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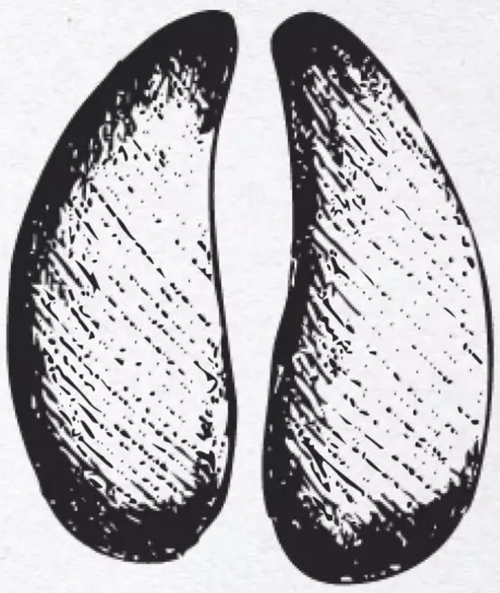
Hit dirt at 0500. Ridge is steeper than mapped. Saw three cows. Bull sign old. Wind swirled hard around noon. Left knee barking as always. Good day to have a good day.

Roughly 4.75 in



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January/February 2026
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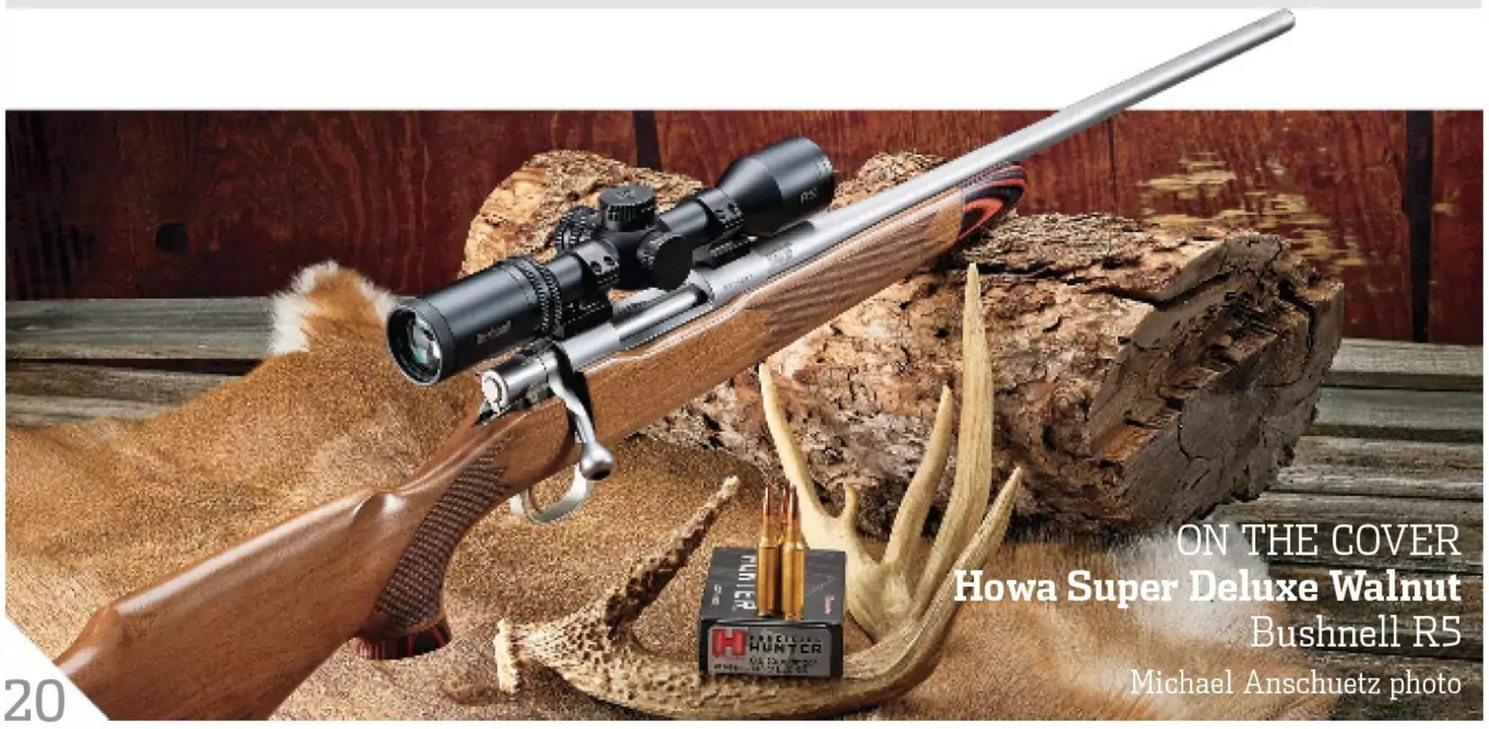

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Cease Fire

Editor in chief Scott Rupp and his 1920s-vintage Savage 99 in .300 Savage on a Pennsylvania deer hunt.

It's hard to write this, but the magazine you're holding is the final issue of *RifleShooter*. It got its start as a special-interest, annual publication in the 1990s, becoming a periodical in November 1997. The late, great Jerry Lee helmed the magazine for its first decade, and I took over as editor in 2007.

In those days we were headquartered on Wilshire Boulevard in Los Angeles. You'd think that an odd place for a firearms magazine—and you'd be right, except when you consider this magazine's official title is ***Petersen's*** *RifleShooter*. For those not familiar, the late Bob Petersen built a publishing empire in Southern California around such famous titles as *Motor Trend* and *Hot Rod*. While he was a serious car guy, Petersen was also a serious gun guy and hunter, so he founded *Guns & Ammo* magazine. *Guns & Ammo* became the core of a portfolio that eventually boasted the most popular firearms and hunting magazines in the country, including *Petersen's Hunting, Shooting Times, Handguns, Shotgun News (*now *Firearms News)* and many more.

Over its nearly 30-year existence, *RifleShooter* has hosted some of the great names in firearms writing. Our crew still includes such luminaries as Craig Boddington and Layne Simpson—along with my old office mates Jeff John and Payton Miller—and to the all-time roll call you can add Garry James, Jon Sundra, Wayne van Zwoll, Terry Wieland and others. It's been really gratifying to be able to publish articles from newer talent as well, guys like Brad Fitzpatrick, Joseph von Benedikt and Keith Wood. They've brought not only expertise but often a fresh perspective on what makes today's rifles worthy of your attention.

A magazine isn't just writers and editors, and it wouldn't be possible without the dedication and hard work of publisher Chris Agnes, art director Heather Ferro, photographer Mike Anschuetz, copy editor Bill Bowers, production manager Liz Carey, production coordinator Ashley Honea and executive administrative assistant Sue Fitch. They do a lot of the heavy lifting behind the scenes and deserve a ton of the credit for the quality we've strived to deliver to readers.

Alas, all good things must come to an end. As *RifleShooter* subscribers already know, their subscriptions will be rolled into *Shooting Times*. For you newsstand readers, if you haven't checked out *Shooting Times*, I'd encourage you to do so. My friend Joel Hutchcroft is the editor, and he has similar tastes regarding rifles as many of you do.

America's rifle tastes have certainly changed over the years. The AR platform has carved out a big market share, and synthetic stocks have largely supplanted wood. Features that were once the province of competition and "tactical" rifles—adjustable stocks, aluminum chassis, M-Lok and optics rails, et cetera—have migrated into hunting rifles. Cartridges of modern design like the 6.5 Creedmoor, the PRCs and others have stormed onto the scene. Large-objective scopes with reticles undreamed of three decades ago are commonplace, as are suppressors. Some have decried these trends, but change is part and parcel to the American rifle scene. Otherwise we'd all still be shooting Trapdoor Springfields in .45-70 (not that there's anything wrong with that).

I know I've seen my own tastes evolve. I started out hunting deer with a Winchester 94, switched to a Remington 760, followed by a wood-stocked Model 700. I restocked the 700 when I became convinced that synthetic was the way to go, and more modern rifles and cartridges soon followed. But as I grew older, I became more interested in classics, and a Ruger No. 1 .300 H&H, a Savage 99 .300 Savage, a Marlin 1895 .444 Marlin and similar rifles found their way into the safe. I also gained an appreciation for vintage military rifles like the M1, .30-40 Krag, M1903 Springfield and several others.

At the same time, I've gotten more demanding in terms of accuracy. While they're of the new breed, I would never part with a Ruger American Gen II 6.5 Creedmoor and a Benelli Lupo .308 because they can put three shots into half an inch at 100 without breaking a sweat.

I'm sorry to see *RifleShooter* go, as I'm sure you are. However, I'm planning on enjoying a lot more field and range time with my favorite rifles and devoting more time to handloading—as well as haunting gunshops and auction sites to look for a No. 1 7x57 Mauser, a Savage 99 .250 Savage, maybe a Sharps. I've got a CZ that's just itching to get back on the NRL22 firing line, and I look forward to starting on my first DIY rebarrel project, a .25 Creedmoor.

That's the thing I love about the world of rifles: There's always something new to learn about and shoot, and it's waiting just around the corner. See you on the range.

—J. Scott Rupp

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The Goldilocks Creedmoor

WITH BETTER WIND DRIFT THAN THE 6MM OR 6.5—AND LESS RECOIL THAN THE LATTER—THE NEW .25 DELIVERS AT LONG RANGE.

by Keith Wood

Regardless of whether you're a fan, Hornady's 6.5 Creedmoor forever changed cartridge design and consumer expectations of factory ammunition. The Creedmoor's success was a slow burn but, once it took off, there was no stopping it. In the years that followed, Hornady's ballisticians have applied the lessons learned from that cartridge to a broad spectrum of applications ranging from the .300 PRC down to the .22 ARC. The newest among them is the .25 Creedmoor, a cartridge with real potential for long-range competitive shooting as well as hunting medium-size game.

Those who toss aside the Creedmoors as equals to other cartridges with similar velocities are missing the point. There is far more to cartridge design that bullet diameter and velocity. There are a few important principles that made the 6.5 Creedmoor successful, and these have been carried forward to other cartridges, including the new .25 Creedmoor.

The first principle is to get more of the bullet out of the case body. The junction of the ogive and the bearing surface sits outside the case rather than inside the neck. That provides more case capacity for propellant and puts tighter constraints around the bullet as it transitions to the rifling.

This goes hand in glove with the next principle, which is to control freebore dimensions so there is little room for the bullet to tip as it begins its journey into the bore. The freebore on the .25 Creedmoor is 0.150 inch long and 0.2575 inch in diameter. This tight diameter is one of the keys to the cartridge's accuracy potential. Compare that to the .257 Roberts, whose freebore diameter is a gaping 0.261 inch.

Another Creedmoor trademark is head height, which allows for longer and more aerodynamic bullets to be used without pushing the bullets deep into the case. Traditional bullets in the .257 diameter topped out at around 120 grains, which was just fine for the short- to medium-distance hunting applications of the era. The .25

Creedmoor's head height allows for much longer bullets such as Hornady's 138-grain A-Tip and 134-grain ELD Match.

So why a .25 when there are already 6.5 and 6mm options? Call it the Goldilocks solution for long-range precision matches. Let's take the Precision Rifle Series as an example. For many years 6.5mm cartridges dominated the sport until shooters began migrating to 6mm cartridges due to their reduced recoil. The ability to spot one's shots downrange is a key element of that sport, so even a minor reduction in recoil becomes a significant advantage.

The .25 Creedmoor splits the difference between the 6.5 and 6mm cartridges. It produces slightly less recoil than a comparable 6.5 but with longer barrel life than most 6mms. Perhaps most importantly, it has superior wind drift characteristics when compared to either the 6.5 or 6mm cartridges in its class.

With all things being equal, the .25 Creedmoor's 134-grain ELD Match load drops 40 inches at 500 yards compared to the 6mm 108-grain ELD Match's 38-inch drop and the 6.5mm 140-grain ELD Match's 44 inches.

When it comes to wind drift with a 10 mph wind at 500 yards, the .25 Creedmoor drifts 13 inches with the 134-grain ELD Match and only 11.8 inches with the 138-grain A-Tip. The 6mm and 6.5 drift 16 and 14.5 inches, respectively.

J. Scott Rupp photo

The new .25 Creedmoor (c.) couldn't be more different than the 1920s-era .257 Roberts (l.) or 1969's .25-06 Rem. The Creedmoor takes advantage of modern case design that allows it to shoot high-BC bullets—making it a great low-recoil, high-performance option.

These numbers might seem like marginal advantages, and they are. The reality is, though, at its highest levels PRS is a sport where tiny margins add up. The difference between hitting or missing a target or two over the course of a two-day match can determine the winner.

My hands-on introduction to the .25 Creedmoor came during the 2025 Hornady Precision Rifle Challenge near Woodruff, Utah. This match, which is considered one of the toughest in the PRS, involves long shots in tricky wind situations.

This was my first-ever PRS match and, boy, did I pick a hard one. My rifle was a borrowed .25 Creedmoor built on a Zermatt Arms TL3 action with a 1:7.5 twist 26-inch pre-fit barrel from Preferred Barrels. The barreled action rode in an MDT chassis, and my scope was a Leupold Mark 5 HD 5-25x56. I shot Hornady's 134-grain ELD Match ammo exclusively, which gave me an

.25 BALLISTIC COMPARISON

Cartridge/Bullet	Bullet Weight	G1 BC	Muzzle Velocity	Muzzle Energy	300 Yd. Drop	300 Yd. Drift	800 Yd. Drop	800 Yd. Drift
.25 Creedmoor								
Hornady ELD Match	134	.645	2,800	2,332	12.3	4.7	165.3	39.3
Hornady A-TIP*	138	.695	2,800	2,402	12.2	4.4	160.4	35.9
Hornady ELD-X	128	.633	2,850	2,308	11.8	4.7	159.7	39.1
6mm Creedmoor								
Hornady ELD Match	108	.536	2,960	2,101	11	5.2	156.5	44.5
6.5 Creedmoor								
Hornady ELD Match	140	.646	2,710	2,283	13.5	5.3	183.1	44.8
.25-06 Rem.								
Win. Ballistic Silvertip	115	.453	3,060	2,392	6.4	6.2	149.8	54.1
.257 Roberts +P*								
Nosler Ballistic Tip	115	.453	2,800	2,002	13.4	7	198.6	61.8

Notes: (*Handload.) Trajectories and wind deflection based on 200-yard zero and 10 mph wind at 90 degrees.

average muzzle velocity of 2,863 fps at 6,400 feet of elevation.

Three out of the nine shooters in my squad were shooting rifles chambered in .25 Creedmoor, while another was using the .25x47 wildcat. Our squad was very generous about sharing information and, as the match progressed, it became clear that the .25 Creedmoor had a slight but definite wind advantage over the 6.5 and 6mm cartridges. For someone who is new to the sport, that was a tremendous aid when it came to hitting some of the longer targets in tough wind conditions.

NRL Hunter is another precision rifle sport that has rapidly gained popularity. Unlike PRS, NRL Hunter uses a power factor. The .25 Creedmoor just clears that hurdle, especially with the 138-grain A-Tip bullet, making it the most efficient factory cartridge available for that sport.

America's history with .257 cartridges is almost exclusively tied to hunting, and the .25 Creedmoor will be no slouch in that role. Hornady's Precision Hunter load pushes a 128-grain ELD-X at 2,850 fps, giving it excellent drop and wind drift characteristics beyond traditional hunting distances with minimal recoil. In November 2024, I watched Hornady senior ballistician Jayden Quinlan drop a fat Wyoming whitetail buck with the then-unreleased .25 Creedmoor using the ELD-X. With traditional-weight hunting bullets such as the 117-grain InterLock, the .25 Creedmoor bests the .25-06 in terms of velocity.

The .25 Creedmoor isn't a game-changer that will make other cartridges obsolete but rather a common-sense round that fills an important niche in the precision shooting and hunting market. The combination of modern cartridge design characteristics with slick bullets that will maintain velocity downrange and perform well in the wind makes this cartridge a viable choice for PRS, NRL Hunter or for a low-recoil cartridge for deer-size game.

It's prior to hunting season as I write this, and I plan on using the .25 Creedmoor for much of my hunting this fall—even if it's just so I can say I used a .25 in '25. ■

Otis Suppressor Cleaning Kit

Unless you've been living in a cave, you're aware of how easy it's become to buy a suppressor. And if you've jumped on board that train, you probably know that at some point you're going to have to clean your suppressor. Otis has made that easier with its new kit, which retails for $40.

For me the star of the show is the threaded soaking container. This allows you to place the entire suppressor, whether the complete unit or a disassembled one, into the container and soak it for 24 to 48 hours—and not worry about knocking it over and spilling liquid everywhere.

The kit comes with Otis's suppressor cleaner concentrate, which you mix with warm water in a 1:1 ratio. This cleaner contains no petroleum products, and it promises to be safe on all mil spec and factory finishes. That includes anodized aluminum, stainless steel/inconel and titanium.

The formula is biodegradable, non-flammable and non-toxic. It's non-hazardous as well, so it's easy and safe to dispose of once you're done.

Also included are a baffle brush with handle, plus nylon, bronze and stainless steel gun cleaning brushes. Obviously don't use the bronze or steel brushes on aluminum parts or the exterior. There's also a micro-fiber cloth, as well as a pair of nitrile gloves and a small vial of CLP.

I disassembled a Banish 22 and a Banish 30 and placed the baffles from both and the tube from the 22 in the soaking container for 24 hours.

As someone who'd previously spent considerable time cleaning suppressors with various chemicals—as well as a sonic cleaner—I was impressed by how well the Otis kit did. Most of the fouling simply wiped off, and heavier deposits were easily removed by some judicious brushing. Even that probably would not have been unnecessary had I soaked for 48 hours.

But the 24-hour soak got them as clean as I need them to be. It's not like I'm going to eat off them. I do wish the soaking container had a smaller circumference so it would take less solution to fill to the necessary level, but then the supplied concentrate and all the accessories wouldn't fit.

Suppressors don't require a ton of care; you just need to service them from time to time. The Otis kit has everything you need to do that, and it cuts down on the effort.—*J. Scott Rupp*

.218 Bee vs .22 Hornet

The .22 Hornet's origin story begins in 1885 with the introduction of the .22 Win. Center Fire, a mild-mannered blackpowder round that was originally chambered in the Winchester 1885 single-shot. In the 1920s, Capt. Grosvenor Wotkyns and Col. Townsend Whelen began experimenting with the .22 WCF case, which featured a .350-inch rim and long, sloping, five-degree shoulder. They swapped the original .228-inch bullet for a .223 and then a .224-inch pill, ditched the blackpowder propellant for smokeless, and, in 1930, the .22 Hornet was born.

It was an immediate success. The early Winchester loads propelled a 45-grain bullet at 2,500 fps with little recoil or blast. Winchester offered its Model 54 in .22 Hornet in 1933, and three years later the new Model 70 was also chambered for the Hornet. A hot cartridge in its day, the .22 Hornet became a darling of handloaders who stuffed bullets from 34 to 55 grains in the Hornet case.

The .218 Bee was introduced in 1938 in the Winchester Model 65 lever action. Based on a necked-down .25-20 Win., it was capable of pushing a .224-inch 45-grain bullet at 2,860 fps. Even though the Hornet had gotten a boost in velocity to 2,650 fps, the Bee was still considerably faster.

However, it was also late to the party. By the time the .218 arrived, the .220 Swift, introduced in 1935, was already pushing .224 bullets over 4,000 fps. The Bee wasn't even Winchester's fastest lever-action .22 centerfire. That honor went to the .219 Zipper.

Hornady and Winchester's 45-grain jacketed hollowpoint .218 Bee ammo offerings manage 2,750 and 2,760 fps, respectively, and HSM offers a 35-grain V-Max that reaches 2,940, which is impressive for this little cartridge. It's worth noting that since early Bees were lever actions, most of the factory loads use flatnose bullets.

