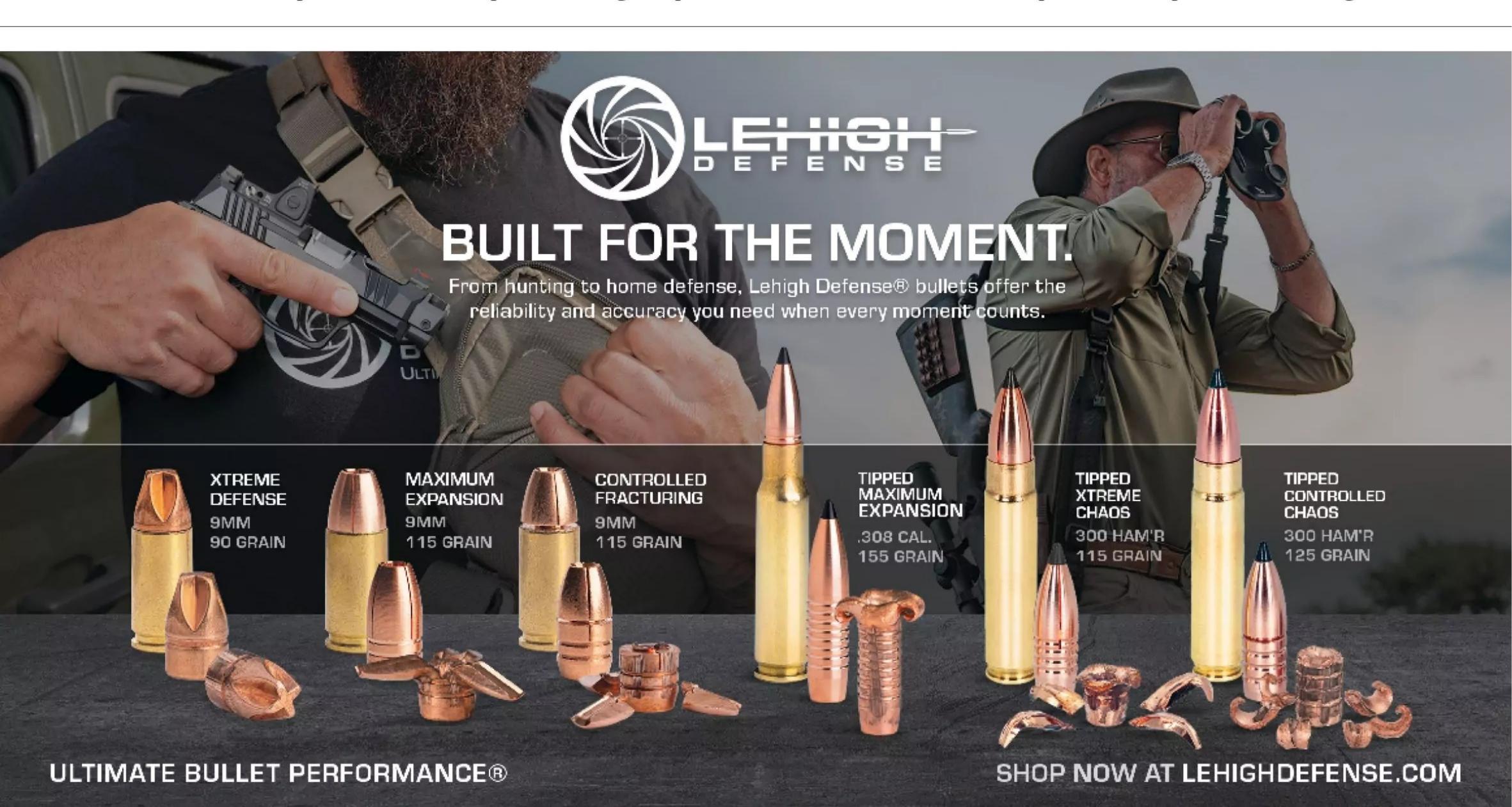
Perrin's strongest rival was the double-/single-action (DA/SA) 11mm Raphael designed around 1860 by Parisians Martial Pidault and Charles Cordier. It got the name "Raphael" in the U.S. because examples were purchased by the Union War Department from importer George Raphael



