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# SHOOTING TIMES

OCTOBER 2020

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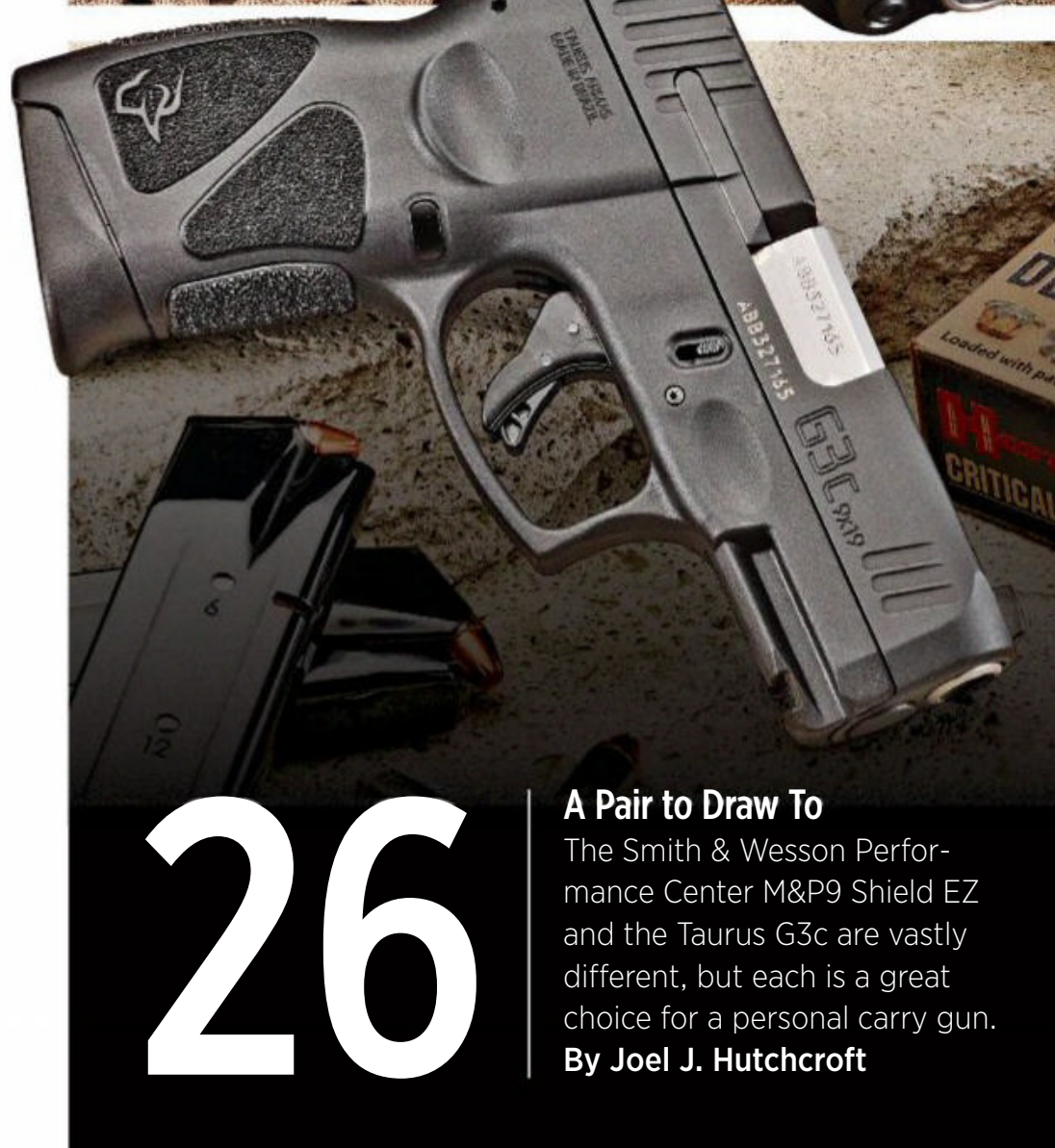
**FRANCHI.**  
FEELS RIGHT



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By Joel J. Hutchcroft

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## Speer 9mm Gold Dot CarryGun Ammo

With specially designed and modified Gold Dot G2 bullets, Speer's CarryGun ammo is optimized for compact and subcompact pistols.