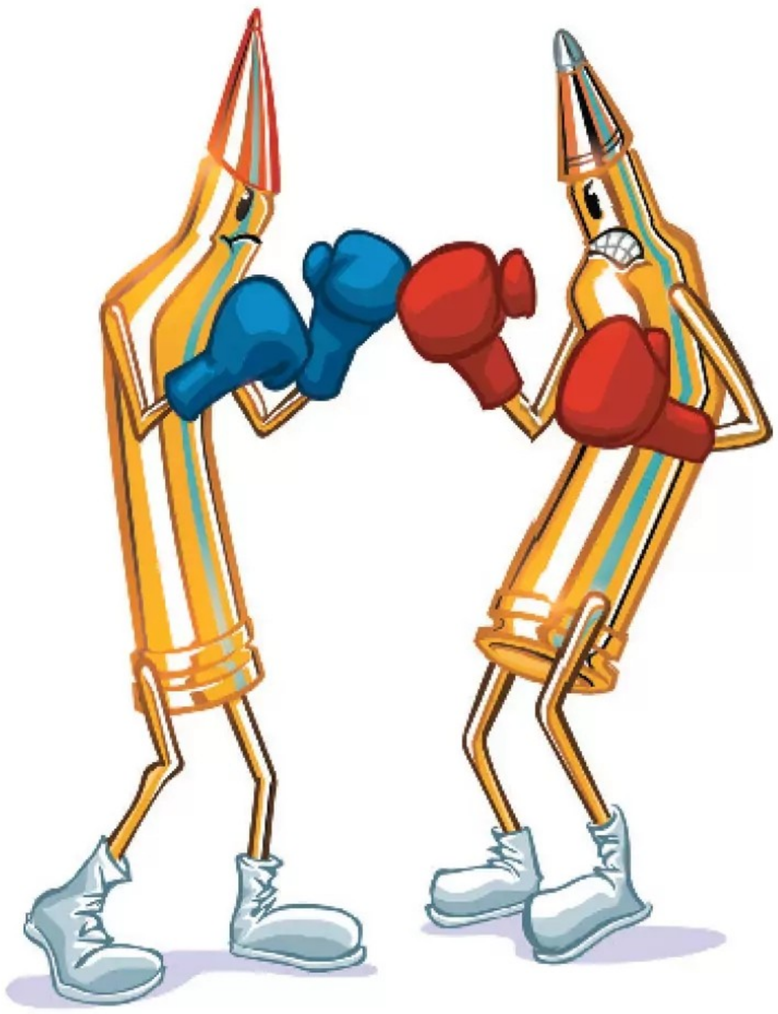
The .22 Hornet approaches Bee numbers in factory ammunition. The 45- and 46-grain loads from Remington and Winchester both attain 2,690 fps according to their manufacturers. The Nosler and Federal 35-grain offerings reach 3,000 fps, and the Hornady 35-grain V-Max achieves 3,100 fps.

It's worth noting, though, that the .218 Bee offers a larger case. This means handloaders will be able to achieve more with the .218 than they can with the Hornet.

There aren't a lot of .218 Bee rifles floating around, and none in production. In addition to the Model 65 it was also offered in Winchester's bolt-action 43, a handful of Sako L46s, and a few Kimber of Oregon 82s. Used rifles can command pretty high prices on auction sites.

There are more .22 Hornet rifles. Winchester, Ruger, Remington, Sako, Savage, CZ, Anschutz and other companies have offered .22 Hornet guns over the years. In Africa I once hunted duiker with a Holland & Holland Rook rifle and a Savage 25 Varminter, both in .22 Hornet. Ruger, Savage and Anschutz still offer .22 Hornets.

The Hornet holds the edge in ammo as well. Winchester, Hornady and HSM produce .218 Bee, but since this cartridge isn't as in demand as other, hotter .22s, runs of .218 ammunition are limited. There are a lot more .22 Hornet loads available. Remington, Nosler, Federal, Hornady, Sellier & Bellot and others offer factory ammo. You've got a chance of finding .22 Hornet ammo on a store shelf, but .218 ammo is considerably scarcer.



Ammo for the .22 Hornet runs as low as $0.65 for target loads and as low as $0.91 a shot for premium hunting fodder. Ammo for the .218 Bee, on the other hand, ranges from $1.36 to $2 per shot.

Both rifles are great for small game, varmints and predators the size of coyotes at close to medium range. And both are an absolute blast to shoot.

.218 BEE

HITS
- Can be handloaded to higher velocity
- Available in lever actions as well as bolt guns
- Panache for days

MISSES
- Rifles, ammo, brass harder to find
- Rifles and ammo tend to be pricier
- Not as much load data

.22 HORNET

HITS
- Widely available ammo
- Decent options for new and used rifles
- Just as capable as the Bee

MISSES
- Handloads can't match the Bee
- No lever-action option
- Not quite as exclusive a club

by Jeff John

Smooth Operator

WHILE THE KRAG-JORGENSEN WAS AN ODD SERVICE RIFLE CHOICE, IT'S STILL ONE OF THE SMOOTHEST BOLT ACTIONS EVER.

Supplanted by the M1903 Springfield in 1907, the Krag-Jorgensen was soon on the surplus market, and it made for a much better sporting rifle than a military rifle.

The adoption of the Norwegian Krag-Jorgensen bolt-action rifle by the U.S. Army in 1892 remains puzzling. An Ordnance Board convened in late 1890 tested 53 rifles—including 11 already in service with other countries—and gave the nod to the .30-40 Krag despite the fact that by this time the smallbore revolution was in full swing.

Also by this point in time, the Lee detachable box magazine was already a proven commodity with the U.S. Navy and Great Britain, and the efficacy of Mauser and Mannlicher clip-feeding systems had established the reliability of the rimless cartridge feeding from magazines.

Against this backdrop, the United States still chose a rifle that had to be loaded with rimmed, loose ammunition through a large, wide box magazine. Paired with a magazine cutoff, this was meant to slow the rate at which a soldier could expend ammunition. But at least the Krag, which lasted a scant 15 years, was step toward a modern rifle, and the manual of arms easy to teach.

The cock-on-open bolt lifts easily and runs with remarkable smoothness. The flip-over wing safety is quiet and locks the bolt closed when applied. The five-round magazine box opens wide for easy, if slow, loading. The magazine cutoff on the left side is unobtrusive and easy to manipulate.

Originally, the sights were adjustable for elevation only, a confusing choice since the prior Trapdoor service rifle had excellent, fully adjustable sights.

With pacification of the frontier mostly assured, target shooting was one of the few pleasures our domestic Army enjoyed on the far distant frontier posts. Therefore, later models would get windage-adjustable sights. Because the two action screws are at the very back of the action, a barrel band or other method was necessary for strength up front.

The new .30-40, called commercially the .30 Army, .30 Gov't or .30 USA, fired a 220-grain roundnose bullet at 2,000 fps from the Krag's 30-inch barrel, putting the cartridge on par ballistically with other smokeless military rounds, many of which were also rimmed. It was soon offered in Winchester 1895 lever rifles, Remington Lee bolt actions, various period single-shots and most recently the Ruger No. 1 and No. 3.

The Krag was the last U.S. rifle made in a short, handy cavalry carbine alongside a long, fully stocked infantry rifle. There are plenty of variations to collect, with subtle changes occurring throughout production.

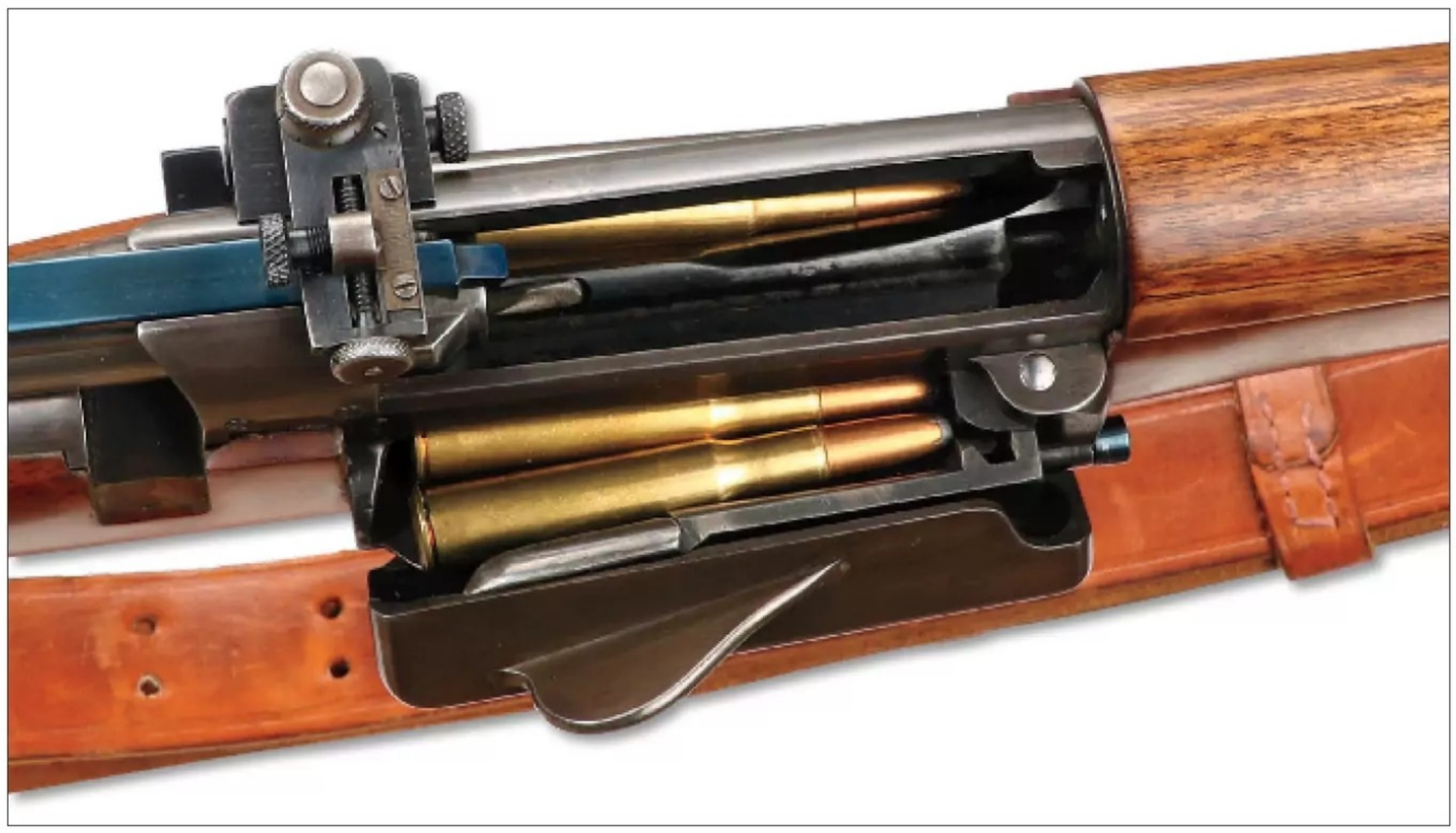
Many early models were upgraded during their service lives, and production reached almost half a million Krags before ending in late 1903. The

Krag was officially replaced in 1907 by the M1903, yet it served in many National Guard units until well after World War I.

The Spanish-American War brought many logistical problems to the fore. National Guard units were still armed with the .45-70 Trapdoor Springfield. The Army and cavalry had .30-40 Krags, while the Marines carried 6mm Lee Straight Pulls. Afterwards, military leaders agreed there would be just one rifle cartridge for all services.

The U.S. entered World War I with too few M1903s to arm our rapidly growing military and too little armory capacity to meet demand. Many new soldiers learned infantry basics with the Krag, the old Trapdoor and—the unlucky ones—a broomstick.

While the Krag had warts aplenty for a battle rifle, it possessed remarkably benign and advantageous charms as a hunting rifle, if a bit heavier than most people desire today. When surplus Krags came on the market, the Krag Carbine with its 22-inch barrel and abbreviated fore-end was short, light-ish and handy, and it was ready for the hunting fields. The 9.3-pound full-length rifle with its 30-inch barrel? Not so much.



The Krag is quick to load. Dump five in the box, close it and run the bolt. To unload just open the bolt, eject the chambered round, open the box and turn the rifle over to empty the magazine. The Krag's magazine cutoff (below) is just to the right of the Lyman 48 sight.

The .30-40 cartridge is still perfectly adequate for most North American game, and the Krag's slick, smooth, reliable operation remains a hallmark feature that delights to this day. It is easy to load, and faster than single-loading magazines on lever or bolt guns. Unloading is safe and simple. Open the bolt and eject the chambered round. Open the mag box, tip the rifle over and dump the rest into your hand.

Mounting a telescopic sight is problematic due to the split receiver bridge and flip-over safety, but it's not impossible. Adding a Lyman 48 receiver sight requires care, since the angles of the holes must be carefully checked before drilling. (A tip of the hat to Clyde Baker's 1933 tome, *Modern Gunsmithing*.)

Today, the .30-40 is loaded by Hornady, Remington and Winchester topped with a 180-grain bullet at around 2,400 fps. Reloading poses no unusual concerns, but the rifle bolt's single locking lug means it's wise to keep loads conservative and certainly never above published maximum.

Much head shaking is done over the single-lug bolt, but the bolt handle itself acts a safety lug, and the rimmed case is of less concern in headspace issues than rimless ones.

If collecting military models, be sure of your seller or be informed. Joe Poyer's *The American Krag Rifle and Carbine* is a must-have, since military Krags are selling in the $1,500 to $4,000 if original, but sometimes well below $1,000 if sporterized or otherwise monkeyed with.

The custom rifle pictured here was once the quintessential "brother-in-law" gun and bought for a song even by 21st century standards. The stock had been broken and glassed back together, with little effort to clean up the ooze. The gun has an overly large, clubby ill-fitting stock ending in a fossilized recoil pad, and the rifle weighed 10 pounds. The barrel had been replaced with a Springfield M1903 barrel complete with ugly pipe wrench marks near the breech.

I restocked the poor thing with pre-carved wood donated by a former boss. Despite its odd styling lines, it came out okay. The handguard hides a multitude of sins, from indifferent inletting on the stock to the pipe wrench marks on the barrel. The right-side receiver sight was missing, so its holes were filled with plug screws, and an original Lyman 48 receiver sight installed on the other side.

Still heavy at 8.6 pounds, it balances well and delivers five-shot groups in the 2.5-inch range at 100 yards with factory ammunition. The old Krag is ready for another hunt. ■

by Joseph von Benedikt

Data Downslide

WHY TODAY'S HANDLOAD DATA ARE MORE CONSERVATIVE THAN THEY USED TO BE.

Veteran handloaders have noted a gradual reduction of maximum charge weights over the past decades. Changes in philosophy and process are big contributing factors.

Over the past several decades, the data provided in reloading manuals have steadily trended toward lighter loads. Max charge weights have diminished, and like many other reloaders, I've wondered why this is.

While researching for this column, I decided to go straight to the horse's mouth and ask several major players in the reloading industry about why every new edition of various reloading manuals has lighter max loads. I wanted to know if it was due to new propellants or less-durable brass—or perhaps historic max pressures were overzealous or maybe modern maxes were due to today's litigious environment.

Of the people I contacted, Hodgdon's Aaron Oelger gave the most insightful answers, which is probably not a surprise since Hodgdon handles more propellant brands and develops more data than most companies.

"Historically, reloading manuals often published maximum loads that approached 100 percent of the SAAMI pressure standard," he said. "In more recent years, Hodgdon and other publishers have moderated that approach, with maximum loads now typically developed closer to 95 percent of SAAMI pressure."

In the past, boundary-pushing handloaders such as P.O. Ackley, Elmer Keith and Col. Townsend Whelen were known for riding the ragged edge of safe with their handloads, which inspired a lot of folks rolling their own ammo at home to do the same. Unfortunately, with less experience and savvy to keep them on the right side of that ragged edge, it wasn't uncommon for regular, everyday shooters to blow primers, lock up bolts and have brass separations. I know in my early days of handloading I did all three.

Historically, there was also a pattern of new cartridges being introduced with impressive muzzle velocities that were later reduced when the original loadings were found to be a bit overenthusiastic.

The .270 Win. is a perfect example. Initial factory ammo was loaded to push 130-grain bullets at 3,140 fps. It wasn't long before that was reduced to 3,060 fps. While that's only a 2.5 percent decrease, it was a clear indication that original charge weights were a bit too hot.

It's worth noting that when the .270 Win. was introduced in 1925, gunpowders weren't nearly as stable as they are now. Ammo that generated perfectly safe pressures in November whitetail woods would produce pressure spikes when used in tropical climates and temperatures.

Oelger also brought up differences in today's components. "With the growth of new sources for components such as brass, primers and bullets, variation between manufacturers has increased," he said. "To account for these differences—and to help ensure safe performance across a wide range of combinations—it has become prudent to moderate pressure thresholds."

I had wondered about this. Back when Ackley, Keith and Whelen experimented, there was Winchester brass and Remington brass, and

perhaps one or two others. Today, we've got those plus Hornady, Federal, Weatherby, Nosler, Barnes, Black Hills, Norma, Lapua, Petersen, Alpha, Starline, Berger, ADG and a handful more. Wall thickness, internal capacity, web construction, primer pockets and so on vary between brands.

Strictly speaking, load data are tied specifically to the brass in which they were developed, which is why the brass manufacturer is always listed in the specifications accompanying a set of data. That data won't be exactly the same for, well, any other brand of cases.

But what reloading company in the industry has time to test and work up load data for every different brand of cases? None does. And because the internal pressures generated will be different with each of the other various types of brass, published data that are five percent below actual SAAMI max is no doubt prudent.

Oelger also noted that factory ammunition is commonly loaded to about 95 percent of SAAMI maximums, which provides greater reliability across different firearms, actions, barrel lengths and environmental conditions. Reloading data providers are simply aligning more closely with this industry standard, he said, which gives us handloaders an added layer of safety.

This just makes good sense. Current max loads should be safe in pretty much every rifle from the makers we all know. However, this "added layer of safety" doesn't mean you should go straight to maximum charges when assembling handloads. Never do this. Always start 10 percent lower and work up cautiously.

Some handloaders have speculated that max loads are lower today because companies are wary about their exposure to potential litigation. Greggory Sloan at Barnes Bullets said this is not the case.

"I certainly understand the consumer perspective and the speculation that lawyers dictate what we do, or that we provide anemic data for safety and litigation reasons. However, that is not the case—at least not for Barnes," he said.

"We always keep both user safety and protecting the Barnes brand in mind, but we achieve this through proper equipment, processes and practices to ensure the most consistent data possible. Our modern test equipment allows us to load to the SAAMI or equivalent maximum average pressure for each cartridge, powder and bullet combination. Importantly, we do not 'download' or artificially reduce maximum charges from those limits."

Sloan said advancements in test equipment, processes and practices have had the biggest influence on the perceived trend toward milder loads. These strides have simply led to more accurate data under real-world conditions compared to older published load data.

Sloan's thinking on process was seconded by Zach Waterman of Nosler.

"The biggest change over the last 20 years has been a gradual improvement in instrumentation and test methods that have improved the accuracy of the data," he said. "The industry has gradually moved away from copper crusher testing and into the use of conformal transducers, and the industry-wide use of reference ammunition has improved with an increasing number of SAAMI test stations, thus improving the quality of calibration data. Generally speaking, it's just better data."

I think Oelger summed it up best. "Taken together, these factors explain the more conservative approach reflected in today's reloading data," he said. "Above all, safety remains the guiding principle, and our data will continue to emphasize reliability and protection for the shooter." ■

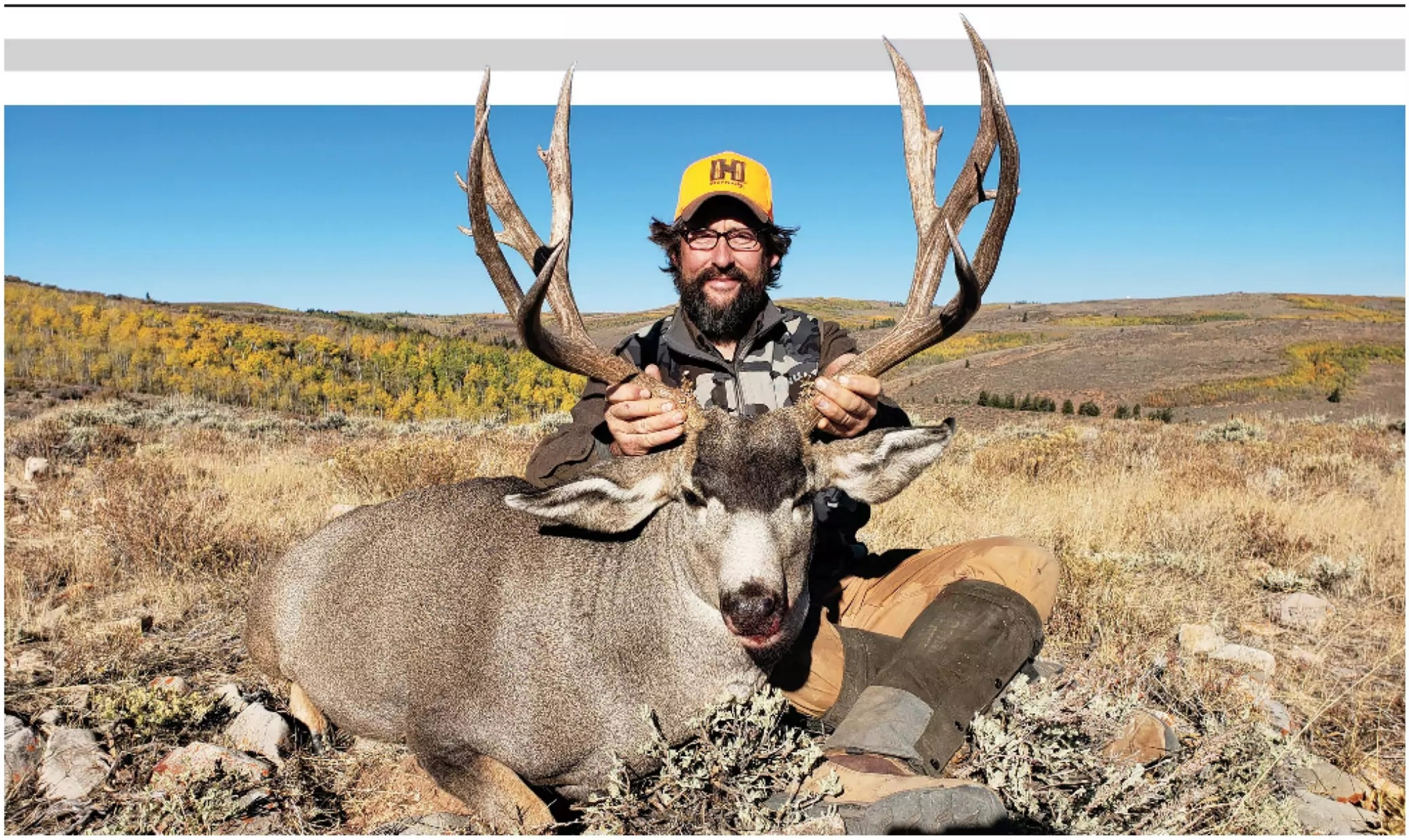
Backcountry Podcast

If you're a fan of podcasts, you should check out Joseph von Benedikt's "Backcountry Hunting." He and his guests tackle a wide array of topics—from guns and loads to hunt prep to today's hot topics, as well touching on the sport's traditions. Get it wherever you get your podcasts or at BACKCOUNTRYHUNTING.LIBSYN.COM.—*JSR*

My Outdoor TV

Staff Report

Outdoors on Demand



These days, America's sportsmen and women are clamoring for more "content," as we call it in the media: more articles, more television shows, more website info. Outdoor Sportsman Group—which publishes this magazine as well as bringing you the Sportsman Channel and Outdoor Channel—has answered that call with the My Outdoor TV (MOTV) app.