& Co. The Raphael resembled the Perrin somewhat but did have a hammer spur for thumb-cocking. While Perrins used under-barrel rotating ejector rods, the Raphael featured a separate ejector/lanyard ring housed in the grip. It could be unscrewed and used to separately poke out cases from the rear of the gun's cylinder through a loading gate. Though the DA/SA mechanism was relatively

straightforward, the cylinder was complex, consisting of a main body and a backplate that rotated with the cylinder. When the loading gate was opened, it was unlocked and allowed for ejection.

Neither Perrins nor Raphaels were purchased in large









The pinfire was the earliest successful self-contained cartridge system. It continued in use in longarms and handguns for a considerable time. Though many styles abounded, the typical Lefaucheux revolver loaded its rounds through an upswinging loading gate [1] [2]. The most vulnerable aspect of the system was the protruding pins, which could be struck causing an accidental discharge [3].







The Model 1858T Naval Revolver loaded and ejected cases in a now-familiar fashion [1] [2]. The pinfire holes were not removed during the centerfire transformation and can still be seen at the rear of the chambers [3].

numbers, and their issuance was spotty. After the war, a small number of Perrins were purchased at a U.S. Government auction and were offered by the New York arms dealer Francis Bannerman in early 1900s catalogs for as lit-

tle as \$4.75 each, advertised as "almost new, no cartridges." A few Raphaels were obtained by Bannerman's from a New York Arsenal sale in 1900 and sold — also without cartridges — for \$3.50 to \$4.85, depending on condition.







Long and short 12mm pinfire cartridges shown with their respective boxes.



A scarce 12mm Devisme cartridge and 9mm box.



Early French cartridges. Left to right: Lefaucheaux pinfire, Perrin, Devisme. Though the Perrin appears to be a rimfire, it has an internal centerfire primer.

Considerably larger quantities of Lefaucheux 12mm revolvers were concurrently available from Bannerman for \$3.95 each, or \$1.25 in lots of 5,000 or more. Ammunition was available but not guaranteed.

GALAND

Though the revolvers mentioned so far certainly express individuality, they have a couple of things in common. First, though being forerunners in the field of the self-contained cartridge, the rounds were rather underpowered. The guns could be loaded and managed more rapidily than percussion repeaters, but cases had to be ejected one at a time, slowing down the reloading process.

The latter situation was ably addressed in 1868 with the

introduction of an ingenious new revolver contrived by Parisian Charles-Francois Galand. Instead of a solid frame or one that opened on a hinge, Galand designed a forward frame/barrel portion of which slid forward when the shooter lowered the gun's sturdy lever-like triggerguard. During this action, the frontally rebated cylinder also moved forward on its arbor, a rear plate separating from the unit. This plate would grip the thick rims of the Galand cartridges, pulling them free of the chambers and allowing them to be shaken loose. The arm could then be easily reloaded, and the lever and frame/cylinder returned to firing condition.

The Galand revolver featured a robust DA trigger, elements of which would be seen on later revolvers such as the Belgian Nagant. The round accompanying the arm was

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The Raphael employed a separate backplate that unlocked from the cylinder body when the loading gate was opened [1] [2]. Ejection of spent cases was accomplished by a rod with an attached lanyard ring that was unscrewed from the base of the revolver's grip [3].



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thicker and the case slightly longer. As in the Perrin, it was internally primed. Calibers were 12mm and 9mm.

Galand revolvers were evaluated by a number of countries and were eventually adopted by the Russian Navy as the Model 1870. In the meantime, civilian sales continued apace and numbers of Galands were made in France and Belgium. Galand also partnered with the firm of Braendlin, Sommerville & Co., which produced versions in Birmingham, England.