By Joel J. Hutchcroft





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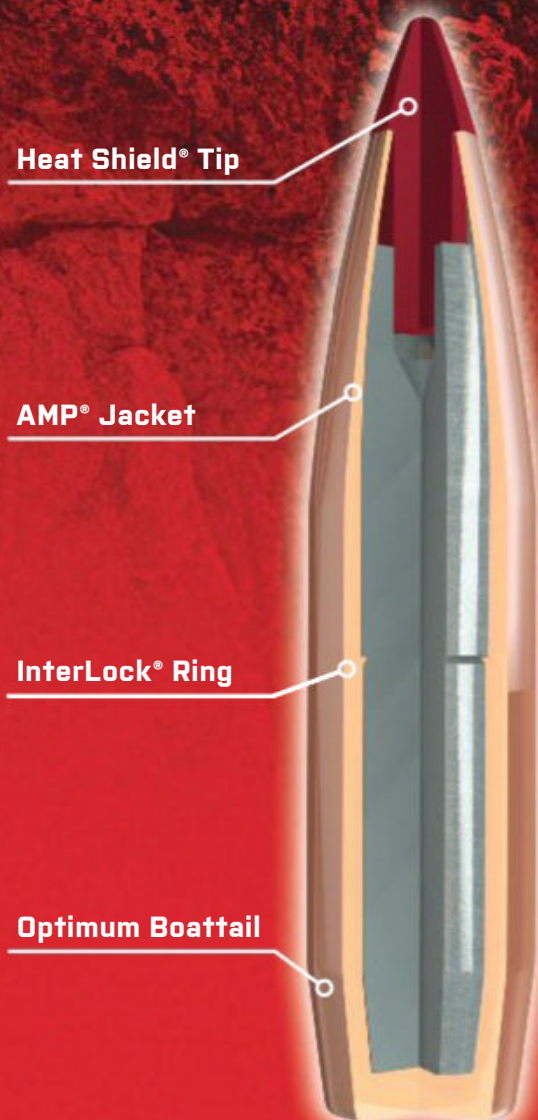
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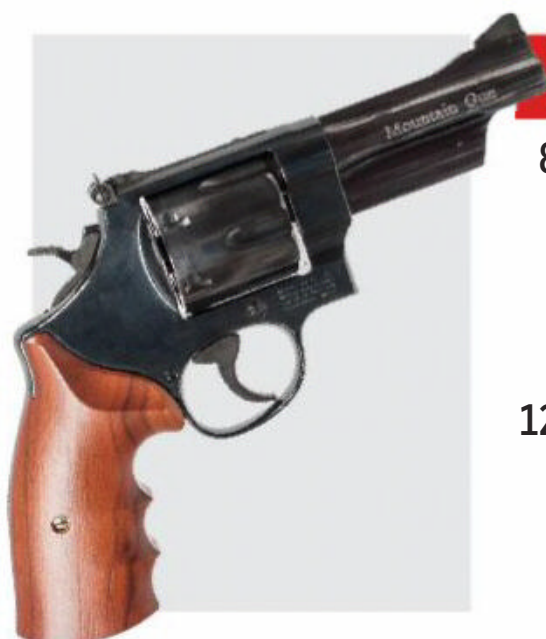
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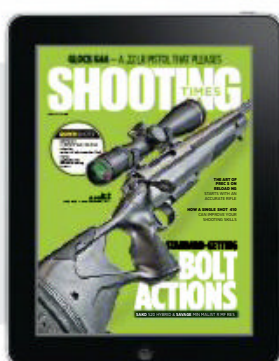