It's a resource like no other, a curated treasure trove of outdoor-oriented television shows and videos. Think of it like your own personal Neftlix, with episodes of "Gun Stories" with Joe Montegna, the gun restoration show "The Gunfather," "Guns & Ammo," "Shooting USA" and more. The universe of content is even bigger when it somes to hunting, and I know a lot if not most of you enjoy your time in the field. Check out "Petersen's Hunting Adventures," shows by hunting legends Fred Eichler and Jim Shockey, "Meat Easter" and many, many more. Plus there is a ton of fishing as well, including live streams of various angling competitions.

MOTV is an incredibly deep library containing more than 20,000 episodes of outdoor television shows as well as short-form video encompassing how-to instructional and history topics you can watch anytime, anywhere.

In addition to the TV episodes, I think *RifleShooter* readers will really appreciate short-form videos such "Gun Stories Tidbits" on iconic rifles as the M1 Garand, the Remington rolling block and the AK-47. And, again, it's all HD-quality video for the ultimate viewing experience.

Perhaps even better for shooters and hunters on the go, in addition to streaming video, you can take this content with you via the "Take With Me" feature that allows you to download content for later viewing when you're without Internet access—say, at the range or in hunting camp.

If you're one of the folks out there who can't get Sportsman Channel or Outdoor Channel through your television provider, this is your porthole into the awesome world of true outdoor programming. MOTV is available on the web, as well as Apple and Android platforms.

A subscription is just $9.99 per month or $98.99 per year, and you get multiple device accessibility with one account. New content is loaded every month, and with the yearly subscription you can get a free magazine subscription. MOTV is the TV you want, your way. Check it out today at MyOutdoorTV.com. ■

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by Brad Fitzpatrick

A Rough and Ready Dot

THE NEW MRO SD FROM TRIJICON IS AS RUGGED AS ITS PREDECESSORS AND FEATURES SOME NOTABLE UPGRADES.

With its oversize 25mm objective lens and short overall length, the MRO SD virtually eliminates tunnel vision, which is important in defensive situations.

It's hard to believe, but Trijicon's MRO (Miniature Rifle Optic) celebrated 10 years of production in 2025. That may not seem like a long time for most products, but a decade in production without major upgrades makes a modern electro-optic a bit long in the tooth. While it did get a tweak with the MRO HD model in 2020, there was still room for improvement.

That's exactly what Trijicon did with the introduction of the new MRO SD. This optic offers everything you love about the MRO and MRO HD's rugged, reliable design with some noteworthy improvements, starting with the adjusters.

The new adjusters are designed to hold zero under impact or very heavy recoil. They sit below flush, with 1/2 m.o.a. click adjustments and 70 m.o.a. of windage and elevation adjustment. The capless design is wonderful because you can quickly adjust elevation and windage without removing a cap, and since there are no caps to unscrew they cannot be lost. The low-profile design is also very sleek when compared to optics with capped adjusters.

The adjustments offer a tactile and—if your hearing's better than the average gun writer's—audible clicks to verify adjustment. Trijicon ships the MRO SD with a clever adjustment tool, but I simply used the rim of a 5.56 case, and it worked quite well.

The reticle on the new SD model is a crisp two m.o.a. dot in red or green. Both red and green versions of the MRO SD offer eight brightness settings. Two of those are night vision, five are daylight settings, and there's an extra-bright setting that's perfect in full sun or when running a white light on your rifle.

Each unit is powered by a CR2032 battery, and battery life for both versions is exceptional. Expect 2.5 years of continuous runtime on the daylight 3 setting for the red dot version and three years for the green dot. There's an Off setting located between the daylight 2 and daylight 3 settings that allows shooters to power the unit off and save battery, but also move to one of these intermediate daylight brightness settings with a single click.

The MRO SD's forged 7075 housing is fully sealed and is waterproof to 100 feet. The pressure at that depth is four bar or roughly 60 psi, four times the surface pressure, and the fact that the Trijicon doesn't leak at that depth

SPECIFICATIONS

TRIJICON MRO SD

TYPE	closed-emitter dot sight
DOT	red or green, 2 m.o.a.
OBJECTIVE	25mm multicoated
LENGTH/WIDTH/HEIGHT	2.9/1.7/2.1 in.
WEIGHT	4.8 oz.
ADJUSTMENTS	capless turrets, 1/2 m.o.a. per click; 70 m.o.a. total adjustment
BATTERY	CR2032
PRICE	$868 (as tested)
MANUFACTURER	Trijicon, TRIJICON.COM

is considerably better than optics with a standard IPX7 rating, which is submerged only to 30 feet. That may not mean much to the everyday user, but it does testify to how ruggedly this sight is built.

The MRO SD has a 25 m.o.a. multicoated objective lens that provides good color and is free of distortion. It's noticeably wider than the objective lenses of other carbine red dots, and it gives you faster target acquisition and reduces the "tube effect" that's inherent to so many red dots—a form of tunnel vision that occurs with small-diameter optics and can be hazardous in defensive situations.

With the MRO SD you get an appreciably larger window and a wide field of view that promotes two-eyes-open shooting. Further, the objective lens has been optimized to function with Trijicon's MRO 3X rotating magnifier, and the MRO SD is offered as a combo package with the magnifier included.

In addition to the reticle options, there are more than a dozen variations including black or coyote brown anodized colors with low, full or lower-third co-witness bases. There's also an option to buy the optic without a base. There's also a patrol MRO SD model that comes with flip caps, an anti-reflective device and a quick detach mount.

My sample featured a red dot, full co-witness base and anodized black exterior, and I mounted it on Smith & Wesson's new M&P15 Axe 16-inch rifle in 5.56/.223. The Axe's flip-up irons co-witnessed perfectly with the MRO SD.

I conducted a box test at 50 yards, moving the sight eight clicks in all four directions. I chose this distance because at 50, changes in point of impact are almost entirely due to the adjustments and not shooter error, which can occur with red dots at longer distances. With the MRO SD, point of impact shift was precise, and the resulting box looked like it should.

The sight also gets high marks for ease of use. The adjustment directions are clearly marked, and they're easy to see without having to move your head from behind the optic. As I mentioned, you can turn the adjusters with a cartridge rim, which is really handy.

A full co-witness is just one of several mount options. The battery is easily accessed through the top. (Below) The sight adjusters sit just below flush, and they're well marked on the back so you can adjust without lifting your head from the rifle.

Illumination setting 6 is brilliant red and leaves halos of light floating in your eyes long after you've shut your eyelids, but it's purpose built for very bright conditions and works well for that. The other five daytime settings are more than enough to cover the gamut from near total darkness to bleaching midday sun, and I never found that there wasn't an adequate setting for the ambient conditions. And as mentioned there are also settings compatible with night-vision gear.

The MRO SD virtually eliminates any feeling of tunnel vision. You'll shoot with both eyes open and have a much greater sense of your surroundings. The anodized housing seems to simply disappear, and that's impressive considering how big the optic is. The objecting lens housing measures almost 1.6 inches in diameter.

The optic alone weighs 4.8 ounces, which is pretty beefy, and with the full co-witness mount it weighed 6.6 ounces. But I happen to like the extra mass. I also like that Trijicon added beefy T20 Torx screws to the base instead of smaller and more common T15s.

This overbuilt design is common on all Trijicon mounting interfaces from scope rings to optic bases. They're bulky but built to last. And if you already own an MRO base you're in luck: The MRO SD footprint is compatible with earlier models.

Like other Trijicon products the MRO SD is also built in Wixom, Michigan, if that sort of thing matters to you. It does to many—myself included—and I'm glad to know that this rugged, reliable optic was built about a half-hour down the road from Mack Avenue in Detroit, where Henry Ford rolled out his first road car.

You can expect to pay from $687 up to $1,472 for the optic and 3X magnifier combo. Coyote brown color increases the cost a bit, as does selecting the green dot instead of red. But no matter which of these optics you choose, you won't be disappointed. Trijicon builds optics for the most demanding critics, so they don't cut corners. The MRO SD is not, therefore, a "bargain" optic, but considering the quality it's certainly a great value. ■

CLASS ACT

THE NEW HOWA 1500 SUPER DELUXE WALNUT PAYS HOMAGE TO TRADITIONAL WOOD-STOCKED SPORTING RIFLES WITHOUT SACRIFICING ACCURACY.

by Brad Fitzpatrick

Michael Anschuetz photo

I've come to accept that the traditional sporter-style hunting rifles I grew up with are no longer mainstream. Walnut and bluing have been replaced by carbon fiber and Cerakote, and although I understand why these changes make sense, sometimes I still long for the look and feel of a sporting rifle from years gone by.

Several new walnut stocked rifles have been released in recent years including multiple Browning X-Bolt models and Weatherby's 307 Adventure SD. But the Howa is certainly among the most eye-catching of all. The wood grade and finish are exceptional, especially considering the price.

The Howa 1500 Super Deluxe Walnut looks very much like the vintage sporters of yore. The high grade deluxe Turkish walnut stock with oil finish is particularly attention-grabbing. The wood grain and finish are excellent, and the laminated fore-end and grip give the gun an extra styling touch that's reminiscent of high-end rifles from years gone by.

I wish the fore-end cap and pistol grip were ebony instead of laminate, but I'm a purist. With their shades of red and purple these laminate accents do give the rifle a unique look, though, and the line spacers between the laminate and walnut are a cool retro touch.

The Super Deluxe Walnut even

features a Monte Carlo cheekpiece that's elevated to align the shooter's eye with a scope. And the finishing touch is an orange recoil pad that hearkens back to the classic Winchester Model 70, Ruger M77 and British express rifles before that. The stock profile is pure sporter, so don't look for any thumb rests or vertical grips. Diamond checkering adorns the pistol grip and the fore-end.

Not surprisingly, the Super Deluxe Walnut rifle is available with a blued finish—the industry standard on sporting rifles for decades—but there's also a matte stainless version, which I received for testing. Available chamberings range from .223 Rem. to .30-06.

Howa's 1500 push-feed action has been popular since it was initially released in 1979. It's manufactured at the company's facility in Kiyosu, Japan, and it features dual locking lugs up front and a plunger-style ejector that extends through the bolt face. Howa machines its steel receivers, and bolt faces are trued and squared to the receivers.

Howa's push-feed design is similar to Remington's venerable Model 700 action, but it outshines the 700 in one important aspect: the extractor. The Remington's extractor was widely viewed as a weak point of the design, and I know one professional hunter who says a broken extractor on a Remington 700 .416 Rem. Mag. very nearly resulted in him being bisected by a bull hippo in Namibia. The Howa utilizes a more robust M16-style extractor, which is renowned for unfailing reliability.

It's worth noting that several major manufacturers have offered factory rifles based on the Howa 1500 action—including Smith & Wesson and Mossberg—and Weatherby still uses the Howa action as the base for its Vanguard rifles. Howa's guns are imported and distributed in the United States through Legacy Sports International in Reno, Nevada.

The proven Howa action runs smoothly and reliably, and the excellent HACT two-stage trigger helps the rifle achieve excellent accuracy.

The Super Deluxe Walnut features a stylish Monte Carlo cheekpiece. The raised comb naturally aligns the shooter's eye with the scope.

The Howa action features a flat base and an integral recoil lug. The front action screw threads directly into the barrel lug. True to its classic sporter roots, the Super Deluxe Walnut is offered with an internal box magazine and a hinged floorplate. The floorplate release latch is tucked into the front of the trigger guard, a virtually foolproof design that prevents the floorplate from releasing while you're busting through heavy brush.

Super Deluxe Walnut rifles come with sporter profile hammer-forged barrels measuring 22 or 24 inches. The barrel is threaded 1/2x28, which means you'll need an adapter to attach muzzle devices with the popular 5/8x24 thread pitch.

The receiver is drilled and tapped for scope mounting. Howa's Actuator Controlled Trigger (HACT) is user adjustable and comes from the factory set at around three pounds. The HACT is an interesting design. Launched in 2011, it's a two-stage mechanism with the actuator located between the trigger and the sear. Initial take-up is light—around a pound—and there's a defined wall.

The HACT lacks the blade design favored by Savage, Mossberg and others,

ACCURACY RESULTS

HOWA 1500 SUPER DELUXE WALNUT

6.5 Creedmoor	Bullet Weight (gr.)	Muzzle Velocity (fps)	Std. Dev. (fps)	Avg. Group (in.)
Hornady ELD-X	143	2,595	12	1.00
Winchester Deer Season XP	125	2,743	16	1.10
Remington Core-Lokt	140	2,553	11	1.30

Notes: Accuracy results are averages of three three-shot groups fired at 100 yards from a fixed rest. Velocities are 10-shot averages recorded on a Caldwell VelociRadar. Temperature, 72 degrees; elevation 1,020 feet.

giving the trigger a cleaner, more traditional look.

The trigger is self-contained and can be removed by loosening a single Allen screw, so if you prefer to install an aftermarket trigger it's a simple process. The HACT features a rocker-style three-position safety that allows you to operate the action with the safety engaged.

My test rifle was chambered in 6.5 Creedmoor. The thin sporter barrel measures 22 inches, which makes the rifle suitable for use with a suppressor, and I used an adapter to attach my Banish Backcountry suppressor for portions of the testing. For an optic I chose the new Bushnell R5 3-9x40mm scope, mounted with Talley lightweight bases and rings. So set up, the combination would set you back a bit over $1,000 at full retail.

With an unloaded weight around seven pounds, three ounces—which can vary depending on wood density—the Super Deluxe Walnut is not a lightweight mountain rifle like Howa's barely-there Superlite. With the scope and a full magazine you can expect the Super Deluxe to run about 8.5 pounds. But that added weight helps mitigate the 6.5 Creedmoor's already mild recoil.

For velocity and accuracy testing I ran the rifle without a can, but when I tested it at 200 yards I added the Banish Backcountry, which helped tame recoil and muzzle blast even more. So equipped, this rifle is a real pussycat that's easy on the shoulder of even the most recoil-sensitive shooter.

You won't find any Arca rails or M-Lok attachment points on this gun, just a simple sling stud. But that allowed me to add a bipod.

The steel setup on my home range has plates starting at 200 yards, continuing to 400 yards, and I fired almost a full box of Hornady Precision Hunter 6.5 Creedmoor at the steel. Howa rifle stocks are designed to manage recoil effectively, and they do just that. And you can take my word on that, since I owned a Howa of similar weight in .375 Ruger. In short, from field positions the Super Deluxe was comfortable to shoot.

The HACT trigger pull is crisp and manageable. Let me address the notion that Howa rifles have creepy triggers. You hear that occasionally, and sometimes the complaint is levied against Weatherby Vanguards as well. But some inexperienced shooters mistake take-up in a two-stage trigger like the HACT for creep. It's not, and the HACT trigger is very good and completely predictable. The test rifle's trigger broke cleanly at three pounds.

Feeding and function were outstanding throughout the test. I like that the Howa 1500 offers enough space in the action to properly top-load the rifle, and the no-nonsense design makes it easy to top off the internal mag while you're walking.

Howa backs its rifles with a sub-m.o.a. accuracy guarantee, and all the Howas I've tested would do that, or come very close with at least one load—even that .375 Ruger I mentioned. You simply know when you buy one of these rifles that it will shoot well if the optic is properly installed and you're using quality ammo that the rifle likes.

While it didn't manage to beat the guarantee on the averages, the test rifle did shoot two of the three groups sub

With this model, Howa has brought back the traditional fore-end tip with line spacers, although instead of ebony the company went with laminate.

The laminate pistol grip sports a recessed honeycomb Howa plate, yet another touch that makes the rifle visually appealing.

SPECIFICATIONS

HOWA 1500 SUPER DELUXE WALNUT

TYPE	bolt-action centerfire
CALIBER	.223 Rem, .22 ARC, .22-250 Rem., .243 Win., 6mm ARC, 6.5 Grendel, 6.5 Creedmoor (tested), 6.5 PRC, .270 Win., 7mm-08, 7mm Rem. Mag., 7.62x39, .308 Win., .30-06
CAPACITY	4
BARREL	22 in., sporter profile, 1:18 twist; threaded 1/2x28
OVERALL LENGTH	41.5 in.
WEIGHT	7 lb., 3 oz.
STOCK	Turkish walnut
FINISH	matte stainless (as tested)
TRIGGER	adjustable HACT 2-stage; 3 lb. pull (measured, as received)
SIGHTS	none; drilled and tapped on Rem. 700 footprint
PRICE	$839
MANUFACTURER	Howa, HowaUSA.com

m.o.a. with Hornady ammo, and very nearly did so with Winchester's Deer Season XP as well.

Howa figured out long ago how to make its guns cycle, and there were no issues with the Super Deluxe Walnut, save one empty case that didn't clear the action for some reason. The opening in the receiver is generous, and the magazine isn't overly persnickety about how the rounds are loaded.

I do enjoy the three-position rocker safety. Like the safety on other Howa rifles it isn't silky smooth, but it's easy to operate and allows you to load and inspect the action with the safety engaged, and lock the bolt so it can't flop open in the field.

Overall performance was excellent, which comes as no surprise since this is a Howa. I also happen to think it's the best rifle offering in Howa's extensive catalog. I wish the flat-bottom fore-end was a bit rounder and leaner, but it's not unattractive or uncomfortable. Heck, I wish I was a bit leaner, too.

The rifle features a traditional hinged floorplate and an internal box magazine that holds four rounds of 6.5 Creedmoor. The mag release is tucked into the front of the trigger guard.

The Super Deluxe Walnut is dressed to impress, but its performance doesn't disappoint. This is a striking rifle that, despite being a bit heavier than some other modern rifles, will make an excellent companion in the field. It's available in an array of calibers for hunting everything from varmints to elk, and there's a nice mix of new cartridges like the .22 and 6mm ARC, as well as classics like the .243 Win. and venerable .30-06.

Despite its stunning looks the Howa is also a cheap date, too, costing just $839 for the stainless model and $799 for the blued version. That's a very good value for such a great-looking gun. ■

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STOP IT!

IS THERE SUCH A THING AS STOPPING POWER? IT'S COMPLICATED.

by Craig Boddington

"100 grains in the right place are as good as ten million," wrote WDM "Karamoja" Bell, in *Wanderings of an Elephant Hunter* (1923). Bell was an outspoken smallbore guy. He is credited with 1,011 elephants, almost all bulls. He didn't kill them all with his .275 Rigby—also known as the 7x57—although that was his favorite. Prior to World War I he also used the 6.5x54 Mannlicher-Schoenauer, .303 British and .318 Westley Richards.

He remained a smallbore advocate, but in 1913 he ordered a pair of .416 Rigby rifles. He took one of them when he returned to Africa after World War I, along with a .400 Jeffery double. His bullet weights ranged from 160 grains in the 6.5x54 to 410 grains in the .416, and respective energies ranged from about 1,740 ft.-lbs. to 5,100.

In the same paragraph from his book I just referenced, he also wrote, "It seems to me that you cannot hope to kill an elephant weighing six tons by 'shock' unless you hit him with a field gun"—as in artillery.

Except for the .416 and .400 Jeffery, all the cartridges Bell used with deadly efficiency are now illegal for the largest African game, and in the 7x57 he shot only non-expanding bullets. Although he used the word "shock," Bell was correct that no hand-held rifle carries enough energy to stop an elephant.

He also knew, as we do today, that disrupting the brain or severing the spine will immobilize any animal. However, if the animal happens to be coming toward you at speed, you'd better get out of the way because you aren't likely to arrest its forward progress.