Though soon overtaken by more sophisticated designs such as the Smith & Wesson No. 3, Galands were manufactured for a number of years and enjoyed brisk sales. Interestingly, Galand offered his design to the French government for evaluation, but it was passed over by a more conventional, though excellent, solid-frame Chamelot-Delvigne, which was taken into the service of the republique as

the revolver Modele 1873. Like its predecessors, the 1873 was somewhat underpowered for a military arm. Still, it enjoyed a long life, seeing military use as late as the mid-20th century.

Despite the practicality and innovation, with the exception of the Lefaucheax, most of the revolvers mentioned here saw only moderate military use. Those that did were likely privately purchased by officers. Still, they enjoyed strong civilian sales. In the manner of many other foreign and domestic civilian and military arms dragooned into service during the Franco-Prussian War (1870-71), Devismes, Lefaucheauxes, Perrins and Galands did see some action during that brief but seminal conflict.

While most of these arms had short production runs, they provided important stops along the way to more powerful and reliable cartridge handguns. During their time they were respected and taken quite seriously, as they should be today.







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A four-prong flash hider is supplied as the muzzle device on the AP53. Underneath, the muzzle is threaded ½x28, opening the door for users to change devices or suppress it.





The Century Arms AP53 is available with or without a pistol brace. The Magpul BTR is adjustable for length of pull and mounted to a backplate with an AR-pattern receiver extension.

CENTURY ARMS AP53

TYPE	Roller-delayed blowback, semiautomatic				
CARTRIDGE	5.56 NATO				
CAPACITY	30 rds.				
BARREL	8.3 in., chrome lined, 1:7-in. twist, threaded ½x28				
MUZZLE DEVICE	Flash hider, four prong				
LENGTH	31 in. (extended), 28 in. (collapsed)				
WEIGHT	7 lbs., 9 oz.				
STOCK	Magpul BTR brace, adjustable				
GRIP	Navy-style, polymer				
SIGHTS	Post, hooded (front), three-aperture, 1 notch, windage/elevation adj. (rear)				
TRIGGER	Single stage, 8 lbs., 12 oz. (tested)				
SAFETY	Selector lever				
ACCESSORIES	Two 30-round magazines, cleaning kit, sling, trigger lock, hard case				
MSRP	\$1,899 w/ brace, \$1,799 w/o brace				
MANUFACTURER	MKE, Kirkkale, Ankara, Turkey				
IMPORTER	Century Arms, 561-908-7993,				

centuryarms.com



Two takedown pins hold the upper receiver to the lower trigger pack and backplate assembly. With the backplate and trigger assemblies removed, the bolt slides out the rear of the upper receiver. Included with the AP53 is a cleaning kit, sling and stackable transparent magazines.



The bolt assembly features two rollers that lock the bolt when in battery to delay the cycle of operation until pressure is reduced.

A BRIEF HISTORY

The first HK 5.56-chambered roller-lock system was in the HK33, introduced in 1968. The first HK33 had a 15.4-inch barrel, 16 inches on the semiauto HK93 that was exported to the U.S. HK also made the HK33K, which featured a 13.1-inch barrel. In the late 1970s, HK introduced the even shorter HK53, reducing barrel length to 8.3 inches and giving it a collapsible

stock. The HK53 was purchased by several militaries, most notably the United Kingdom. The Brits fielded many to small units such as the Special Air Service (SAS), designating it the "L101A1" and "L101A2." The SAS used it on missions involving vehicles, but its short length made it handy in tight urban and indoor environments, as well. As tactical teams started acquiring short-barreled AR-15 variants in the 1980s and '90s, short-barreled ARs were not considered as reliable. Fitted with a collapsible stock, the HK53 in 5.56 NATO filled that need.

MAJOR ASSEMBLIES

The Century Arms AP53 is 28-inches long with the brace collapsed, and 31-inches long with the brace extended. The non-brace model with the feature-less endcap is 22.3 inches long. The Magpul BTR brace model, empty with no magazine, weighed 7 pounds, 9 ounces.