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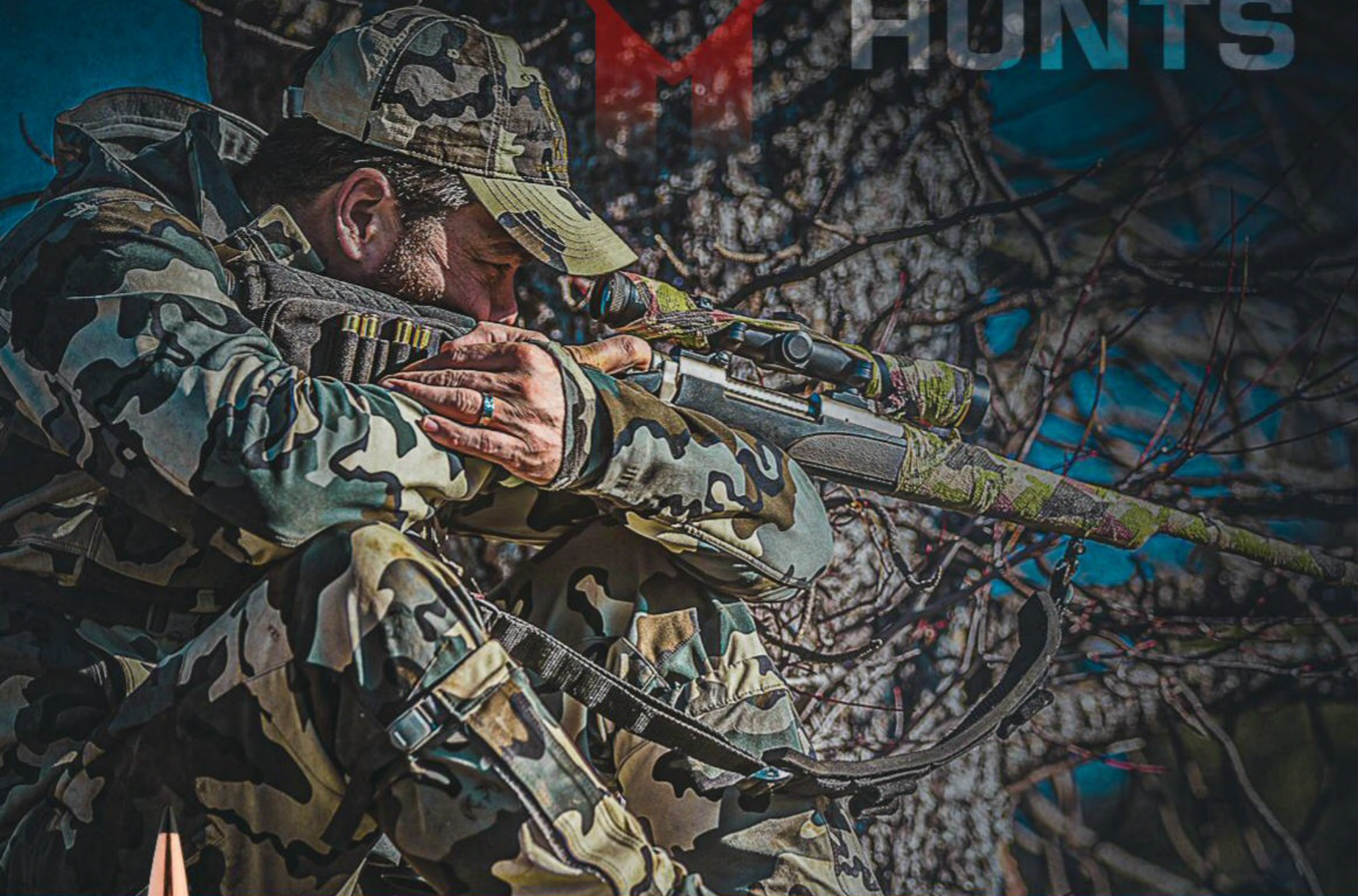
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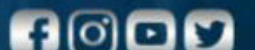
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## SHOOTER'S UPDATE