While the brain or neck shot will drop any stationary animal immediately, most of us aim for the chest cavity because it's a larger and more certain shot. Do it right, and whether it's the heart, the large vessels above the heart, and/or both lungs, the animal will surely die—although it may not be immediate.

Whether we're talking prairie dogs or pachyderms, what's important is that the bullet overcomes the resistance of skin and muscle—bone as required—and penetrates to the desired vital organs, doing enough damage to stop their functioning.

Kinetic energy enables a projectile to overcome resistance and thereby penetrate. In the English system we use foot-pounds of energy. A foot-pound is the energy or force required to lift one pound one foot against the force of gravity, and it's calculated with velocity squared and projectile weight.

There are other options. Elmer Keith loved momentum or pounds-feet, essentially the reverse. Ivory hunter John Taylor proposed Knockout Values, theoretically expressing the ability of a non-expanding solid to stun—knock out—an elephant with a frontal brain shot. There wasn't much science involved in this, but a bullet's frontal area was factored

in—which is not part of the foot-pounds energy formula.

Although kinetic energy is science, fast cartridges have an advantage in producing foot-pounds, and ignoring bullet diameter is problematic because frontal area matters. The larger the bullet diameter, the more energy is required to overcome resistance.

It's easy to stab yourself with a knitting needle, not as easy with an unsharpened pencil. Perhaps because of this, bullet diameter—frontal area—matters in energy transfer. It's kind of like being stabbed with the knitting needle versus being hit with a hammer. Either can be lethal, but the hammer hurts you more.

In other words, kinetic energy in foot-pounds isn't perfect when we talk about stopping power. However, we understand it, and it offers the most common comparative index of cartridge power. Problem is, nobody can say exactly how many foot-pounds s are required.

Gun writer, hunter and career Army ordnance officer Col. Townsend Whelen theorized that you wanted 1,000 ft.-lbs. of energy on impact to reliably take down deer-size game. I like this rule of thumb. I have even theorized that, since a bull elk is twice the size of a big buck deer, maybe we should have 2,000 ft.-lbs. of energy for elk.

My long love affair with the 8mm Rem. Mag. was because I could get a 220-grain Sierra GameKing to carry 2,000 ft.-lbs. to 600 yards. I've never shot an elk at that distance, but I liked the idea.

This Cape buffalo was knocked off its feet for good by a single quartering-to shoulder shot from a .500 Jeffery, a rare display of stopping power.

The truly big cartridges produce a lot of energy, but the attendant recoil makes them hard to handle—especially for critical follow-up shots.

I'm not calling horse-pucky on either Whelen or myself. However, a .223 Rem. with 62-grain bullet, proven effective on deer, drops below 1,000 ft.-lbs. at about 100 yards. The 7mm Rem. Mag., considered by many a good open-country elk cartridge, drops below 2,000 ft.-lbs. at about 300 yards.

If our 1,000 ft.-lbs. rule for deer was absolute, then the .44-40, which generates less than 700 ft.-lbs. at the muzzle, could never have killed a deer. It was America's most popular cartridge in the 1880s, and I suspect it killed a lot of deer.

I've seen thousands of big game animals of all sizes effectively taken through bullet performance and penetration. Conversely, I've seen few instances of animals genuinely stopped, regardless of energy.

One time, professional hunter Mike Payne, hunter Chad Allen and I crossed a dry sand river in the Zambezi Valley—with them and the tracker in front. Across the river there were three tall palm trees. As we approached, a lone buffalo bull rose from the shade, shook his head once, and launched into a full-out charge from 25 yards.

Our unarmed tracker dove out of the way, opening up a shot. Coolly and calmly, Payne said, "Chad, take him. Take him now," as the buffalo closed on the pair. They were carrying .470 double rifles. Chad shot, Mike shot, then they both shot again, pairs of shots almost simultaneous. The first two turned the bull; the next two stopped him and dropped him.

Weighing maybe 1,500 pounds, that buffalo received 20,000 ft.-lbs. of energy in two seconds. All shots were chest/shoulder. Forward progress was arrested, and the buffalo was down eight yards in front of us. That's "stopping power," but it was the equivalent of Walter Bell's field gun. That much energy cannot be harnessed in a single shot from a shoulder-fired rifle.

I've taken most of my Cape buffaloes with cartridges from .375 H&H to .500 Nitro Express, the latter producing 5,850 ft.-lbs. with a 570-grain bullet. Although I've taken most of them effectively, I can't say I've "stopped" any of them.

There is another level, but it comes

at a price. The various fast .450s such as the .458 Lott, .450 Rigby Rimless and .460 Wby. Mag. produce energy up to 7,500 ft.-lbs. I've used them a bit. On buffalo-size game, they make a difference, but you still must put the bullet in the right place. If you do, effects are dramatic.

One year in Mozambique, I borrowed a hunting partner's .500 Jeffery, which propels a 535-grain bullet at 2,400 fps, producing 6,800 ft.-lbs. The PH and I stalked a little herd, and when we got to 60 yards he put up sticks, and I took a quartering-to shot. The buffalo dropped as if the earth was jerked from under it.

This is so unusual with buffalo that we assumed I'd hit too high. The bull was certain to get back up, so I shot again. No movement. The first shot was centered on the shoulder, and the second shot was also fine. I worked the bolt, started toward the buffalo, and then I realized my shooting arm was numb from shoulder to wrist. I'm not sure I could have fired again, and I'm glad I didn't need to.

I've shot the ultra-large bores up to .700 Nitro Express, and they're too much gun for me. Plus, since shooting isn't always perfect, the largest cartridges have so much recoil you can't count on being able to fire a potentially life-saving follow-up shot in time. I'm with Bell, who relied on shot placement with those small rifles on elephants. I don't need to stop them if I can kill them effectively with shot placement.

Not all of us are worried about charging buffaloes and elephants, but we all want our game down quickly and recovered with minimal tracking. Some of us worry about this more than others.

In many areas, productive hunting is done on small properties, bordered by other properties where access for recovery can be problematic. Under such conditions, hunters want their bucks "down right there." One answer is to go for head and neck shots, which some hunters specialize in. I'm mostly a buck hunter, and I don't like those shots. It's a small target, and since I'm being selective, there are fewer opportunities and less likelihood of getting the right buck to stand just so.

Other options lie in different shot placement and in transferring more energy. American hunters love the behind-the-shoulder lung shot. It's the largest target area, it produces little meat damage, and it's absolutely fatal. The latter assumes both lungs are penetrated, which, on that shot, even marginally adequate cartridges will accomplish.

However, you have to expect a death run of unknown distance. Last year a friend shot a deer on our place with a 7x64 Brenneke, not a small gun for whitetails. He shot a nice buck, and we found lots of blood immediately. The buck crossed my north fence into the neighbor's pasture—where we had permission to go—and we found him stone dead, but he traveled a good 300 yards. It's the farthest I've seen a deer go with a good lung shot.

African hunters favor the center of the shoulder one-third up from the brisket/belly line. This shot will break the on-shoulder and take out the large vessels on top of the heart, causing a catastrophic crash in blood pressure. It ruins a bit of meat, but African hunters believe it saves tracking. I'm sure they are correct. Depending on cartridge and bullet, often the bullet will go on and break the off-shoulder. Such animals are usually dead on the spot.

Transferring more energy on impact, dealing a heavier initial blow, also makes a difference. When I was new at *Guns & Ammo*, Art Blatt and I were hunting hogs with Brenneke shotgun

(L.-r.): .30-30 Win., .35 Rem., .360 Buckhammer, .348 Win., .444 Marlin, .45-70 Gov't. Lever-action cartridges and their blunt-nose bullets transmit a lot of energy on impact.

The old .45-70 remains popular because its large-caliber bullet transmits a lot of energy on impact, and with modern projectiles you can go with 300- to 350-grain bullets for less recoil while still retaining the cartridge's effectiveness.

slugs. We stalked a bedded pig that came boiling out downhill toward us, and Art shot it frontally at 10 yards. The boar collapsed in mid-stride, stone dead. It's one of the most amazing displays of stopping power I've ever seen.

Art's slug hit with possibly 2,500 ft.-lbs. While that's a lot of energy, I don't think the effect was a matter of raw energy. That big, broad .69 caliber slug hit like a freight train and dumped a lot of energy.

Energy transfer is poorly understood and little studied. If a bullet exits, its residual energy has no effect on the animal. I'm okay with through-and-through penetration, and some hunters prefer exit wounds because they leave better blood trails. What we don't really know is at what rate energy bleeds off during penetration.

I'm not arguing for using bigger hammers. However, larger-diameter bullets transfer more energy on impact and displace more tissue. So do quick-expanding bullets. There's some risk with this, because expansion creates more resistance, thus reducing penetration.

Bullet design and shape make a difference. All tipped bullets offer rapid initial expansion. On impact, the tip is driven down into the bullet, initiating expansion. Copper-alloy bullets are essentially hollowpoints. Upon impact, material is driven into a nose cavity—as is the tip, if tipped—causing the petals to peel back.

Australian outfitter and gun writer Bob Penfold culled thousands of animals and believed he could see a difference in the initial energy transfer of copper-alloy bullets. However, they don't expand as much as lead-core bullets, so wound channels are smaller. Also, they frequently exit, so not all energy is expended in the animal.

Then there's bullet shape. Blunt-nose bullets have poor aerodynamics, but they hit hard, and initial expansion is rapid. Although energy yields are modest, I believe part of the .30-30's deer-slaying legend is based on the roundnose and flat-point bullets long necessary for safe use in tubular magazines. At its lower velocity, the old, mild-kicking .35 Rem. produces about the same energy as the .30-30—less than 2,000 ft.-lbs.—yet its blunt-nose 200-grain bullet of larger diameter is famous for anchoring big woods bucks and black bears.

In no small part, it's this business of energy transfer that keeps the 150-year-old .45-70 popular. On deer, hogs and black bears, we don't need the original hard-kicking 405-grain bullets. Modern bullets from 300 to 350 grains are heavy enough, fly faster and kick less. And the .458-inch bullet has a major impact.

Right now, I'm packing for a black bear hunt in Maine. I'm taking a Marlin .45-70 with handloaded 300-grain flat-points. My buddy is taking a .35 Rem. with 200-grain roundnoses. Neither of us thinks of the black bear as dangerous, but there's nothing fun about digging for a bear in dark woods. I doubt either of us will have to. ■

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THE LONE RANGER

WINCHESTER FINALLY BRINGS BACK A LEVER-ACTION .22, AND THE NEW RANGER IS A WINNER.

by Layne Simpson

The new Ranger is the fourth lever-action rifle in .22 Long Rifle to wear the Winchester name during the past 152 years. While the Model 1873, introduced that year, became a big hit among deer hunters due to its .44-40 chambering, it was also the first repeating rifle to be chambered for the .22 Short and .22 Long cartridges; the .22 Long Rifle did not exist at the time.

Next up in 1965 was the Winchester Model 250. The Model 94/22, introduced in 1972, was built first by Winchester Repeating Arms Company and later by U. S. Repeating Arms Company. I had the pleasure of owning several through the years and managed to hang onto the XTR variant with its fancy wood and nice checkering. Around 800,000 Model 94/22 rifles in .22 Long Rifle and .22 Mag. were built prior to it being discontinued in 2005.

I devoted a bit of space to the Model 94/22 because when lifting the new Winchester Ranger from its box I initially thought the old rifle was back. Closer examination revealed a number of differences, understandable since

production of the two rifles is separated by 20 years of inflation.

According to Winchester, the light operating forces designed into the Ranger action make it easy for both old and young shooters to operate. A friend's young daughter—who, for her age, is quite experienced at small game hunting and target shooting—loved the Ranger. While firing rapidly at a Cabela's Rimfre Dueling Tree placed 20 yards downrange, she held her own against her father and me.

The Ranger is built to Winchester's stringent specifications by Istanbul Silah, a family-run small arms factory in Istanbul, Turkey, where rifles and shotguns have been manufactured for more than three decades. The receiver is CNC-machined from a bar of 6061-T6 aluminum alloy and given a durable black anodized finish. Measuring only 1.040 inches thick and 2.050 inches tall there, the trim little Ranger carries in the hand like, well, like a Winchester. The top of the receiver is grooved 3/8 inch for scope mounting.

All other parts including the finger lever, hammer, trigger and bolt are steel. The hammer has the traditional three positions: cocked, half-cocked and all the way forward in the resting position.

The firing pin, with its coiled return spring, is inertia-driven so its nose does not contact the rim of a chambered round when the hammer is resting against its rear end. The bolt has dual opposed extractors and, due to a slippery nickel coating, it glides to and fro in the receiver smoothly and it resists rusting as well.

Breech bolt locking and unlocking was explained to me by Jared Evenson, the Winchester engineer who was in charge of designing the Ranger.

To begin, a spring-tensioned steel locking bolt rotates on a transverse steel pin at the rear of the receiver. Closing the finger lever pushes the breech bolt forward, and as it reaches the limit of its travel, a radius on the lever cams the locking bolt upward to engage a deep recess in the bottom of the breech bolt.

Pushing the finger lever forward withdraws the locking bolt while retracting the breech bolt to the rear. Such a strong and durable lockup indicates to me that the Ranger could potentially be offered in .22 Mag. and .17 HMR sometime in the future. A fired case is tossed through the port as the bolt's dual opposed extractors impact it against a fixed ejector.

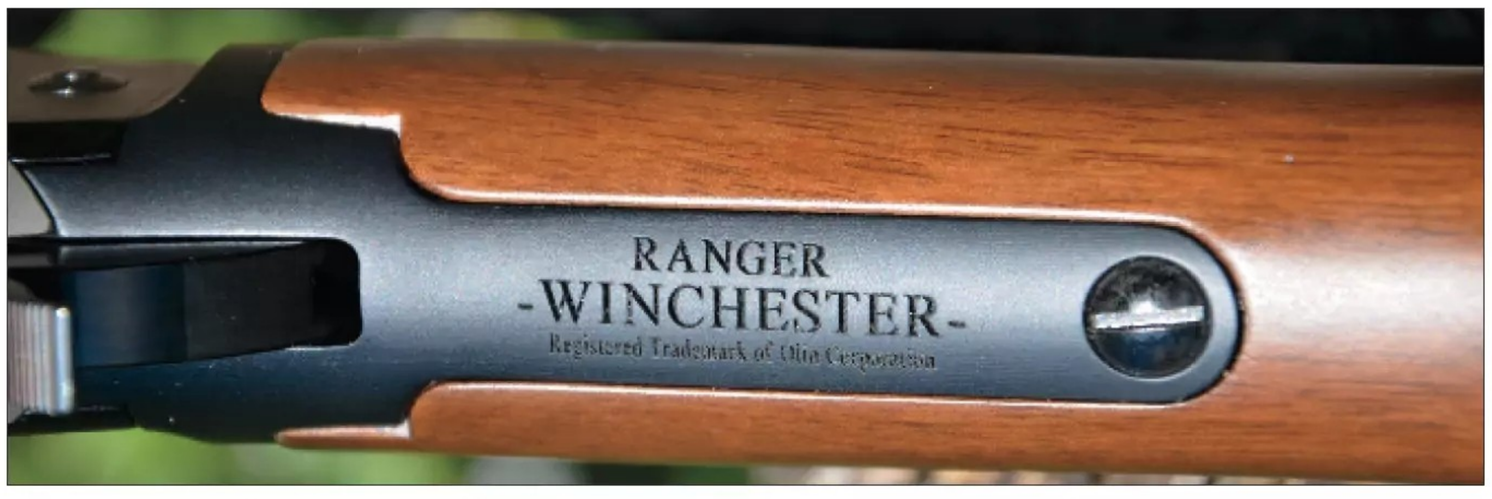
The carbon steel barrel has a blued finish and is 20.25 inches long with the usual 1:16 rifling twist for the .22 Long Rifle. Diameters are 0.760 inch at the receiver and 0.670 inch at the muzzle, where the barrel is given a target-style crown.

The buckhorn rear sight is elevator-adjusted for elevation and drifted in its dovetail slot in the barrel for windage. The ramped black blade at the front and the front barrel band are a one-piece casting held in place by a screw down through the top and into the barrel. A protective hood is included.

The flawless finish on the Turkish walnut stock and fore-end gets my AAA rating of approval for both application and appearance. Wood-to-metal fit is quite good for a rifle in its price range.

The straight-grip stock is attached by a machine screw down through the

Zero is not lost when the Ranger is taken down and put back together because the scope remains attached to the receiver/barrel assembly.



The straight-grip stock is held in place by a large machine screw down through the upper tang of the receiver and into the lower tang.

SPECIFICATIONS

WINCHESTER RANGER

TYPE	lever-action rimfire
CALIBER	.22 LR
CAPACITY	15+1 tubular magazine
BARREL	20.25 in. button rifled, 1:16 twist
OVERALL LENGTH	37.50 in.; 24.5 in. taken down
WEIGHT	5.35 lb.
STOCK	Turkish walnut
FINISH	blued barrel, black anodized receiver
TRIGGER	6.75 lb. pull (measured)
SIGHTS	elevation-adjustable rear, ramped blade front w/ hood
PRICE	$450
MANUFACTURER	Winchester, WINCHESTERGUNS.COM

upper tang of the receiver and into the lower tang. Removing the stock reveals the traditional coiled hammer spring and its guide rod. A pair of Phillips head screws are used to attach a plastic buttplate. The fore-end is held in place by a barrel band.

Taking down the rifle begins with making sure no cartridge is lurking inside, removing the tubular magazine and pushing the finger lever all the way forward. Now place the rifle left side up on a soft padded surface.

To avoid buggering the slotted screw and gouging the nice finish on the side of the receiver with an ill-fitting screwdriver, the Ranger deserves nothing less than a No. 8, hollow-ground, gunsmith-grade screwdriver.

After about eight rotations, the screw disengages from the threads in the receiver and is ready to be pulled out with thumb and forefinger. Now separate the rifle by grasping its grip with one hand while using the other to pivot the front section downward and away from the receiver. The breech bolt is now free for removal from the receiver.

If the Ranger is taken down and stored or carried in a case, locking the breech bolt inside the receiver will prevent it from going astray. Doing so is easy. Position the receiver upside down, push in the bolt as far it will go and push down on the front of the locking bolt.

When the time comes to put the rifle back together, free the breech bolt by pressing down on the rear of the locking bolt.

It's ingenious to say the least, and since the scope remains attached to the receiver/barrel assembly, zero is not lost when the gun is taken down and put back together.

The Ranger's 15-round tubular magazine assembly is the familiar steel outer tube accepting a rustproof brass inner tube with a spring-loaded cartridge follower. Turning its knurled cap releases the inner tube to slide forward, allowing cartridges to be dropped into a slot in the side of the outer tube. A small rubber O-ring at the front of the inner tube prevents it from inadvertently becoming unlatched in the field.

During a plinking session with the open sights of the Ranger, I found the drop in its stock to be perfect for a comfortable cheek weld. A dot of red nail polish applied to the front sight improved the picture. Balance point of the rifle is a half-inch beyond the front of the receiver.

Due to the drop in the stock along with the short ring spacing on the receiver, a fairly small scope with a one-inch tube is the logical choice. A faithful old 1.5-4.5X Bushnell Scopechief VII proved to be perfect when mounted in Talley low rings—although the rear sight's elevator had to be removed entirely in order for the scope to clear.

When shooting the Ranger from a benchrest, I nestled it in a Lyman Match Bag/Bag Jack combo and placed a bunny-ear sandbag at the rear. As measured by a Lyman digital gauge, average trigger pull weight was an ounce shy of seven pounds, and my finger detected just a trace of creep with no overtravel. The owner's manual indicates that overtravel can be adjusted at a Winchester authorized repair center, but the trigger of the test rifle needed no adjustment.

With paper-punching behind me, I filled the magazine with two rounds each of the seven test loads and fired the rifle from the standing position as fast as I could pull the trigger and operate the lever. My stopwatch indicated just under 11 seconds. The little rifle never missed a beat and kept begging for more. ■

A black rubber O-ring prevents the magazine from inadvertently coming unlatched while the Ranger is being carried in the field.

ACCURACY RESULTS

WINCHESTER RANGER

.22 Long Rifle	Bullet Weight (gr.)	Muzzle Velocity (fps)	Std. Dev. (fps)	Avg. Group (in.)
SK Long Range Match	40	1,060	19	0.65
SK High Velocity Match	40	1,022	12	0.77
CCI Stinger	32	1,623	36	1.04
SK Flat Nose Target	40	977	22	1.19
Remington Yellow Jacket	33	1,530	34	1.31
Remington Viper	36	1,511	20	1.33
Remington Cyclone	36	1,329	26	1.72
CCI Mini-Mag Segmented HP	40	1,209	33	2.60

Notes: Accuracy results are averages of three five-shot groups from a Lyman Match Bag/Bag Jack combo at 50 yards. Velocities are averages of 10 shots measured by a Garmin Xero C1 Pro chronograph. Temperature, 82 degrees; elevation, 866 feet. Abbreviation: HP, hollowpoint

DROPPING THE HAMMER

WITH ITS NOVEL DESIGN, HENRY'S LEVER ACTION SUPREME ISN'T YOUR GRANDDAD'S LEVER GUN, BUT IT'S DEFINITELY STILL A SMOOTH-SHOOTING WOODS RIFLE.

by Brad Fitzpatrick

Henry is an iconic name in American firearms, and most shooters associate the brand with lever-action rifles. Benjamin Tyler Henry's groundbreaking .44 lever action, which debuted in 1860, changed the course of the Civil War and became known as the "rifle you load on Sunday and shoot all week."