The barrel has a four-prong flash hider installed. Unlike



The AP53 can be locked to the rear manually, but the bolt does not lock rearward after the final round in the magazine is fired. Like the HK53 and MP5, the bolt can returned to battery with a hand slap.

the HK variants, which have metric threading, the barrel of the AP53 is threaded ½x28 to make it convenient for American endusers to change the muzzle device or mount a suppressor.

The AP53 continues the modular construction, which was advanced when the platform was introduced in 1959. The upper receiver is stamped sheet metal, which is the serialized part. The barrel and trunion are welded to the

receiver. The lower trigger assembly features a polymer module with an internal chassis, trigger and selector components — i.e., the "trigger pack" — held in place by two crossbolt pins. Pop out those push pins and both the endcap and the lower receiver can be separated from the upper receiver. Then, the bolt and carrier assemblies can be removed from the rear. The recoil spring and guiderod assembly on these pistols is affixed to the end cap.

One pin secures the triangular polymer forend in place. The AP53 will accept MP5-style handguards. In fact, that's what comes installed on Century's AP53. True HK53 handguards extend to the back of the receiver, almost to the magazine well, to protect the support hand. These guns get hot quicker than the 9mm MP5, but you'll be out of ammo before the thick handguard gets too hot to hold.

WORKING THE CONTROLS

The charging handle on the AP53 is forward on the left



The AP53's magazine well has been enlarged slightly versus the original HK design. This effort improved reliability with different magazines. Magazines insert straight into the magwell for operation.



Two transparent, stackable polymer magazines are provided. The AP53 features both an ambidextrous paddle magazine release lever and a right-side-only push-button release.

for the protective ring of

the front sight to fit inside

it when taking a quick sight

picture, a ring within a ring.

The fourth position marked

meant for use at speed or

at close range. The entire

front sight tower fits inside

the wide part of the notch.

The rear sight is adjustable

for windage, too, using a

Phillips-head screwdriver.

Elevation can be zeroed

using a narrow needle-nose

pliers or, preferably, an HK

"1" is a stepped notch

side near the front sight. It's spring loaded and folds outward; it requires some force to cycle. The bolt can be locked back manually, though, by lifting it up into a notch. However, the action does not lock rearward when a magazine is empty. There is a button magazine release on the right side of the gun few use. Instead, magazine changes most frequently involve the paddle magazine release lever forward

of the triggerguard. Magazines insert straight in and are intuitive to change.

The polymer trigger housing features pictograph markings for safe, semiautomatic, three-round burst, and full automatic modes. The last two are just for show; the trigger is semiautomatic only and cannot be retrofitted to select-fire modes. The housing is the slim Navy-style with integral pistol grip. You can reach the selector lever with

your thumb, but these guns are notorious for hard-to-reach selector levers by some. The bilateral lever on G&A's sample was a bit stiff to operate.

The HK-pattern sights on the AP53 are iconic. The fixed front sight is a post protected by a sturdy hooded ring. The rear sight is a rotating fourposition drum with V-notch. Three of the positions are apertures. They are all the same diameter, but the height is positioned for use at different ranges marked on the drum: "2" for 200 meters, "3" for 300, and "4" for 400. The aperture is just large enough



True to the HK original, the Century Arms AP53 features a protected post at the front and a four-position drum at the rear. The rear sight can be zeroed for windage and elevation with a screwdriver.

rear sight tool, which is not provided.

At two spots on the top of the receiver are bulges where the provided rail attaches for mounting optics. The spacing between the receiver mounts is the same on the AP53 as on MP5-pattern guns, although they were moved back on the AP53.

HK-pattern roller locks are known for a few things, and heavy trigger pulls are one of them. G&A staff had an

> opportunity to shoot several samples. The lightest trigger tested at 7¾ pounds. The trigger pull on the sample featured in this column was 8¾ pounds. They are shootable, but you really have to work at it.

G&A's initial sample was one of five prototypes in the U.S. A piece in the cocking tube was discovered to be out of spec, causing issues with the charging handle. A replacement was obtained, making it trouble free.

Derek Giddings, Team HK shooter, was consulted, and he stated that the magazine well on the MKE-



The AP53 is semiauto only, however, the pictograms on the trigger housing falsely suggest three-round burst and auto functions.