READERS SPEAK OUT

NEW GUNS & GEAR

ASK THE EXPERTS



# A Tinkerer's Dream

**THANK YOU FOR D. FAUBION'S ARTICLE ON BUILDING YOUR OWN GUN** in the April issue. I have put together a few AR rifles and pistols, not because it is cheaper than buying but because of the accomplishment I feel when I am finished. Like Mr. Faubion, I have also had great experience with AERO Precision parts and components. I have used the company's uppers, lowers, gas tubes, gas blocks, handguards, and other items on a couple of rifles and have found them to be high quality. AERO has great customer service as well and is happy to provide support if you need more info before or after the sale. Another great thing about AERO is it has a "blems" category on the website where you can get really nice items with only minor cosmetic imperfections for deep discounts. If you are just building a rifle to bounce around in the truck or drag through the woods and don't mind a scratch or nick (which are going to happen anyway if you really use your gun a lot), then these are the way to go.

**John Newcomer**

Via email

## Wants More Classic Lever Actions

I enjoyed the June issue, especially "The Reloader." It is really great that Hornady has given life to the .25-35 Win., .348 Win., and now the 7-30 Waters with its FTX bullets and LEVERevolution ammunition. But how about Marlin or Henry giving us a new lever rifle to go with them? The classics are getting harder to find and expensive when you can find them.

**John Robinson**

Bethel, CT

## Bifocal Shooting Glasses

As usual, *Shooting Times* magazine is superb—the articles, the illustrations, and the commentary. I have noticed the recent articles about the "older" shooter, yet I have never seen an advertisement in the magazine for what I consider to be one of the greatest devices for the senior shooter: bifocal shooting glasses. I have several pairs of them, in the various traditional lens colors, at a strength of 2.0. (They do come in other strengths.) I have found them to be invaluable when adjusting a telescopic sight out at the range or hunting and for many other functions. They are available from various companies and at a range of prices. I even use the clear set when working on or cleaning a rifle or a handgun.

**Neil Rothman**

Lake Worth, FL

## Great Story!

I recently read Joseph von Benedikt's column about Doug Turnbull's Winchester Model 1886 rifle and his hunt in Africa in the March issue. What a great story about



a master in his trade with his favorite rifle! I would love to see more articles just like this one covering the greats of the firearms, hunting, outdoors, and law enforcement worlds and their favorite arms. Thank you.

**Derek S.**

Via email

## .22 LR Colt Python

In regard to Joel J. Hutchcroft's statement in "Ask the Experts" about the Colt Python being advertised chambered for .22 LR but never actually produced, I saw some photos of a .22 LR Python and a .256 Magnum Python that were in a big-name gun auction several years ago.

**James Hammaker**

Via email

## Don't Forget the .41 Special

Great article on the S&W Model 57 by Payton Miller in the July issue. I would like to offer some missing information. In the article Miller says there is no lower-power load for the .41 Magnum like the .44 Special/.44 Magnum and .38 Special/.357 Magnum. Well there is—the .41 Special, a reduced-capacity case that allows target or lower-powered loads to be fired in .41 Magnum revolvers. The cases are made and sold by Starline, and there is a fair amount of load data available on the internet. While it is not available in factory-loaded form, the round exists and is popular among handloaders and those of us who enjoy the .41 Magnum but like the reduced recoil for practice.

So don't forget the .41 Special. It is alive and well, and custom revolvers are made by several gunsmiths.

**Joseph F. Leighty, PE**

Scottdale, PA

## A Revolver Is Not a Pistol

Reading the letters in the July issue, I saw where a reader wrote in to explain that a revolver is a pistol.

I know from calling the Virginia State Police for background checks, you have to specify if it is a "Rifle, Shotgun, Pistol, or Revolver," and on the Federal 4473 form, it's the same thing. They are both "Handguns," but according to the legal folks who set the rules, a revolver is *not* a pistol.

**Kennis Easter**

Via email



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## A Hoot to Shoot!