Modern Henry rifles like the Golden Boy and Side Gate are among the most popular lever actions available today. Further, the company has launched a new Special Products Division that's designing advanced lever-action rifles for the next generation of shooters. But I didn't see the Lever Action Supreme rifle coming. While most of Henry's modern lever-action designs reflect their roots, this one is a substantial departure.

The Henry Lever Action Supreme Rifle—or, as Henry abbreviates it, LASR—still has a hammer, but it rides inside the anodized aluminum receiver. The rear of the receiver is boxy and angular, reminiscent of Winchester's Model 63 or even Browning's A5 as well as Henry's new semiauto Homesteader rifle.

But the internal hammer design serves two important functions. First, the receiver is free of gaps and holes that could let debris enter and potentially foul the action. Second, the internal hammer eliminates the need for manual hammer operation and simplifies shooting.

In simpler times, lever-action rifles had only a hammer, but many companies eventually opted for a hammer and a crossbolt safety. The system was anything but streamlined. However, the LASR's internal hammer is coupled with a tang-mounted safety that's readily accessible for both right- and left-handed shooters. The safety is not only easy to reach but also moves positively from Safe to Fire.

The clever safety design locks the trigger when the lever is in operation. Because the trigger is locked, there's no way that dropping the rifle while cycling the lever could cause a discharge. The safety also locks the trigger when the bolt is closed, making this one of the safest and simplest lever-action rifles to operate.

Lever operation is silky smooth on this rifle—smooth enough that it's easy to overlook all the mechanical wizardry happening within the receiver. To witness this wizardry firsthand, simply drive out the two transverse pins in the receiver using a non-marring punch. Once they are removed you can separate the barrel/fore-end/upper receiver assembly from the lower assembly. The lower assembly contains the trigger mechanism, bolt and firing pin.

If you're thinking that upper receiver/lower receiver verbiage sounds very much like AR-15 talk, you're spot-on. But the upper/lower receiver design is not the only DNA that this rifle shares with an AR. When you understand that, you know why this model is chambered to .223 Rem. and .300 BLK, both popular AR cartridges.

The bolt body looks very much like an AR bolt, from the eight lugs to the M16-style extractor to the ejector. A cotter pin allows you to remove the firing pin, and from there you can pull the cam pin and remove the bolt.

Effectively, the LASR bolt operates much like an AR bolt, but it uses mechanical energy instead of gas to cycle the action. But that's easier said than done, and it's difficult to transfer the rotational movement of the rifle's lever into the smooth lateral movement of the bolt.

Henry managed to accomplish just that, using a clever system the company calls the quad bar linkage and slider crank mechanism. Essentially, there are four arms—two in the front, two in the rear—attached by a linkage. As the lever is lowered, the linkage drops and the forward bars draw the bolt carrier and bolt rearward. The bolt carrier itself is machined from 416 polished stainless steel and rides smoothly on rails when the lever operates.

The result is pure magic. What's most impressive to me is that cycling the bolt is extraordinarily smooth. Drop the large loop lever and the quad bar linkage folds in and draws the bolt back with svelte precision. There's no ratcheting, no grinding.

The simple two-pin takedown offers several advantages. First, should some stray piece of vegetation or dirt find its way into the receiver, you can easily remove it. Cleaning and lubricating is also quite simple, and even if you never disassemble the bolt you can at the very least wipe down the internals and add a thin layer of lubricant to the lugs and the rails upon which the bolt carrier group rides. You can also break down the rifle for easy transport.

Each LASR rifle ships with a 10-round PMag and a five-round limiter. Limiters are necessary in some states that restrict capacities for hunting. Installing the limiter is simple, and directions are included in the manual. Speaking of manuals, Henry's manuals are excellent. They cover all the basic operations and include useful photos and plain English instructions, which doesn't seem noteworthy unless you've tried to piece together a firearm using only a poorly written manual for reference.

While flipping through the manual I came across something that surprised me: directions to adjust trigger pull. If you know lever-action rifles, you understand how unusual an adjustable trigger is. One of the primary reasons many lever actions don't shoot well is that they come with heavy, gritty triggers. Not so the LASR. To adjust trigger pull weight, after making sure the rifle is unloaded, insert the included 1/20 hex key through the hole in the front of the trigger. Then turn counterclockwise to lighten the pull.

You'll want to keep that hex key close by because it is also required to adjust the rear sight for windage and elevation. Two set screws lock the sight in place. The rear sight features a flat top and a trapezoidal cutout that corresponds with the pyramid-shaped front sight.

This sounds odd, but it works. The eye naturally balances the front sight in the trapezoid notch, and the peak of the front sight aligns naturally with the peak of the rear sight. It works well for close shots, and I find it far more intuitive than the buckhorn sight favored by some lever-action fans.

If iron sights aren't your bag, the top of the receiver is drilled and tapped to accept a rail or bases and rings. This sleek woods rifle pairs perfectly with a light red dot, and I mounted a Vortex SPARC AR atop a Ranger Point Precision rail on my .300 BLK sample. So equipped, the gun weighed just seven

The Henry's squared-off receiver and checkered walnut stock add a classic touch, and the rifle features an adjustable trigger. The optics rail shown here is an aftermarket part.

The LASR employs a bolt design very similar to an AR-15's, and its linkage and slide design results in an action that operates super smoothly.

SPECIFICATIONS

HENRY LEVER ACTION SUPREME RIFLE

TYPE	lever-action centerfire
CALIBER	.223/5.56, .300 BLK (tested)
CAPACITY	10; 5-round limiter included
BARREL	16.5-inch, 1:7 twist; threaded 5/8x24
OVERALL LENGTH	36.65 in.
WEIGHT	6 lb., 7 oz.
STOCK	checkered American walnut
FINISH	blued barrel, anodized black receiver
TRIGGER	adjustable; 3 lb., 8 oz. (measured, as received)
SIGHTS	adjustable rear, pyramid front
PRICE	$1,299
MANUFACTURER	Henry Repeating Arms, HenryUSA.com

pounds. Couple that with an overall length of just over 36 inches, and you can see why the compact LASR is well suited for hunting in heavy timber or from a tree stand or blind.

Henry uses premium checkered American walnut for its stocks, and the wood on my test rifle was exceptionally good. The checkering is clean and offers a secure grip.

The .300 BLK version sports a 16.5-inch barrel, while the .223/5.56 features an 18-inch pipe. The .300 BLK gets a 1:7 twist rate while the .223/5.56 has a 1:8 twist. Both barrels are threaded—1/2x28 for the .223, 5/8x24 for the .300—and both are free-floated.

You read that last bit correctly. Henry barrels are free-floated thanks to an aluminum extension on the front of the receiver that supports the fore-end. The fore-end is press fitted and not designed to be removed, but it works well and allows the barrel to be truly free-floated. That feature, combined with the trigger design and lack of a barrel band, improves the LASR's accuracy potential compared to other lever-action rifles.

It's easy to fall in love with the Henry, thanks to its novel design, sleek lines and beautiful walnut stock—plus being made in America—but good looks and domestic pride don't make up for poor performance. I hoped that the Henry would not disappoint on the range.

No need to worry. This gun shoots exceptionally well for a lever action and will go head-to-head with many bolt-action rifles and ARs. It's not a match rifle, but the numbers are impressive.

The best 100-yard, three-shot group of the day came via Federal's new 190-grain Fusion Tipped load (see sidebar), which managed a 1.15-inch group at 100 yards. All the ammo grouped under 1.5 inches, and most groups were in the 1.3- to 1.4-inch range. And that's with a two m.o.a. red dot. A riflescope would potentially turn the LASR into a one m.o.a. rifle.

The LASR is the smoothest lever action I've ever fired, with no wobble or ratcheting while cycling. The AR-style bolt worked in perfect synchronicity with the PMag, and there wasn't a single issue during cycling, aside from the magazine failing to lock in position a couple times. I found that I had to wiggle the mag back and forth to secure it, and it seemed to work better with the action either completely closed or open.

Trigger break weight averaged 3.5 pounds out of the box, and I like the wide trigger shoe. The recoil pad is dense and comfortable, although as a wing-shooter I do wish the heel had a bit more radius for snap shooting. Recoil with this .300 BLK was hardly noticeable.

There aren't a lot of controls on this rifle, and I like that. The simple tang safety is easy to access for right- or left-handed shooters, and it's easy to lower the lever to check the status of the chamber with the safety engaged. The only other control of note is the magazine release tab in front of the lever. It's a bit stiff, but it works very well.

My only other complaint is really a plea to the folks at Henry: Chamber the LASR for straight-wall cartridges. This is the type of rifle for which the .350 and .400 Legends were created, and a LASR in either cartridge would be a top-shelf Eastern whitetail rifle that would also work on hogs and bears over bait.

The LASR is beautiful, handy and lots of fun to shoot, and it would make a terrific saddle or truck rifle. It also makes a compelling case as a home defense rifle, especially in areas where magazine capacities are restricted and/or semiauto rifles are not allowed.

By dropping the hammer, Henry has opened a new chapter in lever-action design, and it's impossible to ignore a rifle that's this innovative, well-built and accurate. ■

The Henry's serrated, adjustable rear sight features a trapezoidal notch.

ACCURACY RESULTS

HENRY LEVER ACTION SUPREME RIFLE

.300 BLK	Bullet Weight (gr.)	Muzzle Velocity (fps)	Std. Dev. (fps)	Avg. Group (in.)
Federal Fusion Tipped	190	1,071	11	1.21
Wilson Combat V-Max	110	2,296	14	1.35
Hornady Frontier FMJ	125	2,280	17	1.45

Notes: Accuracy results are averages of three three-shot groups at 100 yards from a fixed rest. Velocity figures are 10-shot averages recorded on a Caldwell VelociRadar located at the muzzle. Temperature, 72 degrees; elevation, 1,020 feet. Abbreviation: FMJ, full metal jacket

Fusion Tipped .300 BLK

The Federal Fusion has been around for a while, but recently the company added a tipped option. The orange polymer tip improves aerodynamics, and the ballistic coefficient of this particular bullet is an impressive .494.

Federal promised excellent accuracy from this new load, and it did not disappoint. That's particularly impressive since this is a bonded bullet and not all such bullets shoot well. The copper jacket of Fusion bullets is electrochemically bonded to the lead core one molecule at a time, and the resulting jackets are uniform and enhance accuracy potential. Muzzle velocity is listed as 1,050 fps, but out of the Henry it averaged slightly faster than that. The polymer tip and skived nose promote reliable, energy-shedding expansion, and the bonded jacket/core promises deep penetration.

The .300 BLK load is brand new, as is a 7mm Backcountry round, and the entire line runs the gamut from 6.5 Creedmoor to .300 Win. Mag. The .300 BLK load retails for just under $50 per box, while the others range from $53 to $73.—*BF*

CZECH, PLEASE

CZ'S NEW 600+ FINALLY REALIZES ITS SWITCH-BARREL POTENTIAL, AND THE RANGE MODEL IS LOADED WITH WORTHY FEATURES FOR DISTANCE SHOOTERS.

by J. Scott Rupp

Several years ago, CZ introduced the 600, a new bolt action replacing the beloved and well-respected CZ 550. I shot a prototype 600 at a media event prior to its introduction, and apart from a few criticisms I thought the company had done a decent job with its new baby.

However, that initial model never fulfilled its promise. It was intended to be a switch barrel, but prior to launch the company discovered a design issue, and when the 600 was actually introduced, the switch-barrel capability was not a feature on the new rifle.

Now, with the new 600+, that capability is back. The 600+ is available in several versions: synthetic-stocked Alpha; classic wood American; the Lux, with a Bavarian-style stock; the Trail chassis model; and the Range.

I tested the Range, which features a target-style laminate stock. This stock plus a 10.4-pound bare weight and its 24-inch, stout-contour cold-hammer-forged barrel make the 600+ Range either a competition/long-range plinker or a heavy hunting rifle for blinds and stands.

My sample was in 6.5 Creedmoor. CZ classifies this as a medium action—size II in its parlance—and you can switch it to .243 Win., 6mm Creedmoor or .308 Win. simply by changing barrels. Want a 6.5 PRC? All you have to do is swap barrel and bolt head.

The Range is also available with a long (size III) action. This cartridge group includes .270 Win., .30-06, .300 Win. Mag. and 8x57 Mauser. Only the .300 requires a new barrel and bolt head; the rest just need a different barrel.

The system is designed to be easy for anyone to make changes. To swap the barrel, unload the rifle, remove the action screws and pull the flat-bottomed barreled action from the stock. Loosen the two screws in the left side of the receiver and press the receiver liner outward. Remove the old barrel and install the new one.

When you get the new one in correctly, you'll feel the barrel recess lock into a pin inside the receiver. Tighten the liner screws to 45 inch-pounds. CZ does provide a Torx T25 L wrench, but you're best off using a gunsmithing torque wrench and T25 bit.

For the bolt, a pictogram on the side of the shroud shows which way to turn it to release the firing pin and spring. Then push the ejector button forward to release the bolt head. I found a small non-marring tool worked best for this.

Reverse the process to reassemble, and you'll probably want to make use of the handy bolt tool CZ provides in order to compress the firing-pin spring sufficiently to place the bolt shroud in the correct position. I'd also point out here that CZ has done a nice job with illustrating the key points of all assembly/disassembly processes. These number-keyed color illustrations are found on the insides of the owner's manual cover flaps.

The 600+ features a controlled-round-feed action that can also be single loaded, and the bolt has three lugs—in twin sets at six, 10 and two o'clock. It has a short 60-degree throw, and the Range model features a straight bolt handle and an oversize bolt knob with grooves around its circumference.

The 600+ also incorporates a slick locking mechanism for its double-column polymer magazine. In its unlocked position, pressing upward on the magazine release drops the mag. But if you're in the field and want to be sure the magazine is secure, push the release forward to reveal a white mark and lock the mag in place. Maybe it's not a big deal with the Range model, but for the hunting-centric versions it's a nice feature to have.

The rifle's trigger is a cut above. While some other companies outsource triggers for their premium rifles, CZ simply builds on its tradition of excellent factory triggers. A single-stage, it adjusts to four distinct positions—nominally 1.4, 1.9, 2.5 and 3.1 pounds—with a turn of the provided Allen wrench, and you don't have to disassemble the rifle to do it.

As received, the trigger on my sample was set on position one, the white mark lined up with a single dot. That yielded an average pull weight of one pound, two ounces. I shot it that way for a bit but eventually found it too light, so I moved it to position two for a one-pound, eight-ounce pull. It's super crisp and completely creep free. While it does have a bit of overtravel, overtravel doesn't bother me, and I think this is one of the best factory triggers I've used.

The CZ 600+ action is a controlled-round feed that can also be single loaded. The scope hole geometry atop the steel receiver is Remington 700, so bases are easy to find.

The 600+ is a switch barrel, and it couldn't be simpler to change components. The barrel is secured via a two-screw receiver liner, and the bolt disassembles easily to swap heads.

When I shot that prototype CZ 600 rifle years ago, I wasn't a fan of the safety. It's a vertical crossbolt on the tang, and it seemed to me it was different just for the sake of being different. And when rapidly shouldering and firing the rifle, as you might do in the field, the middle finger on my firing hand would occasionally push the safety upward to Safe and prevent the rifle from firing.

That's not an issue with the Range because the bottom of the safety doesn't protrude beyond its inlet in the stock. At the same time, it's easy to place it on Safe. The serrated top of the safety sits fairly flush with the tang, and I did operate it with winter gloves to be sure it fully depresses without issue. It does. The bolt is locked on Safe, but you can unlock it for loading or unloading by pressing the sliding bolt release on the receiver's right side.

The 24-inch barrel on the Range is a heavy contour with a fairly straight taper, starting at 1.06 inches at the receiver to 0.88 inch behind the 5/8x24 threads. Like the steel receiver, it is finished in black BobOx, a proprietary process that promises durability and corrosion resistance.

The Range's target-style laminate stock gives the rifle a distinctive look, and it features a nifty tool-less adjustable comb. A half-moon folding lever sits in a circular recess below the comb. To adjust, flip the lever out, loosen it a quarter-turn, raise or lower the comb to the desired height and retighten.

You can get about 1.5 inches of adjustment, but there are no witness marks. I marked the stainless steel stems with a Sharpie so I could return it to the same position after moving it down in order to remove the bolt for cleaning.

The stock is flat on the bottom from the wrist on back, and it has a large relief cut in the belly. A soft polymer five-slot bag-rider rail sits at the toe. The recoil pad is not too squishy, not

too firm. It's just right. There are QD sling sockets on either side.

The stock's beefy wrist has a rough texture and a palm swell on the right side, and it flares subtly at the base. While it's comfortable, I found the proportions too large for my medium-size mitts. You'd want to put your hands on it to see if it's right for you.

The fore-end is flat-bottomed. You'll find three oblong holes for a bit of weight reduction, along with twin sling-swivel studs that are of the wood-screw variety and thread directly into the laminate. There are QD sling sockets on either side.

Depending on what you want to do with this rifle, CZ may have missed the boat here. While I do think a lot of today's stocks go overboard with M-Lok slots and such, most modern long-range shooters prefer options other than old-school bipods that attach to a sling-swivel stud. A single M-Lok slot for attaching a rail section would be a worthwhile addition.

Fortunately, I was able to steal my wife's Spartan Precision system, which has the wood screw necessary to install the Spartan adapter on the Range's fore-end in place of the forward sling-swivel stud. That in turn allowed me to use Spartan's magnetic bipod and tripod for practical shooting.

First up, though, was bench testing. I borrowed the new Vortex Viper HD 3-15x44mm, which I installed in Vortex Pro medium rings. The Range's receiver doesn't include an optics rail but rather is drilled and tapped for Remington 700-footprint scope bases.

The Range comes with a 0.75 m.o.a. accuracy guarantee for five-shot groups at 100 yards with match ammo. Unfortunately, the original plan was not to test the Range but rather one of the hunting-centric models, so I ordered only hunting loads. Instead it was the Range that was available in time for this issue, so I proceeded with the ammo listed in the chart plus some Hornady Match I had on hand.

As you can see, while they were three-shot groups, most of the hunting

The stock's comb raises and lowers via a folding lever—no tools required—and there's a polymer, slotted bag rider at the toe. The beefy wrist is well textured, and it has a palm swell on the right side.

The safety is a vertical crossbolt on the tang, and it locks the bolt on Safe but can be unlocked via the release forward of the bolt handle.

SPECIFICATIONS

CZ 600+ RANGE

TYPE	switch-barrel bolt-action centerfire
CALIBER	.243 Win., 6mm Creedmoor, 6.5 Creedmoor (tested), 6.5 PRC, .270 Win., .308 Win., .30-06, .300 Win. Mag., 8x57 Mauser
CAPACITY	5+1 (as tested)
BARREL	24 in. heavy contour, 1:8 twist; threaded 5/8x24
OVERALL LENGTH	45 in.
WEIGHT	10.36 lb.
FINISH	BobOx chemical/thermal black
STOCK	varnish-finished laminate w/adjustable comb, bag rider, QD sockets, 2 fore-end sling-swivel studs
TRIGGER	4-position adjustable single stage; 1 lb., 8 oz. (position 2; measured, as tested)
SIGHTS	none; drilled and tapped on Remington 700 footprint
SAFETY	bolt-locking vertical crossbolt
PRICE	$1,599
MANUFACTURER	CZ, CZFIREARMS.COM

loads did meet the guarantee. The rifle didn't care at all for Fiocchi Hyperformance or Hornady Precision Hunter, which is odd since both of these loads have proved accurate in plenty of other test rifles. I didn't include those results because I don't think they're indicative of how this rifle typically shoots.

With Hornady's Match load I spun on a Banish 30 suppressor and changed to five-shot groups instead of three-shot in order to test to the accuracy standard CZ set for the Range. The Range did not make that grade here, but to be fair it's the only match-type load I tried.

After bench testing, I moved to the steel range with the Spartan system and suppressor installed. The 600+ Range really came into its own here. It was rock solid with the Spartan bipod, and I got quick first-round hits from 400 to 700 yards.

Next I shot off two different positions from a barricade, and I found the rifle to be stable and well balanced. I didn't do as well off the tripod, but I think that was a function of how far forward it was mounted, and to be honest I was running out of ammo by that time and wasn't able to experiment enough to get a truly solid position.

Bolt cycling was silky smooth, and feeding and ejection were flawless. Breaking good shots consistently was a breeze thanks to the excellent trigger. In short, when my position was good, the steel was ringing.

Where does this rifle fit in? As I said earlier, it'd make a fine hunting rifle for a ground blind or elevated stand, although due to its length you might find it a bit unwieldy—especially with a suppressor. But with a good solid tripod or other support, it certainly has the accuracy to get the job done.