PERFORMANCE

LOAD	VEL. (FPS)	VEL. (FPS) ES		BEST GROUP (IN.)	AVG. GROUP (IN.)					
.223 REM.										
Hornady Am. Gun. 55-gr. HP	2,384	72	44	1.3	3.1					
American Eagle 55-gr. FMJ	2,367	44	28	1.8	2.6					
Winchester 55-gr. FMJ	2,438	47	23	2.2	3.4					
5.56 NATO										
Black Hills 50-gr. TSX	2,564	42	30	2.1	4.2					
MKE SS109 62-gr. FMJ	2,389	52	36	2.8	4.1					

Notes: Accuracy is the average of four five-shot groups at 100 yards from a sandbag rest. Velocity is the average of 10 shots measured with an Oehler Model 35P chronograph set at 12 feet in front of the muzzle.

manufactured guns has slightly different (bigger) dimensions than that of actual HK models. Hence, MKE magazines are generally more reliable, good news for AP53 users. Additional MKE mags through Century are only \$30 apiece; authentic HK mags are \$80. Steel HK magazines were used in G&A's reliability testing, too. While they wiggled in the magazine well, reliability was perfect.

AT THE RANGE

While an 8.3-inch-barreled 5.56-chambered firearm is loud, the flash hider worked. Our first range session was indoors, specifically to test this. There was no visible flash with any load. While the MP5 is known for being the softest-recoiling 9mm sub-gun on the market, the same roller-lock system paired with the 5.56mm produces more recoil than a gas-impingement AR.

The heavy trigger pull didn't help our accuracy test, but with patience and a Leupold Mark 5HD 2-10X, some decent groups left the short-barrel.

This was also the first time G&A experienced the Magpul BTR brace.

For \$100 extra, the AP53 includes the brace, buffer tube and castle nut, too, which is a solid value. However, of all Magpul products, it was the least impressive. Handgun Editor Jim Tarr called it a "near minimum effort." If you want a braced AP53, the SBA5 brace from SB Tactical (\$125, sb-tactical.com) is the preferred choice. It vaguely resembles an HK416 stock, so aesthetically it complements the AP53 and is more functional.

The AP53, objectively, is inferior to an AR-15 of the same size. The safety is hard to reach and stiff to manipulate. The gun weighs more while producing more recoil. The bolt does not lock back on an empty magazine, and the charging handle isn't quite as easy to work. The trigger pull is both longer and heavier. It's not as accurate, or all that accurate either. Despite these considerations, the heart wants what the heart wants. It is an iconic design and a piece of firearm history. Until now, it's been largely unobtainable in the U.S. It is reliable, durable and a battle-proven design that will continue to put smiles on the faces of those who can find one. CA



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Special Interest Publications for enthusiasts!

NICHING THE NICHES

AT GUNS & AMMO, we take pride in our mandate to review any firearm category or topic. However, the once-per-month publication means if anything is missed in an issue, it may need to be covered in the next month's. Being a general interest publication, though, can mean that some readers only get a taste of their particular interest. A pistolero may skip straight to James Tarr's latest handgun feature, leaving the other articles unread. For those who want a focused experience, allow me to introduce the Outdoor Sportsman Group's Special Interest Publications (SIPs) Division.

"We're the opposite of a general firearm magazine such as Guns & Ammo," said SIP Editor-in-Chief D. Faubion. "By producing a variety of special interest magazines for the Guns & Ammo brand — 'AR-15,' Suppressor,' 'Rimfire,' 'Precision Rifle Shooter,' 'Carry,' and many more we provide readers with the option of sighting in on certain firearm topics. Maybe you're in the mood for longrange shooting, considering a red dot for your carry gun, or exploring the benefits of pistol-caliber carbines. No matter what it is, the SIP Division has you covered."