While nowhere near the meanest or baddest out there, the little .380 is one of the sweetest, easiest to conceal, and certainly the most accurate handgun I've ever shot. Their compactness, light recoil, and ease of racking make them perfect for some people. All this and they're a

hoot to shoot—must be why their sales are epic!

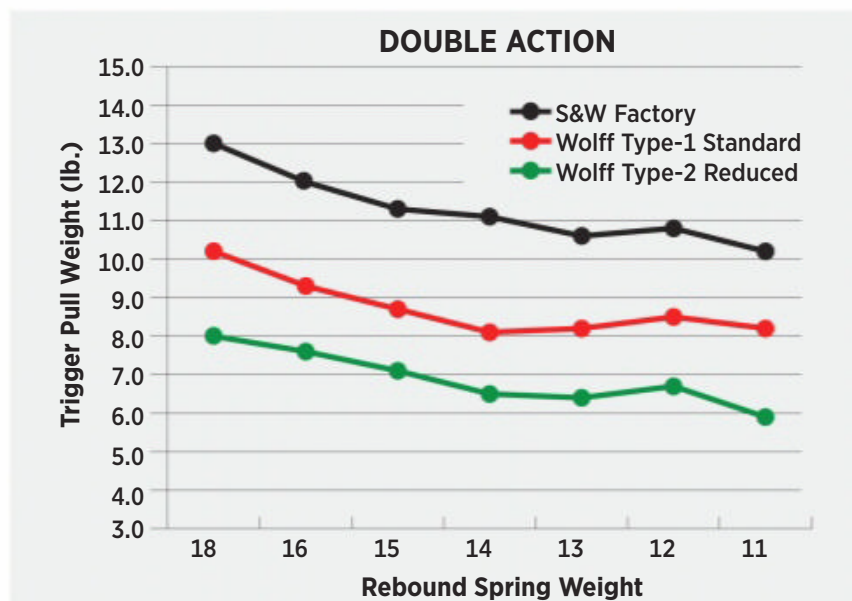
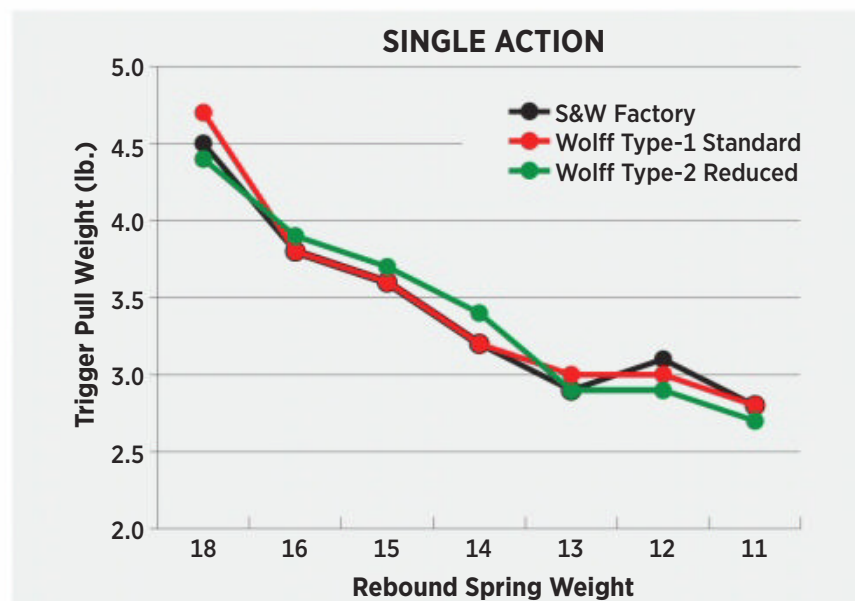
**Norm Cooter**  
Via email

## Correction

In the August issue, the colors in the legends for the spring rates and trigger pull weights graphs were inadvertently switched. They have been corrected in the accompanying graphs.