The trigger adjusts easily to four different positions for a range of pull weights, and it's incredibly crisp. Rupp thinks it's certainly one of the best factory triggers out there.

The 600+ Range would not make the grade for NRL Hunter Factory division because it's too heavy. With the Vortex scope aboard—hardly a hefty optic by today's standards—the rig is exactly at that division's 12-pound weight limit, and a bipod and/or suppressor would put you over. The rifle would, however, make weight for Open Heavy, which has a 16-pound limit, but then you'd be competing against customized guns.

The Range would, however, slot perfectly into PRS's Production division, which is governed by price. The Range's $1,600 price tag is well below Production's $2,500 limit, and I think that makes it a great entry point for someone looking to take up the sport because it also offers several big advantages.

First, since it's a switch barrel, it would be a snap to replace a barrel that gets worn out from high round counts. CZ didn't have an estimate on the price tag for replacement barrels at press time, but a rep told me the company expected good availability.

Two, I don't know where you're going to find a better trigger, and it couldn't be simpler to change the pull weight to suit you. Last, I think the weight and balance are pretty ideal, and while there are stocks out there that offer more adjustability, comb height is the biggie, and the Range has you covered.

True, it did not fulfill the accuracy guarantee, but again, I tried only one match load. I have no doubt that some experimentation with factory loads or judicious handloading would yield the kind of accuracy you want. It's certainly plenty accurate for hunting, if that's what you want to use it for.

CZ has always been known for dependable, accurate rifles. The new 600+ stays true to those roots while delivering some worthwhile advancements, and whether it's the Range or one of the other models, it's definitely worth checking out. ■

ACCURACY RESULTS

CZ 600+ RANGE

6.5 Creedmoor	Bullet Weight (gr.)	Muzzle Velocity (fps)	Std. Dev. (fps)	Avg. Group (in.)
Berger Classic Hunter	135	2,644	30	0.63
Berger Hybrid Hunter	156	2,539	20	0.67
Federal Fusion Tip	140	2,670	15	0.71
Hornady Match	140	2,674	33	0.98*
Federal Terminal Ascent	130	2,744	26	1.31

Notes: Accuracy results are averages of three three-shot groups at 100 yards with a Vortex Viper HD 3-14X from a Caldwell Fire Control rest. (*Three five-shot groups w/Banish 30 suppressor.) Velocities are averages of 10 shots recorded 10 feet from the muzzle with a ProChrono DLX. Temperature, 70 degrees; elevation, 4,900 feet

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KNOW WHEN TO FOLD 'EM

THE LATEST RUGER MINI-14 TACTICAL ADDS A COOL FOLDING STOCK.

by Cory Ross

Readers of a certain age may remember "The A-Team," a TV series that ran for four years in the 1980s and followed the exploits of a fictional band of ex-Special Forces members turned soldiers of fortune. If you've seen the show, the rifle featured in this article will likely be familiar. A stainless Ruger Mini-14 with folding stock was one of the guns prominently featured on the show.

The Mini-14's designer was Leroy James Sullivan, an influential but largely unknown inventor who helped developed guns like the M16, the Stoner 63 and the Ultimax 100L LMG. The Mini-14 has been available in several configurations over its nearly 50-year lifespan. One was the Mini-14 GB-F, which Ruger designed to better serve law enforcement. It featured a paratrooper-style folding stock, a pistol grip, a flash hider and a bayonet lug, and it's almost identical to the new model I had the chance to review here.

This folding-stock version, inspired by the GB-F model, is part of the Mini-14 Tactical family, and the side folder itself is made with the original Ruger castings and toolings dating back to the 1970s and 1980s. The stock folds to the right and locks in place via the folding buttpad. You actuate a button within the butt and fold the stock, then lock it onto a nub on the fore-end. The stock locks solidly, with only one or two millimeters of play as the stock swings out.

The new rifle is a "limited availability" model chambered to 5.56 NATO, and it ships with two bright, nickel-Teflon 20-round magazines. (There's also a Davidson's distributor exclusive, a similar side-folder chambered to .300 BLK.) This one sports an 18.5-inch barrel with factory-installed flash hider that's cold hammer forged, and the matte stainless barrel is threaded 1/2x28 in case you want to change out the flash hider for a suppressor or other muzzle device.

Ruger's original goal with the Mini-14 was to downsize the M14 service rifle to fit the smaller service calibers of the era, specifically the 5.56 NATO. While it doesn't share the same operating system as the M14, it bears some resemblance to the former 7.62 NATO service

rifle while incorporating many modern touches.

The Mini features Ruger's integral mount bases machined into the receiver fore and aft of the ejection port, and a pair of Ruger one-inch rings and a Picatinny rail to fit this system are included with the rifle. This being 2025, I think it'd be smart for Ruger to substitute 30mm rings for the one-inch versions. This rifle really begs for a low-power variable scope of some type, and very few of those have one-inch tubes.

The Ruger Mini-14 Tactical ships with nice iron sights as well. The rear is an adjustable ghost-ring aperture. The front sight is unique. It features a blade protected by wings, but instead of being located at the muzzle, it's set several inches back and includes an integral bayonet lug.

The wood portion of the stock is matte-finished walnut, and the wood is so-so with no distinguishing figuring—just a utilitarian stock. There are sling mounts on the left-hand side: one at the tip of the fore-end, and the other above the pistol grip.

All this combines into a cool and distinctive rifle that exudes 1980s nostalgia. It features a simple gas system, at least when compared to the M14's complex setup. The system attaches to the barrel with four bolts and includes the clamp-on gas block, gas pipe and slide assembly, which is Ruger's version of the M14 operating rod.

The magazine release is located forward of the trigger guard and functions similarly to the M14. Unless you have exceedingly large hands, you'll have to break your firing grip to operate it. The magazine is best inserted via the "rock-and-lock" method, placing the forward edge of the mag in first and then rocking it rearward to lock it in place. The safety sits inside the trigger guard, as on the M14. Push forward for Fire; pull rearward for Safe.

The bolt handle is on the right side. I operate it with my off hand and reach over so that my dominant hand remains in the ready position. The polymer grip sits at a unique angle. I much prefer the grip angle of something like the Magpul K2 series, so I didn't find this to be the most comfortable arrangement.

The two-stage trigger was the biggest letdown. The average pull weight over 10 pulls using a Lyman digital gauge was four pounds, 10 ounces. It has a solid first stage followed by a gritty second stage with a hitchy feel to it. The trigger's reset was noticeable and about 3mm to 4mm. Overall, though, the trigger is functional and designed more for tactical applications rather than precision shooting.

For accuracy testing at 50 yards I added a Vortex Sparc Solar red dot to the supplied Picatinny rail. As you can see in the accompanying chart, I used a variety of bullet weights—all in .223

The folding stock not only gives the rifle a cool retro look but also makes for convenient transport and storage. Folding and lockup are solid and secure.

While the Mini-14's gas system is different than the M14's, the bolt is quite Garand-like. The receiver is machined to accept the supplied Ruger rings, and the ghost-ring sight is adjustable.

SPECIFICATIONS

RUGER MINI-14 TACTICAL

TYPE	semiautomatic centerfire
CALIBER	5.56 NATO
CAPACITY	two 20-round detachable magazines supplied
BARREL	18.50 in., 1:9 twist, flash hider; threaded 1/2x28
OVERALL LENGTH	39.25 in.; 29.75 in. folded
WEIGHT	7.5 lb.
FINISH	stainless steel
STOCK	walnut w/stainless side-folder
SIGHTS	adjustable ghost-ring rear, fixed front
SAFETY	2-position rocker inside trigger guard
TRIGGER	2-stage; 4 lb., 10 oz. pull (measured)
PRICE	$1,849
MANUFACTURER	Ruger, RUGER.COM

Rem.—and I was interested to see how the rifle would handle the heavier loads with its 1:9 twist barrel.

With regard to bench accuracy, keep in mind that the Mini-14 not a precision rifle and was never meant to be one. In the past Ruger did release some "accurized" versions, but even those weren't precise by today's standards. Furthermore, the Mini-14 stock's ergonomics aren't ideal for bench shooting. I supported the stock tip with a small rear bag, using my off hand to apply slight downward pressure on the handguard, forward of the red dot, to steady the rifle and help it ride in the bag.

The included Picatinny rail provides for easy optic mounting. The rear sling attachment point is located just behind the receiver.

The front sight sits several inches back from the muzzle and includes an integral bayonet lug.

ACCURACY RESULTS

RUGER MINI-14 TACTICAL

.223 Rem.	Bullet Weight (gr.)	Muzzle Velocity (fps)	Std. Dev. (fps)	Avg. Group (in.)
Berger BT Match	73	2,645	28	2.32
HOP Munitions FMJ	55	2,970	31	2.43
Remington Premier Match	68	2,874	14	2.54
Fiocchi Hyperformance	77	2,418	33	2.78
Remington UMC FMJ	55	2,897	29	3.52
Federal CenterStrike	77	2,535	22	3.75

Notes: Accuracy results are averages of three five-shot groups fired at 50 yards with a Vortex red dot from a bag on a concrete bench. Velocities are averages of 10 shots recorded on a Garmin Xero C1 chronograph. Temperature, 68 degrees; elevation, 1,030 feet

As the chart demonstrates, the best performer of the group was the Berger 73-grain load, which came as a surprise since that's a relatively heavy bullet for a 1:9 twist. In fact, I hope Ruger will consider changing the twist to a more modern 1:8.

I actually had one group with the Berger that approached an inch, but a flyer pushed it out to more than 2.75. Subsequent groups hovered around two inches. Again, this was all with a red-dot sight—no magnification to help with precision shots.

The rifle didn't like all the heavier loads, though, and the results with the Federal 77-grainer were more in line with what I would've expected with the 1:9 twist. The HOP 55-grain load managed a sub two-inch group, which I found satisfying. Based on my testing, for longer shots I would choose the Remington with the Sierra MatchKing, along with the Berger round.

In limited field exercises, the rifle proved well-balanced, thanks in part to its Garand-style action, which helps keep the weight centralized. While the folding stock seemed minimalist, it was comfortable, and with its short length of pull it worked well for me. And both from the bench and from the shoulder the rifle proved 100 percent reliable.

The Ruger Mini-14 is a popular rifle that bears a resemblance to its namesake, the M14. While it combines elements of two well-known American military arms, it is inherently a unique design. Moreover, the Mini-14's popularity seems to fluctuate over time.

In a world where AR-15s dominate, the Mini-14 is not as mainstream, but its presence in popular media helps keep it relevant. In a market flooded with black rifles, the Mini-14 manages to stand out. This was evident at the range, where many people approached me to ask about the rifle.

However, this particular Mini-14 Tactical is pricey, with a suggested retail price of $1,849. And because it's a limited-availability offering, you won't find it everywhere. Still, if you're a serious firearms collector—and/or a fan of "The A-Team"—this Mini-14 definitely deserves a spot in your collection. ■

THE OTHER GARAND

RECREATING JOHN C. GARAND'S SNIPER RIFLE, THE RARE M1D.

by Jeff John

While I was growing up, my love affair with the M1 Garand formed while watching war movies and the TV show "Combat!" It was a special day when I received my surplus Garand via registered mail from the Office of the Director of Civilian Marksmanship—forerunner to the Civilian Marksmanship Program—during Ronald Reagan's presidency.

It led me to a thirst for the sniper version. Even though ODCM and CMP continued their sales of rebuilt and surplus M1 Garands, original M1 sniper models remained very rare and beyond my means. However, the path to a sniper version became easier once almost every part had been faithfully reproduced.

Had the M1 Garand been designed for a detachable box magazine, conversion to a sniper model would have been measurably simplified. That the base rifle and its eight-shot top-loading clip worked so well is a testament to John C. Garand and Springfield Armory.

The M1 Garand was definitely the best rifle appearing at the worst of times, giving our U.S. infantry unprecedented firepower against opponents still using arms designed in the 19th century. More than 5.5 million were made over its relatively brief production life from the mid-1930s to the mid-1950s, although the sniper versions served in some National Guard units well into the 1990s. But no thought of adding a telescopic sight to the M1 was ever considered at the beginning.

Army high command had developed an oddly intense loathing for sniping between World Wars I and II—to the degree that no plans were made for a sniper rifle. All despite our historical

record of sharpshooting going back to the American Revolution, when riflemen had a telling effect against British smoothbores, and the equally telling effect of telescopic sighted rifles on both sides of our Civil War. The Army took an M1903 sniper rifle into World War I, and the Marines a slightly different version. All sides employed snipers, and their value should have been written in stone.

The Army scrapped its sniper rifles in 1925, but the Marines kept theirs. Of course, even had someone been interested in reviving the sniper program, there was little money, thanks to the Great Depression. So the M1 Garand infantry rifle was the priority.

World War II quickly showed the need for snipers, and our Army was forced to make do on the fly. The quickest path was topping the venerable M1903 rifles with off-the-shelf commercial scopes and mounts. Fitting a scope to the M1 Garand took some doing, and it never delivered the desired results.

Force-fitting a telescopic sight on the M1 was really a fool's errand, but that's what the military leadership wanted, so Springfield Armory took on this unenviable task. After six false starts, two systems proved satisfactory. Springfield Armory's first choice—the simpler M1D, designed by John Garand himself—was eschewed in favor of the M1C, using mounts by Griffin & Howe. The harder-to-build M1C would serve from late World War II through Korea while the M1D cooled its heels until Vietnam, by which time it was obsolete.

The biggest problem with the M1 is the necessity of mounting the scope an inch or so to the left of the bore line, to accommodate the top-loading clip. The rifle can be zeroed at only one distance. At close ranges, the bullet impacts a little to the right. Beyond the zero point, the bullet impacts to the left—increasingly so as the range increases. The rifle also required a cheekpiece so the shooter's eye was in the right place.

The inaccuracy of standard ball ammo exacerbated the point-of-impact disparity. Army testing proved the M2 ball was not sufficiently accurate beyond 800 yards, and in fact accuracy was barely adequate at half that distance.

The biggest benefit of John Garand's M1D design was that, unlike the M1C, the rifle could be chosen for accuracy from the start, and the M1D mechanism was simple enough that it could be built or repaired by any armorer with access to a lathe. He could pull and lathe-turn the barrel until the scope collar could be fitted, leveled and staked in place. The stake pin was set in place, and the base peened over to retain it. The scope ring's large thumb screw locked the mount to the rifle. The handguard was shortened, and the conversion complete.

After World War II, Springfield Armory quietly declared the simpler M1D the future sniper rifle, using the new 7/8-inch M84 2.2X scope, which had been designed and tested but never put into production. However, when the Korean War began, there was no time to produce the M1D, so the M1C with its 2.5X Lyman Alaskan along with the M1903A4 sniper rifles were cleaned up and sent to war.

As much as I'd love to have an original M1D Garand sniper, how much shooting do I want to do with a rifle costing in the high four figures? I found a better path when Sarco offered the M84 scope, rings and barrel mount on sale for less than the scope alone.

The CMP's custom shop manager told me a Criterion M1D barrel was on hand, and the price installed was $1,450 on an original Expert Grade M1 receiver. Everything else—cheek rest, flash hider, sling, scope and rings—came from Sarco for $600 more.

My first step was to clean, lube and zero the iron sights while awaiting the rest of the parts. The M1 has a non-adjustable two-stage trigger. Take-up

The CMP Expert Grade M1 action was fitted with an M1D Criterion barrel. The Sarco accessories brought the total project cost to just over $2,000.

The need to load the M1 from the top meant that the M84 scope had to be placed to the side, which resulted in point-of-impact disparities.

on the CMP M1D's first pull measured 2.5 pounds, and it broke cleanly at 5.25 pounds, which is delightful for a military trigger. The first 48 rounds ran with zero malfunctions, with eight-shot groups in the four-inch range but five-shot groups in the 2.5- to three-inch range. It was a fortuitous start.

All the pieces fit together in a way that would make Springfield Armory and CMP proud. I'm rarely this lucky. The only bit of fussing was with the rings and base. The scope ring has a large thumb wheel to tighten it onto the rifle. Next to the wheel is a small spring-loaded post that engages with detents behind the wheel to lock it in place. But this post extended out the back of the base and prevented the scope from tightening properly. Careful use of a Dremel shortened the post until the base locked tightly against the block.

The leather cheek rest was very stiff and dry and needed several applications of Fiebing's Aussie Leather Conditioner to soften it. Oddly, the proper No. 7 brass wood screws to attach it to the stock are no longer available, and only No. 6 and 8 screws can be had. I chose 3/4-inch No. 8s.

It seems everyone has their own ideas about fitting and lacing the cheekpiece, and even the ordnance manual changed the process over the years. The cheek rest has three felt pads underneath to adjust the fit to the individual's face, and the fit is perfect for me as is. The scope's sight picture is a little too far forward for bench work but perfect when prone.

The M2 flash hider was too tight. Originally, some M2s were too loose and negatively influenced accuracy, so the fact that mine was too tight was a good start. Thinking perhaps it was the thickness of the Parkerizing, I ran a cotton swab with oil around the barrel and the inside of the M2 and rotated it gently until it fit snugly, and the latch tightened securely over the bayonet lug. Weighing 7.4 ounces, the M2 lowered point of impact a good inch at 100 yards.

I shot two match loads and one ball load through the rifle: Black Hills 168-grain MatchKing, Hornady 168-grain ELD Match and Prvi Partisan M2 150-grain ball. The best eight-shot groups with match ammo always had five or six close ones in the two-inch range and an overall group in the 3.5-inch range. The ball ammo delivered five-inch groups, with four or five inside three inches.

The most important thing I learned was to let the gun cool thoroughly between groups. Eight shots heats everything up, and giving it 20 minutes to cool paid dividends, not only in accuracy but with groups landing in the same place.

Performance of the M84 repro rifle-scope is not going to warm anyone's heart by today's standards. Magnification is a paltry 2.2X for a 27-foot field of view at 100 yards. The windage and elevation knobs have coarse one m.o.a. click values, and the square post reticle

The M2 flash hider weighs nearly a half pound and will change point of impact about an inch at 100 yards. It slips over the muzzle and latches onto the bayonet lug.

The offset scope required a large laced leather cheekpiece to help align the scope with the shooter's eye.

ACCURACY RESULTS

CMP M1D

.30-06	Bullet Weight (gr.)	Muzzle Velocity (fps)	Std. Dev. (fps)	Avg. Group (in.)
Hornady Garand ELD Match	168	2,608	29	3.5
Black Hills Gold/Sierra MatchKing	168	2,747	35	4.0
Prvi Partisan M2	150	2,684	21	4.8

Notes: Notes: Accuracy results are averages of three eight-shot groups fired at 100 yards from a benchrest. Velocities are averages of 10 shots recorded on a Competition Electronics ProChrono screen set 10 feet from the muzzle. Temperature, 79 degrees; elevation, 4,200 feet

subtends a beefy three m.o.a. at 100 yards.

One nice touch, though, is that the elevation drum has graduated hash marks for the drop of the M2 ammunition, and there is enough adjustment to compensate for base and ring alignment issues. The turrets can be set to zero after sighting in, but this requires special tools. A sliding sun shade at the front is complemented by a rubber eye shade at the rear.

The scope's sliding sun shade flew off while I was firing the first clip. Sarco sent a new, heavier spring. It's better, but it still comes loose after a couple of clips. Replacement sun shades are offered for originals, so this might not be an unusual occurrence. Also, the ring system interferes with getting the big thumb wheel tight enough, and retightening was a constant chore.

One interesting aside on the M84 riflescope. The issue scope came without covers. The sniper was supposed to remove the scope and carry it in the M65 web case for protection from the weather.

The biggest drawback to the Garand is that it must be cleaned from the muzzle. Because M1 ammo was loaded with corrosive primers until after the Korean War, the rifles required frequent and full disassembly for cleaning. Because of this, many M1s show erosion at the muzzle as well as the throat. Savvy buyers use a throat and muzzle gauge, available from outfits such as Brownells, to measure erosion at those two points.

If you're interested in an M1D or M1D project gun, barrels are key. There were never many M1C or M1D rifles originally made, and many went to our allies around the world. Springfield Armory made somewhere around 12,000 spare M1D barrels, and many of those went to Israel with the rifles, and the barrels subsequently were sold as surplus.

Those barrels will have the correct codes and dates, and if the conversion is done well, it will be hard to discern an original from a home-built rifle. The qualities that made the M1D so easy to build and repair also make it easy to replicate. To be fair, many of these were put together because original sniper rifles weren't available, but parts were. Today, there are excellent reproductions of the M1C and M1D systems, and the values between an original, an obvious repro like mine and one "faked" by unscrupulous fellows are vast.

While the Garand and its .30-06 were replaced by the M14 and its 7.62x51 in the late 1950s, the M1D was one of the few available choices for a sniper rifle at the start of the Vietnam War. That makes it an interesting and unique choice for the collector or surplus aficionado.

One last bit of good news. The CMP is having brand new Garand receivers forged and machined here in the U.S.A. to continue John C. Garand's legacy. The first rifles with these new receivers should be available soon. ■

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Springfield 1903A3 Rifle rebuilt using a new 'old stock' USGI barrel. Any worn parts have been replaced and receiver professionally reconditioned by our gunsmith with experience on thousands of Springfields. Stocks are original GI in used 'good condition' . See Web Site for more info. Get one while we have them because they never stay in stock for long!