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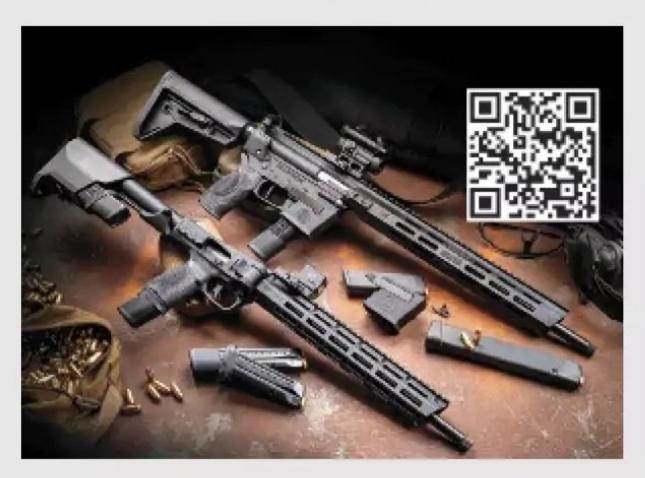
Deciding the topic for each publication depends on several factors, including demand and industry trends. When readers submit requests for articles on rimfires, Faubion's team answers with the "Rimfire" edition, which is dedicated to ammo, optics, and everything that shoots them.

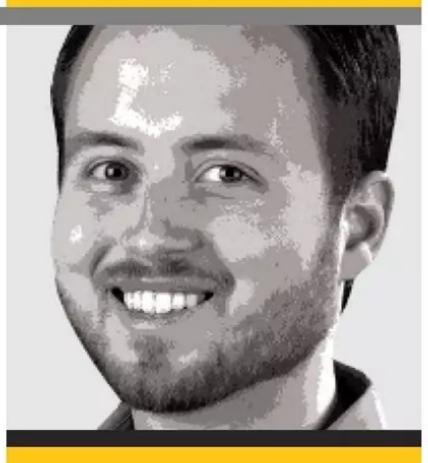
Categories of firearms and ammunition aren't limiting. For example, the SIP Division released its best-selling publication, "Zombie Nation," at the height of the zombie craze in 2012. It was an SIP focused exclusively on how to survive hordes of walking dead.

Manufacturing trends also influence the publication schedule. For instance, as interest in lever-action rifles rises, new models from Henry, Marlin, Rossi, Smith & Wesson, and others have emerged. The surge in availability meant that there was enough new material available to support a dedicated magazine.

SMITH & WESSON SHOWDOWN

Which pistol-caliber carbine (PCC) from Smith & Wesson is right for you?





ANTONIO ACITELLI

Have a niche subject you want to learn more about? Perhaps, you just can't get enough of a certain type of gun? Email us at gaeditor@outdoorsg. com to get the conversation started.

TOP COMMENTS

In response to "Connect" (May 2025), titled "Quick Response":

Concerning the utilization of QR codes: Please give consideration to those of us who do not possess nor use smart phones. Thanks. — Joel R., Email

Dear editor, as hard as it seems to realize, not everyone today uses a "smart phone." To hold down monthly costs — I am on a fixed income — I use a Tracfone, which is voice and text only. So, I vote against widespread use of QR codes. I know that I am in the minority, but it makes me wonder if print magazines will someday be nothing but two sheets of paper filled only with QR codes! — Phil M., Email

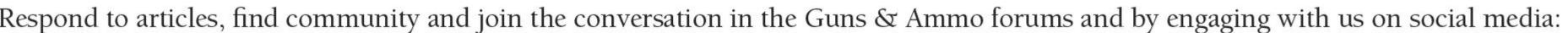
I love it when my copy of Guns & Ammo shows up in the mailbox. I know that I can cuddle up in bed at night and read some interesting, educational, and enjoyable information about a hobby, and it means I can be away from my computer for a few hours. My life career has been in computers, and it's nice to get away from them for relaxation. I especially dislike QR codes, as I don't like to read from my cell phone. It's the pits to get it on to some comfortable format. I have pretty much canceled all the magazines, books, etc., that I read for pleasure. Computers are for business. I would hate to lose the enjoyment of this magazine, but I will have to give up on this one if the format is changed. There are other magazines I have been taking for years as well, and others available to switch over should you move to the QR format. Please keep up being the fine magazine you have always been.

— Leyne E., Email

If you go to QR codes, I'm out. — Frank N. Email









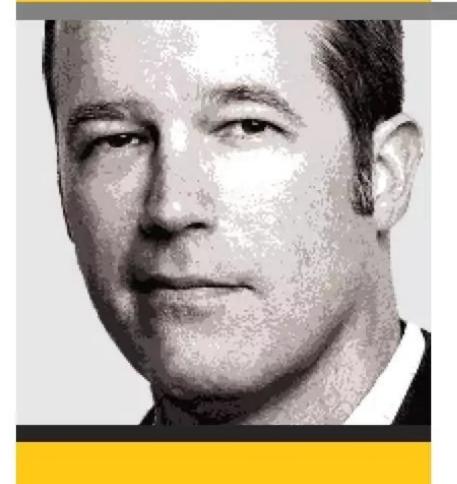








96 G&A AUGUST 2025 SPENT CASES



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KEITH WOOD

BACK ON TRACK

IN 2024, former Guns & Ammo Publisher Doug Hamlin took the reins as CEO and Executive Vice President of the National Rifle Association (NRA). He stepped into the unenviable position of cleaning up the waste left in the wake of Wayne LaPierre and his cronies. I wished Mr. Hamlin well, but given the circumstances, I wasn't over-

whelmed with optimism.

A year after his election to the role, I sat down with Hamlin for a one-onone meeting at the NRA Annual Meeting in Atlanta, Georgia. He looked me in the eye and shot me straight. No question was off the table. After months of quiet observation, backchannel discussions with NRA staff, and finally this sit-down, I am convinced that the organization is on the right path.

Serving six years as a U.S. Marine officer, Hamlin became a close confidant of Guns & Ammo Founder Robert "Pete" Petersen. Hamlin is what I've long said the NRA has needed: A humble businessman. He's not the type who loves to see his face on TV, but rather a leader who makes the trains run on time. He's not an egomaniac, and he buys his own suits. (I asked.) During his first year, Hamlin quietly cleaned house. He dismissed numerous executives and replaced them with folks who came through the ranks at headquarters in Fairfax, Virginia, those who want to see the NRA succeed. I've known several for decades, and they are solid, honest individuals.

As part of what Hamlin calls "NRA 2.0," he instituted widespread reforms inside the organization. Perhaps most importantly, he severed the NRA's ties with William A. Brewer III, the attorney who reportedly collected more than \$200 million in legal fees from the organization for more than 6 years. It was precisely that type of excessive spending that disillusioned many longtime NRA supporters — myself included.

I've advocated for reforming the NRA's Board of Directors, including use of this column. During the 2025 elections, self-described "reform" candidates were successful in taking over 20 of the 29 available board seats. At the annual meeting, board member and NRA 2.0 supporter Bill Bachenberg was elected as the NRA's President. As

> Donald Trump, Jr. put it, "Bachenberg being named the new president of the NRA Board of Directors is a positive, and much-needed step in the right direction."

Though other organizations, including the National Shooting Sports Foundation (nssf.org) and Foundation (saf.org) are reality is that no group has been able to fill the NRA's