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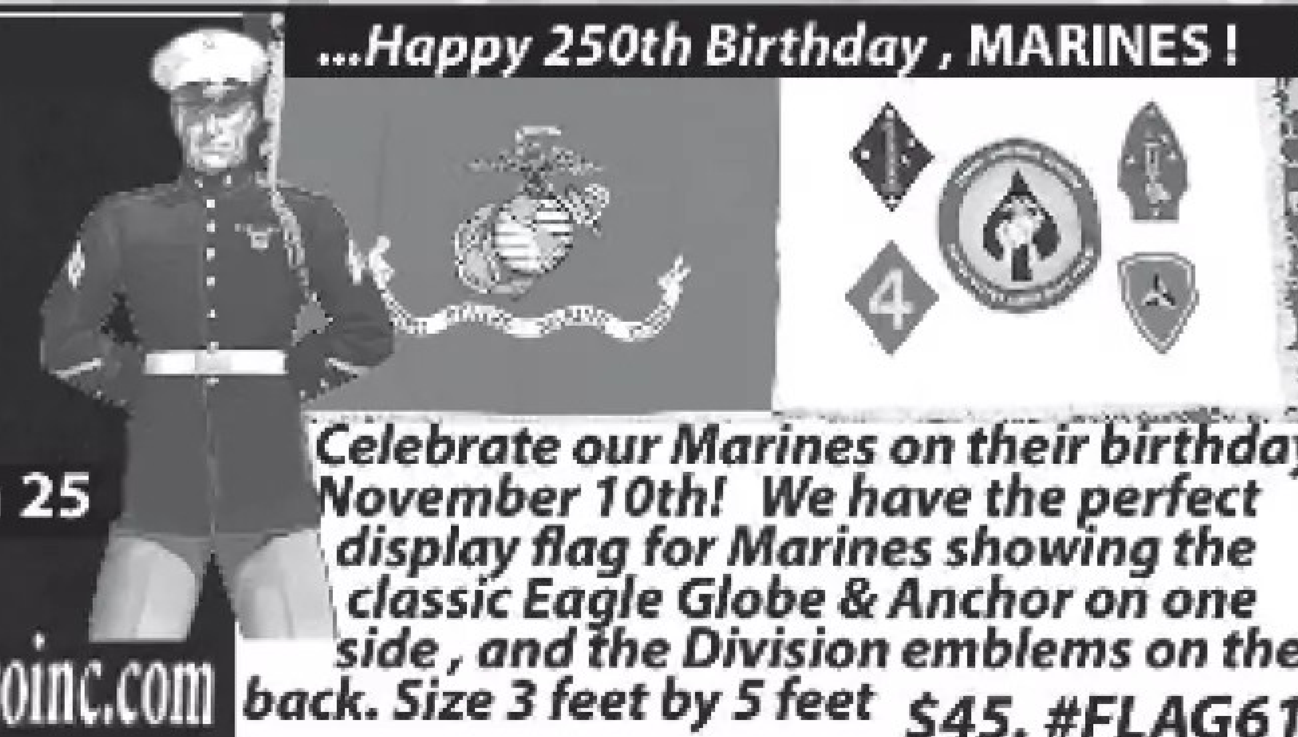

Celebrate our Marines on their birthday November 10th! We have the perfect display flag for Marines showing the classic Eagle Globe & Anchor on one side , and the Division emblems on the back. Size 3 feet by 5 feet $45. #FLAG61

Rifle Bolts - *Get em' while they are still available !*

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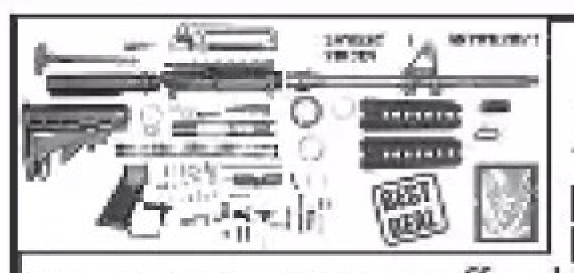
Enfield P14 Bolt, complete $100. #P14002

See Web Site for details

AR15 Builder's Parts Set



Truly affordable way to obtain the AR 15 you want , is to build it yourself. Our kit has all parts needed except the lower receiver which is available from numerous sources affordably. This set features a 16",5.56mm barrel, 4 position collapsible stock. and picitanny rail on a flat top upper receiver with removeable carry handle. $385. #AR150

Thompson 1928 SMG

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Full size metal and wood replica with 20rd. replica mag., & sling. Cocking mechanism and trigger pull work! A beautiful life like replica !

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20 Original parts to keep your Revolver running !

M84 Scope, Base, & Mount

New

Want to build an M1 Garand Sniper Rifle ? This set will get you on your way. Brand new mnfr. Scope with rubber eye cup and Govt. ID plate like the original. Scope made w/ the same engineering drawings as the original scope. Scope optics are crystal clear w/2.5 power. Precision steel M1D Mount for the barrel and M1D Scope Clamp Included. New

$399. #GRD260

M14E2 Stripped Beech Stock - newly manufactured and ready for your M1A or M14 barreled receiver.

$165. #M14364

Hardware available Seperately

Springfield Rifle Barrel, 4 Groove, 1903A3

Very Limited Supply of these brand new .30-06 cal. barrels in the white. 4140 steel with 1 in 10 twist. Extractor groove cut , shallow chamber, front sight cut out for base. You can add an '03' rear sight sleeve to make this a standard 1903 barrel too ! Shallow Chamber' of .044" applied to handle variations in Springfield Rifle receivers. $149.95 #SPF387

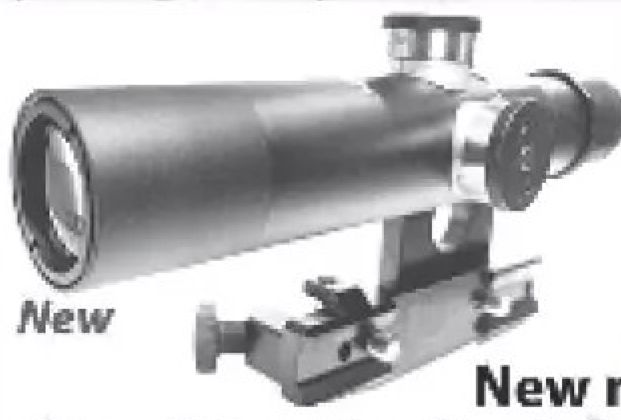
Original USGI Springfield 1903A3 2 Groove Barrel Packed in grease since the 1940s, they are new, but need to be degreased. Might be the last of these new old stock' barrels on the market !

$189.95 #SPF080

German G43 Stock with Handguard

New stripped Beech hardwood stock is a beautiful replacement stock for your 'war worn' G43 rifle ! The stock is ready for installation of your barreled receiver. May require some fitting, but minor. This stock handles all G43 rifles except for the 'last ditch' 1945 issue model. Vey Limited. $295. #G43074

Mosin PU Scope



New

Good for outfitting Mosin Nagant rifles and SVT rifles. New manufacture w/ 3.5 x 20 optics & original style mount. See more on the Web Site

$135. #SCP063

More BARRELS For Your Projects

AK74 Barrel, *new, 5.45 x 39, 15.413" long with In the white, 906" breech $125. #AK088*

M14 Barrel, *new,7.62 Nato, 22" long, Parkerized $175. #M14124*

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New 3.87x

Russian 'PE' Scope Ensemble

Early WW2 Sniper Scope model as used by some of the best Russian snipers like 'Zaytsev' of Stalingrad fame. Newly manufactured with mounts, both hex and round, lens covers,drill & tap set, and canvas cover. See more on Web site. For Mosin 91/30.

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AR15/M16 Scope for carrying handle mounting

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Mosin Nagant 91/30 Golf Ball Launcher - mounts onto the 91/30 rifle and using crimped 7.62x54 blanks, launching golf balls for hundreds of yards!

Loads of FUN!

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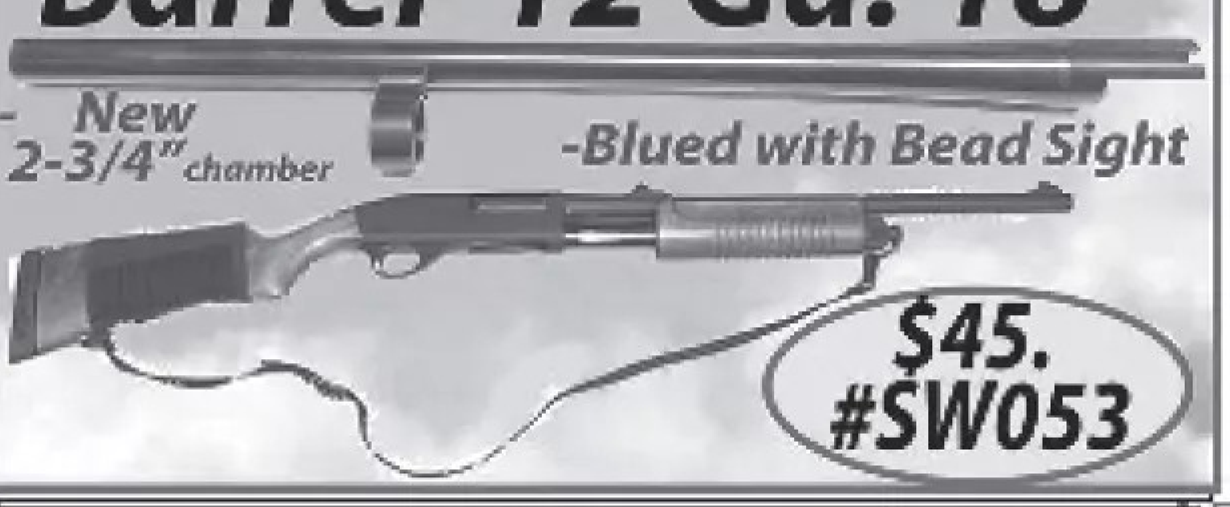
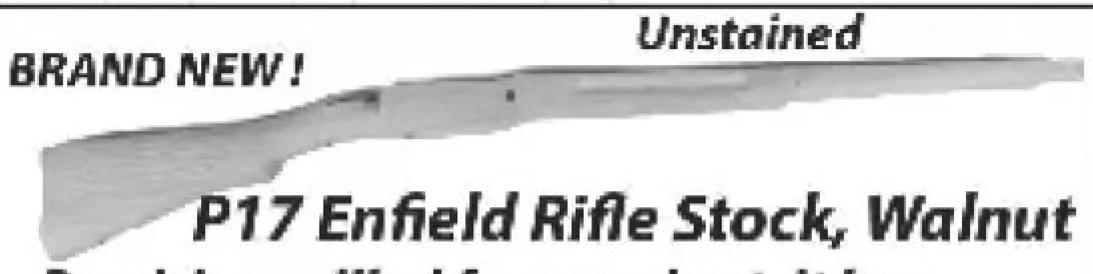


- New 2-3/4" chamber

-Blued with Bead Sight

$45. #SW053

BRAND NEW ! *Unstained*



P17 Enfield Rifle Stock, Walnut

Precision milled from walnut, it has been made to GI Specs. The stock is unstained, and comes with stock bolt & nut. This is only for the stripped stock and as with all new stocks, may need slight fitting although we found that the stock fit our barreled actions perfectly. Perfect replacement stock ! $195. #P17089

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Heavy duty Leather gun scabbard offered in two versions: Lined and unlined. Newly manufactured and accurate to the original and comes with straps.

Brown leather LINED Scabbard $44.95 #GRD382

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Newly manufactured heavy duty gun scabbard used with cavalry , jeeps, halftracks etc. Comes with straps and almost impossible to find originals.

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Available in Tan or Brown Suede

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New

U.S. M73 Sniper Scope

Newly manufactured 2.5 power sniper scope with mount. Perfect for building that 1903A4 Springfield Sniper Rifle that you want!. Tube is 3/4" diameter.

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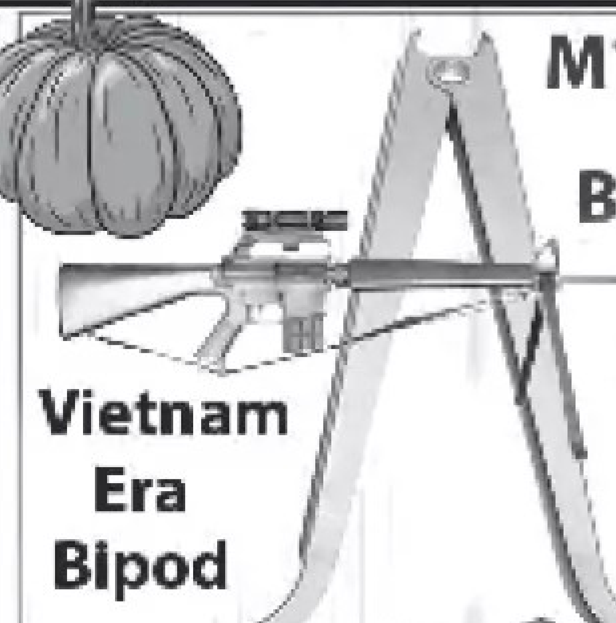
M16/AR15 USGI BIPOD



Vietnam Era Bipod

Original Bipod $24.95 #AR139

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Leather scabbard w/ straps to outfit and carry the shotgun in numerous ways including attached to backpacks, vehicles, etc. Made for short barrel shotguns. Depth of scabbard is 17.5" and handles most single and double barrel shotguns.

SCABBARD in smooth brown leather $49.95 #HOL188

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Several Options !

1903A3 C stock (full pistol grip) Walnut stock, new, w/o handguard unstained. $169.95 #SPF276-W

1903A3 C stock w/ handguard, unstained. Walnut $199. #SPF278

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WW1 Design for Trench Warfare.

Steel with brass bead front sight and sling swivel. Lug fits the U.S. 1917 Bayonet. Order quickly because these always sell out!

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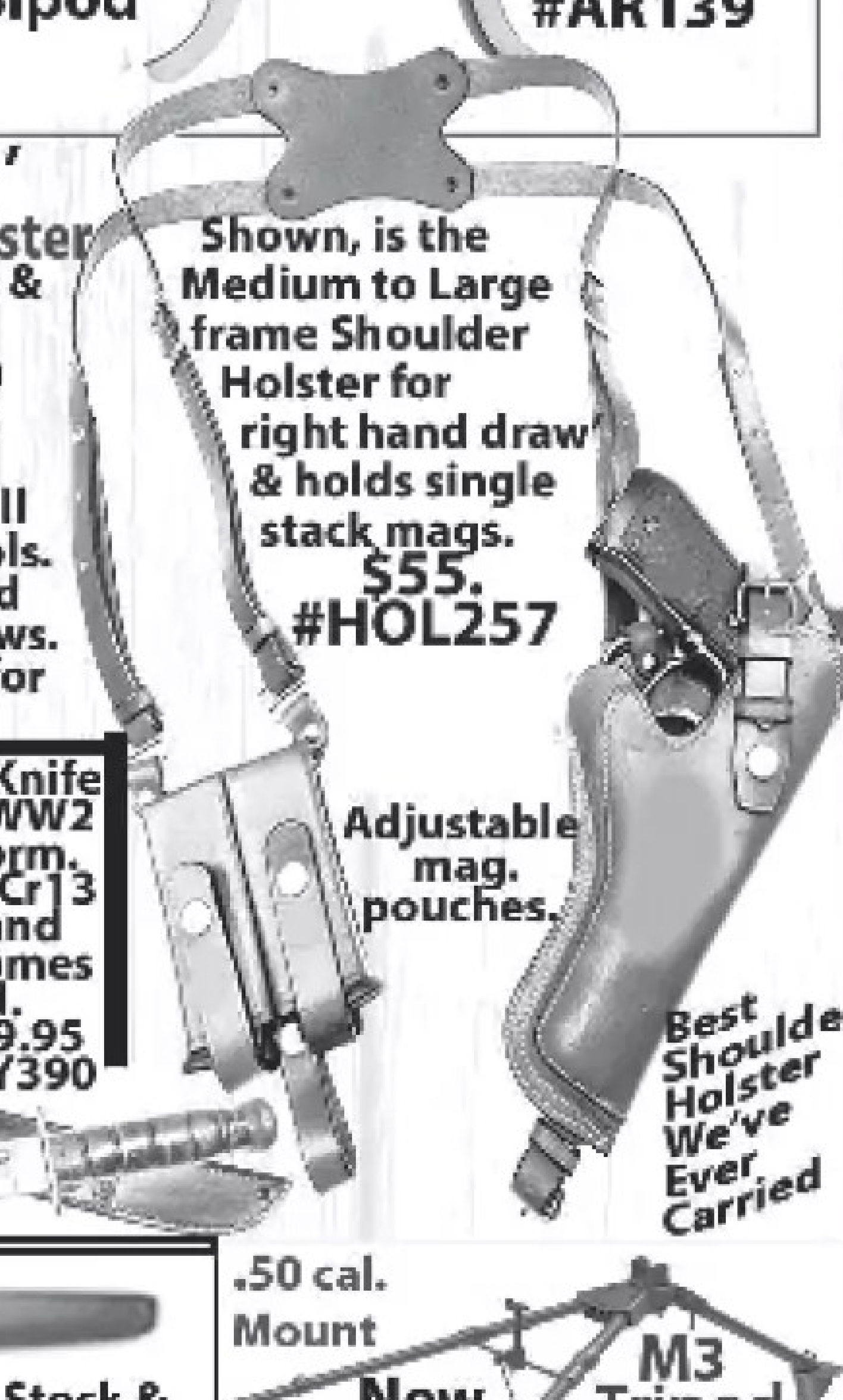
'Easy Rider' Shoulder Holster

Highest quality & rugged for the hardest duty. In 'double stack & 'single stack', compact and full size frame pistols. In Left hand and Right hand draws. See Web Site for details.



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Perfect parts set for building a Government Model 1911 as all parts are included except for the frame. Parts are new except for grips that may be take offs' from disassembled GI pistols. This set comes with a new 7 rd. .45 cal. magazine and new Government model slide with sights and 5" barrel. This is out most popular 1911 'Builders Kit', because it is highly economical in the pursuit of building your own 1911 pistol.

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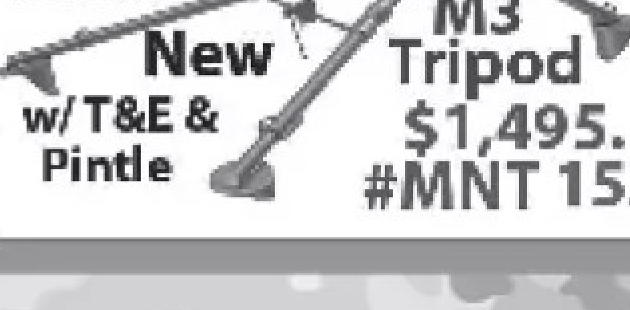
Ruger 10/22™ Folding Paratrooper Stock

Stock and handguard set like the above item, but made for the Ruger 10/22 rifles. More fun, controlability & easily stored. Stock & handguard matching stain. $150. #STK362

New GI Walnut Stocks

$114.95 #GRD278

M1 Garand Stock & Handguard set. Retrofitted for .30-06 rifles from Italian .308 rifles.



.50 cal. Mount

New w/ T&E & Pintle

M3 Tripod $1,495. #MNT 153

Springfield Model 2020 Heatseeker

It's been more than five years since Springfield launched its first modern bolt-action rifle, the Waypoint 2020. That gun was a success, but its M-Lok target-style stock with vertical pistol grip might have been too mod for many bolt-action enthusiasts. To maintain the interest of traditionalists, the Boundary 2020 sporter-style rifle followed. Now Springfield is back with an ultra-modern rifle that offers all the modern amenities that chassis gun enthusiasts like.

The rifle is built around a Sharps Bros. Heatseeker chassis that's machined from a single block of 6061-T6 aluminum and weighs a mere 19 ounces, making it far lighter than some target chassis guns.

The aluminum handguard has M-Lok attachment points arranged in six rows at the 12, 10, two, nine, three and six o'clock positions. There are six M-Lok slots at the nine, three and six o'clock positions and five at the 12, 10 and two o'clock spots. That's a total of 33 M-Lok slots—plenty for even the most accessory-loving shooter among us. More importantly, you can position those accessories precisely where you want them.

As if that weren't enough attachment points, the handguard comes with a pair of QD attachment points on both the left and the right side. These correspond with anti-rotational QD cups on the left and right sides of the Heatseeker's B5 Systems Collapsible Precision Stock.

The B5 CPS offers easy and precise adjustments and incorporates robust hardware that won't fall to pieces in the field. Pull down on the tab on the underside of the stock to adjust length of pull, and a lockout feature prevents the stock from slipping. The cheek riser and buttpad are adjusted by turning heavy-duty dials, and there's no movement when the proper height is set. It's a fast, simple and secure system, and certainly one of my favorites.