the Second Amendment doing great work advocating for our rights, the

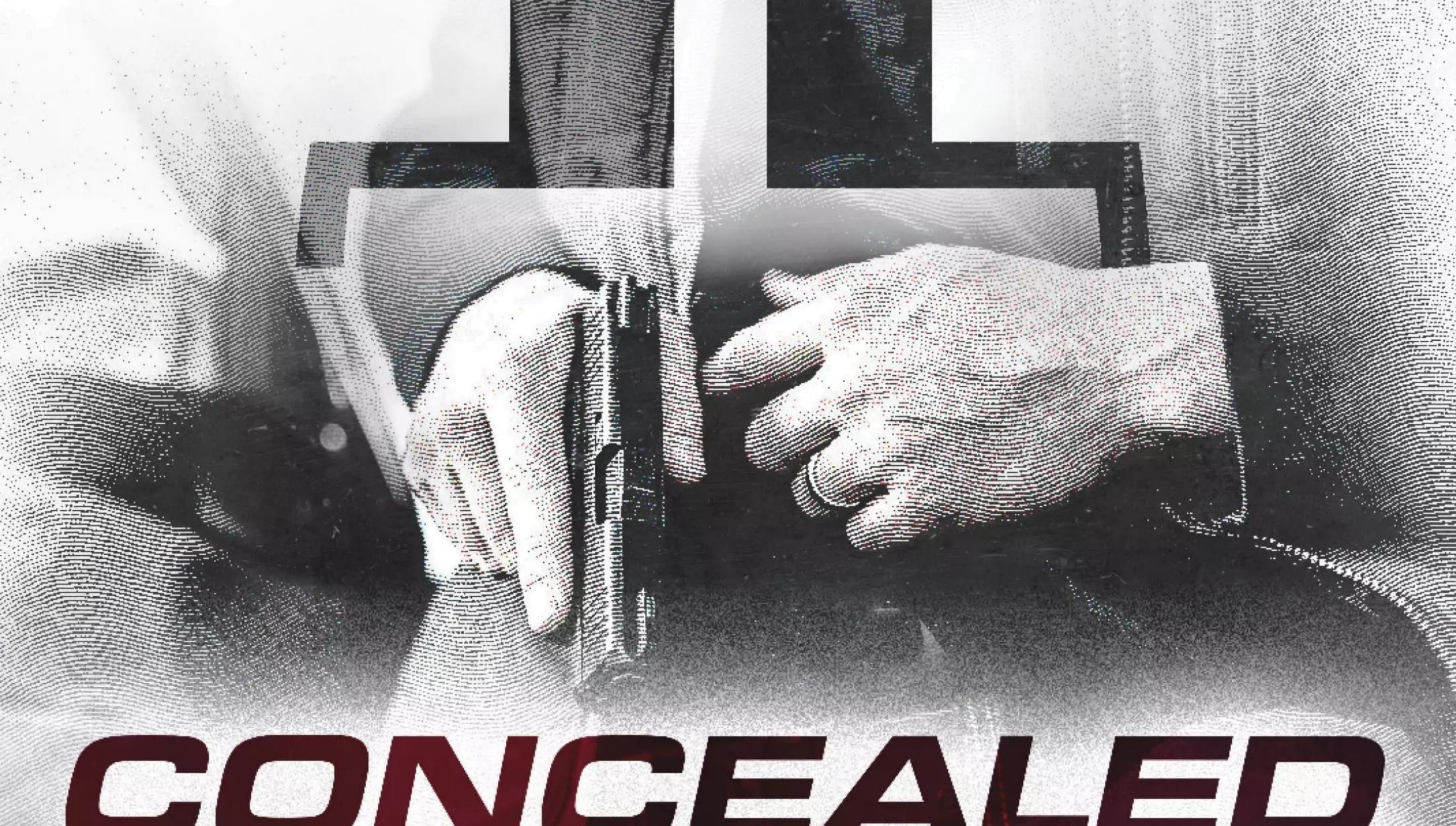
shoes. Rebuilding the NRA has always been gun owners' best bet. With Hamlin at the helm, that process is underway.

I joined the NRA as a teenager and have been an Endowment Member for decades. In recent years, I've been hesitant to contribute to the organization financially. As a former employee, I saw things that I thought were the result of ineptitude. They turned out to be downright fraud and waste. "Not another penny," I swore.

Seeing the reforms that are being made has changed my tune. While in Atlanta, I put my money where my mouth is and bought my 10-year-old son, James, a Life membership. My hope is that, during his journey, the NRA will continue to protect the rights of all Americans, as well as the future.

NRA 2.0 still has a tough road ahead, but through these actions they've won back my support. Returning the NRA to its position of influence will take time — and money. If you've let your membership lapse or, like me, stopped writing checks out of frustration or mistrust, maybe it's time to reconsider. I did. 🖎





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