The stock offers yet a couple more M-Lok attachment points on the base, and a sling mount as well. The Heatseeker has a B5 Systems P-Grip 23, and both the stock and pistol grip are the same Coyote Brown color as the rest of

SPECIFICATIONS

SPRINGFIELD ARMORY MODEL 2020 HEATSEEKER

TYPE	bolt-action centerfire
CALIBER	6.5 Creedmoor (tested), .308 Win
CAPACITY	5-round AICS magazine supplied
BARREL	16 in. carbon fiber, 1:8 twist; threaded 5/8x24
OVERALL LENGTH	35.5–39 in.
WEIGHT	7 lb., 7 oz.
CONFIGURATION	Sharps Bros. Heatseeker chassis, B5 Systems Collapsible Precision Stock, B5 Systems P-Grip 23 pistol grip
FINISH	Coyote Brown Cerakote
TRIGGER	TriggerTech Field adjustable; 3.75 lb. pull (measured, as received)
SIGHTS	none; Picatinny rail on Rem. 700 pattern w/ 6-48 screws
PRICE	$2,355
MANUFACTURER	Springfield Armory, SPRINGFIELD-ARMORY.COM

the rifle. Rounding out the Heatseeker package is a TriggerTech Field trigger that is adjustable from 2.5 to five pounds—it came set at 3.75 pounds—and a five-round AICS detachable metal magazine.

Like other rifles in the line, the Heatseeker features Springfield's proven Model 2020 push-feed action, which uses a tubular receiver with an integral machined recoil lug. A Picatinny rail with dual recoil pins is mounted to the top of the receiver, and the thread pattern mimics the Remington 700 action, so swapping out for a new rail or bases and rings is simple.

The bolt body is fluted and includes two locking lugs and a beefy extractor that is mounted on the outboard lug. A plunger-style ejector protrudes through the recessed bolt face. The bolt is spiral fluted and includes a 90-degree bolt handle with removable bolt head. A bolt release is positioned high on the rear of the receiver,, so it's easy to access when needed but stays out of your way during normal operation.

The Heatseeker's bolt and action are machined after heat treatment, which reduces distortion and improves consistency. Springfield 2020 rifles also feature EDM raceways, and the result is a silky smooth action that's immediately recognizable when you cycle the rifle. It offers custom gun feel at production rifle prices.

The 2020 action is paired with a 16-inch carbon-fiber-wrapped steel barrel with a 1:8 twist rate and a 5/8x24 threaded muzzle with a thread protector that matches the barrel's profile and looks like it belongs on an expensive rifle. Like the receiver, the thread protector is treated with a Coyote Brown Cerakote finish.

Springfield offers the Heatseeker in both the 6.5 Creedmoor I tested and .308 Win., two calibers that perform well with 16-inch barrels. I paired it with a Leupold VX-5HD 3-15x44 Gen 2 scope and a Magpul M-Lok bipod. These additions brought the total weight of the rifle to just under 10 pounds.

The Heatseeker isn't the lightest rifle, but it's fun to shoot. It barely bucked when I pulled the trigger, and the Field trigger broke crisply. Feeding was flawless. Accuracy lived up to the 0.75 m.o.a. accuracy guarantee, and the best group of the day measured 0.65 inch.

I really like the B5 Systems collapsible stock, although I wish the chassis' recoil pad was a bit larger to engage more of the shoulder. I'd probably also swap out the pistol grip, but otherwise it was fine.

At $2,355 the Heatseeker isn't cheap, but it has top-shelf components, and the accuracy and build quality are excellent. If you want a chassis rifle but aren't interested in piecing one together yourself, this is one of the best off-the-shelf options. ■

The Heatseeker's aluminum handguard features 33 M-Lok attachment points as well as QD cups on both sides, making it easy to customize.

The B5 Systems CPS stock is easy to adjust for length of pull. Gross adjustments are made with a lock lever, finer ones with a thumb wheel. A separate thumb wheel adjusts the cheek riser.

The action incorporates a TriggerTech Field trigger and feeds flawlessly from its AICS magazine. The grip is the B5 Systems P-Grip 23.

ACCURACY RESULTS

SPRINGFIELD MODEL 2020 HEATSEEKER

6.5 Creedmoor	Bullet Weight (gr.)	Muzzle Velocity (fps)	Std. Dev. (fps)	Avg. Group (in.)
Hornady Precision Hunter ELD-X	143	2,435	13	0.74
Winchester Deer Season XP	125	2,612	14	0.92
Winchester Deer Season XP	129	2,651	17	1.05

Notes: Accuracy results are averages of three three-shot groups at 100 yards from a fixed rest. Velocity figures are ten shot averages recorded on a Caldwell VelociRadar located at the muzzle. Temperature, 72 degrees; elevation 1,020 feet

Mossberg MVP Patrol Professional

When we think of a typical sniper's engagement, our minds instantly drift to super-long distances, but police marksmen often operate in urban environments where shots are much closer, like inside 300 yards. Here the higher velocities provided by long barrels aren't necessary, and iron sights can sometimes come into play.

Mossberg's MVP rifle has been tweaked to meet these needs, and now we have the MVP Patrol Professional—a tactical bolt-action rifle made for rapid deployment and intermediate-distance engagements.

Available in 5.56 NATO, .300 BLK and 7.62 NATO, these rifles are among Mossberg's law enforcement offerings, accessed from the main site via a link at the top left corner or LawEnforcement.mossberg.com. You can also ask your local dealer to request a Patrol Professional from their distributor.

These rifles accept AR-pattern magazines and can also accept M14/M1A mags. This is helpful because many departments already have these on hand, and it also allows for convenient ammunition sharing in the field.

I chose the 7.62 NATO, as I have a soft spot for carbine-length firearms that sling full-power ammunition. At a shade over 37 inches, the Patrol Professional rivals most of my AR-15s, while coming in a bit shorter than nearly all my AR-10s.

The polymer stock kept the weight right about there, too, despite making a small concession for the bull barrel. This is a fair trade, as it provides accuracy while helping to reduce the point-of-impact shift between a cold bore and follow-up shots.

I was thrilled to see that iron sights come standard, and Mossberg went the extra mile to include a fiber-optic front post. This is helpful for hastening acquisition while aiding in low-light conditions overall.

The MVP also features a pre-mounted Picatinny rail with a channel that allows for use of the iron sights without having to remove the rail. Therefore, mounting an optic in quick-detach rings lets you switch to the irons in the case of a scope failure.

SPECIFICATIONS

MOSSBERG MVP PATROL PROFESSIONAL	
TYPE	two-lug bolt-action centerfire
CALIBER	5.56 NATO, .300 BLK, 7.62 NATO (tested)
CAPACITY	10+1, detachable box magazine
BARREL	16.25 in., 1:10 twist, threaded 5/8x24 w/A2 flash hider
OVERALL LENGTH	37.5 in.
WEIGHT	7 lb.
FINISH	Tungsten Cerakote
STOCK	synthetic, straight comb
TRIGGER	single-stage LBA adjustable; 3.0 lb. pull (measured, as received), 2.9 lb. pull (as tested)
SIGHTS	fully adjustable rear notch, fixed fiber-optic front; Picatinny rail
SAFETY	two-position rocker
PRICE	$847
MANUFACTURER	Mossberg, LAWENFORCEMENT.MOSSBERG.COM

The MVP Patrol Pro's feeding system is unique. The two-lug design is enhanced with a pair of nubs that can slide a cartridge off either side of a detachable box magazine. Mossberg calls this the Dual Push bolt design, and it contrasts with the company's Dual Drop system, which folds away during operation and is native to the versions that feed only from AR-15 mags.

This rifle also has a dual latching mechanism to accept both M14 and M1A styles of magazines. I like that the engineers had the foresight to cut the magazine release flush with the mag well, because these have a tendency to get bumped during transit. I'm also a fan of the rocker-style, push-to-fire safety that serves lefties and righties equally well.

Like most of Mossberg's catalog, the MVP includes the user-adjustable Lightning Bolt Action trigger system. By removing the stock, you can dial it for your desired pull weight. My sample had a measured range of 2.9 to 6.8 pounds and arrived at nearly the lightest setting. As I trust my trigger discipline, I cranked it down the rest of the way for testing.

For range work, I mounted a GPO Centuri Compact in a pair of Talley Modern Sporting Rings. I selected the new Black Hills 110-grain TSX load, which was developed specifically for government and law-enforcement carbines like the MVP Pro.

I didn't have any M80 ball on hand, but Federal's 150-grain American Eagle load is darn close, so I added that into the mix. And because match-grade fodder is the best way to explore a firearm's capabilities, I selected Hornady's 168-grain hollowpoint.

All three types of ammunition fed and fired well, with the Hornady Match barely out-grouping the others. I was thankful for the included flash hider, as both that and the Federal ammo created a bit of a fireball due to the shortened barrel. But the Black Hills load did not, since it was designed explicitly for guns like this.

Recoil was stout but manageable, and a good muzzle brake would be a welcome addition where noise and dust signature aren't a concern. I shot the gun from both a rest and a bipod, and found it to be great and generally easy to handle.

I ended my day by firing the MVP Pro from the offhand position, as well as kneeling with improvised support. The shorter rifle was markedly easier to balance than lengthier options, which is another important point to consider. You won't find a shooting bench in the field, so being able to steady your gun with less is paramount.

Overall, I think Mossberg did an excellent job with this update, as it retains the features that made it a hit in the first place, while adapting to the needs of the modern shooter. This makes it a handy tool for the professional, as well as a worthwhile hunting implement. ■

The Dual Push bolt's twin projections will push rounds from either side of an AR-pattern or M14 magazine.

The rifle sports an adjustable rear sight and fiber-optic front sight. The barrel has an A2 flash hider and is threaded 5/8x24 for other muzzle device options.

The MVP comes with an optics rail installed. The Lightning Bolt Action trigger is adjustable from 2.9 to 6.8 pounds.

ACCURACY RESULTS

MOSSBERG MVP PATROL PROFESSIONAL

Cartridge	Bullet Weight (gr.)	Muzzle Velocity (fps)	Std. Dev. (fps)	Avg. Group (in.)
.308 Win.				
Hornady Match	168	2,493	10	1.84
Federal American Eagle	150	2,675	13	2.29
7.62 NATO				
Black Hills LE TSX	110	3,061	35	2.14

Notes: Accuracy results are averages of three five-shot groups at 100 yards from a Caldwell Rock rest. Velocities are averages of 10 shots recorded 10 inches from the muzzle with a Garmin Xero C1 Pro Chronograph. Temperature, 60 degrees; elevation, 700 feet

TriStar KR22

While many shotgunners are familiar with TriStar as an importer of affordable, well-made guns from Turkey, rifle shooters may not have heard of the firm. But that could change, as the company is now importing its first .22 rifle, the KR22, from Turkish maker Kral Arms.

The KR22 is a semiautomatic that feeds from Ruger-style 10-round rotary magazines. It features an 18.6-inch barrel that's threaded 1/2x28. The fixed two-dot rear sight is set inside the forward section of the polymer receiver's integral Picatinny rail. The front sight is a red fiber optic that's adjustable for elevation by turning an Allen screw at the front of the base, and the necessary Allen wrench is part of a supplied tool set that's thoughtfully key-ringed together.

I think the rifle's main selling point, aside from the price, is its synthetic stock. The butt has a large cutout that contributes to the rifle's svelte four-pound, 14-ounce weight. Better still, it incorporates an adjustable comb. Insert the correct Allen wrench into the screw in the side of the stock, loosen it and slide the comb up or down to accommodate an optic or the open sights.

The stock has a beefy wrist that's nicely textured for a sure grip, and it flares noticeably at the base. The butt has a rubber recoil pad/cap cut with V-shape grooves to keep it in the shoulder. The fore-end is smooth but has a series of diagonal cuts to provide a bit of traction. The fore-end tip sports a rakish angle and incorporates a sling swivel stud, as does the buttstock.

The action's charging handle can be swapped to either side, and the necessary Allen wrench is included on the key ring. There is no bolt stop, and the action doesn't lock open on an empty magazine.

SPECIFICATIONS

TRISTAR KR22	
TYPE	semiauto rimfire
CALIBER	.22 Long Rifle
CAPACITY	2 10-round rotary magazines supplied
BARREL	18.6 in., threaded 1/2x28
OVERALL LENGTH	38 in.
WEIGHT	4.9 lb.
FINISH	blue
STOCK	polymer w/adjustable comb
SIGHTS	fixed 2-dot rear, elevation-adjustable red fiber-optic front; integral Picatinny rail
TRIGGER	single stage; 4 lb., 10 oz. pull
SAFETIES	trigger blade, crossbolt
PRICE	$289
MANUFACTURER	Kral Arms
IMPORTER	TriStar, TriStar.com

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The trigger is a bit creepy with a four-pound, 10-ounce pull weight, but it's fine for plinking. It has a red safety lever in its face, and that safety is paired with a triangular crossbolt safety at the front of the trigger guard. It's red on the left side for a good visual reference.

The magazine releases by pushing forward on a lever at the rear of the mag well. The two supplied magazines dropped freely and inserted easily.

Disassembly is straightforward. Barreled action and stock are held together with a single screw (the manual says you have to turn out the front sling stud, but that wasn't the case with my sample); the trigger group has screws fore and aft; and the barrel is secured to the action by screws at three and nine o'clock. All the required Allens are provided on the key ring.

Unlike with a 10/22 and similar designs, the bolt can't be removed from the receiver. When reassembling, take a longish, thin-bladed screwdriver or similar tool to hold the magazine latch forward while reinstalling the barreled action.

While I would usually throw a red dot on a rifle like this, for testing I mounted a Zeiss Conquest 3-9X on the integral Pic rail to get a better idea of how this newcomer would shoot. While you're not going to win an Olympic medal with the KR22, its 50-yard accuracy was decent, as you can see in the accompanying chart.

With the bench work done, I removed the scope and shot the iron sights offhand at 25 yards. The rifle balanced well, and rapid-fire accuracy was soda can or better. The sight picture is a little different in that you can see both the entire front sight blade and also part of the blade's base within the rear sight notch. It did take a little getting used to.

There were three light firing-pin strikes that caused failures to fire—one from the bench and two offhand—with the SK load. Everything else functioned fine. It's just another example of how rimfires can be particular about ammo.

Overall I liked the KR22, although the lack of a bolt hold-open might be a deal-breaker for me. For one thing, trying to clean the rifle at the range with a pull-through is a pain since you can't lock the bolt back. Further, since you can't keep the action open you'll always need to have a chamber flag handy, especially if this is a rifle you want a beginning shooter to use.

The other thing I discovered is that I couldn't fully thread my Banish 22 suppressor onto the barrel. It started okay, but about two-thirds of the way back it got hard to turn. Not wanting to strip threads, I didn't force it.

Aside from those criticisms, the KR22 is a fine plinker, and the ability to adjust comb height for irons or optics is a big bonus on a rifle in this price class. It's light, decently reliable and accurate, and a lot of fun to shoot. ■

One really nice touch is the adjustable comb, which can be moved up and down for irons or optics by loosening a screw in the side with the provided Allen wrench.

The front sight can be adjusted for elevation via a screw in the front of the sight base. While the barrel is threaded 1/2x28, Rupp's rimfire suppressor did not fit.

The polymer receiver has a Picatinny rail molded right in, and the charging handle can be moved to either side. There's a safety lever in the trigger face, along with a crossbolt safety.

ACCURACY RESULTS

TRISTAR KR22

.22 Long Rifle	Bullet Weight (gr.)	Muzzle Velocity (fps)	Std. Dev. (fps)	Avg. Group (in.)
SK Semi-Auto Rifle	40	994	21	0.74
Remington Standard V	38	1,040	29	0.80
Fiocchi Range Dynamics	40	1,053	14	1.06

Notes: Accuracy results are averages of three five-shot groups at 50 yards with a Zeiss Conquest 3-9X from a Caldwell Fire Control rest. Velocities are averages of 10 shots recorded 10 feet from the muzzle with a ProChrono DLX. Temperature, 70 degrees; elevation, 4,900 feet

Continued from page 64

dark, I brought a Henry .30-30 that I'd topped with a Pulsar Thermion thermal scope. Zack looked at it and said, "I wonder if that's the first lever-action .30-30 ever topped with a thermal?" I doubt it, but it was shooting well. One morning I used it to shoot three: one in black dark; another in pre-sunrise gray; and a third in broad daylight. Ranges were 50 to 125 yards, all with thermal.

Back in camp, Zack said something that surprised me. Lifelong Georgia hunter and the most eclectic rifle freak I know: "You know, I've never owned a .30-30." So maybe this old dog can still teach other old dogs new tricks. ■

Keep Up with Craig

A lot of you look forward to reading Craig Boddington's work in every issue of *RifleShooter*, and while we may be going away, he is certainly not. His website, CraigBoddington.com, is packed with information on endorsed outfitters, events he's attending, his newsletter and blog, and a whole lot more.

No one—and I mean no one—knows as much as about hunting game around the world. Craig's website is loaded with advice, particularly about Africa. There's a section devoted entirely to free safari education where visitors can learn about pursuing plains game, buffalo, elephants, the big cats, and critters like crocodiles and hippos.

There's a ton of video content as well, including old episodes of "The Boddington Experience" television show. And if you or a friend is working with a new hunter, the free digital book *Hunting…What You Need to Know* is definitely worth checking out. —*J. Scott Rupp*

by Craig Boddington

Aultman Forest

We never get too old to keep learning. At least I hope not. The alternative sounds grim. I don't know how many of you are fortunate to have a refuge where you can be surrounded by good folks who know as much about rifles as you do, maybe more, and shoot as well as you do—on some days better. Okay, most days. These are folks you can keep learning from.

For me, that place has been Aultman Forest, Zack Aultman's pine plantation in south Georgia. Time flies, and I've been going there for 25 years. I have no idea why they've put up with me ever since. Sometimes it's best not to ask too many questions, just be grateful.

Although it's far off my beat, I usually make the pilgrimage once a year. It's during deer or turkey season, sometimes both, other times in between. There are always hogs, and when I was down there last August Zack thought he was seeing too many, despite constant efforts. And despite our best efforts, me and the others there didn't help much.

My suspicion is that hog hunting in mid-August in Georgia—where it's 90-plus degrees at sundown, and there's high humidity, a bright moon and woods full of good groceries—may not be ideal. It doesn't matter. I love those Georgia longleaf pines.

Even if hunting is slow, Zack and Debi have an awesome range off their back porch—actually not just one but two. On the left there's a cutline with a combination of frames for paper targets and steel silhouettes to 400 yards. On the right there's another cutline with steel deer from 450 to 800.

Deer come and go on both cutlines, so you have to be careful, and occasionally a hog shows up. Last fall, Charlie Barnes of Flat Creek Precision came over to shoot with us for a couple days. He'd built me a 7 PRC, but I hadn't had time or place to shoot it in at distance. So we got it tuned. That afternoon at sunset, a sounder came onto the long range, and I flattened it at 500 yards—the rifle's first blood.

The Aultman Forest club is an extended family, me a shirt-tail and occasional relative. Zack is an incurable rifle addict, so part of the fun is delving into the safes and seeing what's new. As long as I get there now and then, there is no reason for me to order up the newest whiz-bang. Zack will have one. In sequence, he introduced me to the 6.5, .300 and 7 PRC. The first game I took with all three was at his place—some in his rifles, others in test guns I brought.

IN SEQUENCE, HE INTRODUCED ME TO THE 6.5, .300 AND 7 PRC. THE FIRST GAME I TOOK WITH ALL THREE WAS AT HIS PLACE—SOME IN HIS RIFLES, OTHERS IN TEST GUNS I BROUGHT.

His Bergara .300 PRC with 212-grain ELD-X was a bit of overkill for a Georgia whitetail, but in Aultman Forest he plants linear food plots between the pines, and his place is bisected by an endless power line right-of-way. There's no limit on distance, just your luck in where animals step out—and confidence in taking the shot.

There wasn't much in the way of new cartridges when I was down there last August, but you never know what Zack Aultman might have. New was an AR in 6mm ARC. Using thermal, one of our crew shot several hogs with it.

As always, at this campfire (well, in August, inside in air-conditioning) we talked cartridges. With all the cartridges from which he could choose, Zack maintained his first choice as an all-around cartridge short of dangerous game is the .300 Win. Mag. It's accurate and so available.

Of my age and right-handed, Zack has lost most sight in his right eye, but his left eye is still good. Rather than go full-lefty, Zack worked on a solution to let him shoot off his recoil-conditioned right shoulder using his left eye in an offset mount.

It's not as easy as it sounds. Jim Hart at Hart Barrels spent years working on it. With some modifications in width and mounting, Charlie Barnes made some prototypes, so on this trip we spent much range time zeroing a couple of .300 Win. Mags. with the offset mount.

It was the weirdest deal ever for me. I'm totally left-handed, and my right shoulder isn't used to .300 magnum recoil. I got pounded. Although left-eye dominant, I had to work hard to get the rifle into my right shoulder and use my left eye. With some fits and starts, we got the scope dialed to 400. Then Gunner Malone—50 years my junior and already one of the guys I can learn from—took over. In a flash he had it centering the gong at 600. Aultman Forest is a place where I keep learning.

Expecting most hog activity after

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