The Editors

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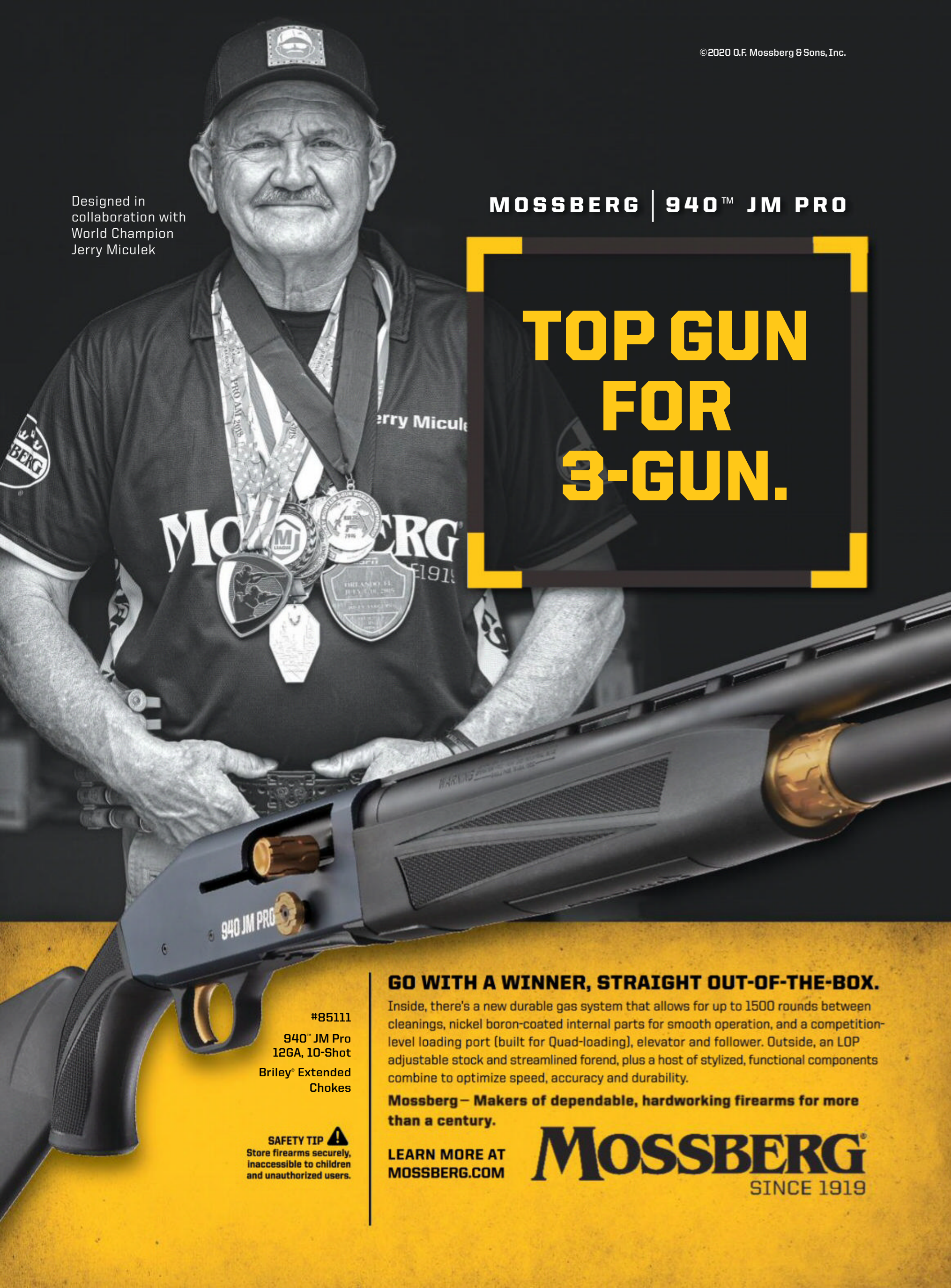
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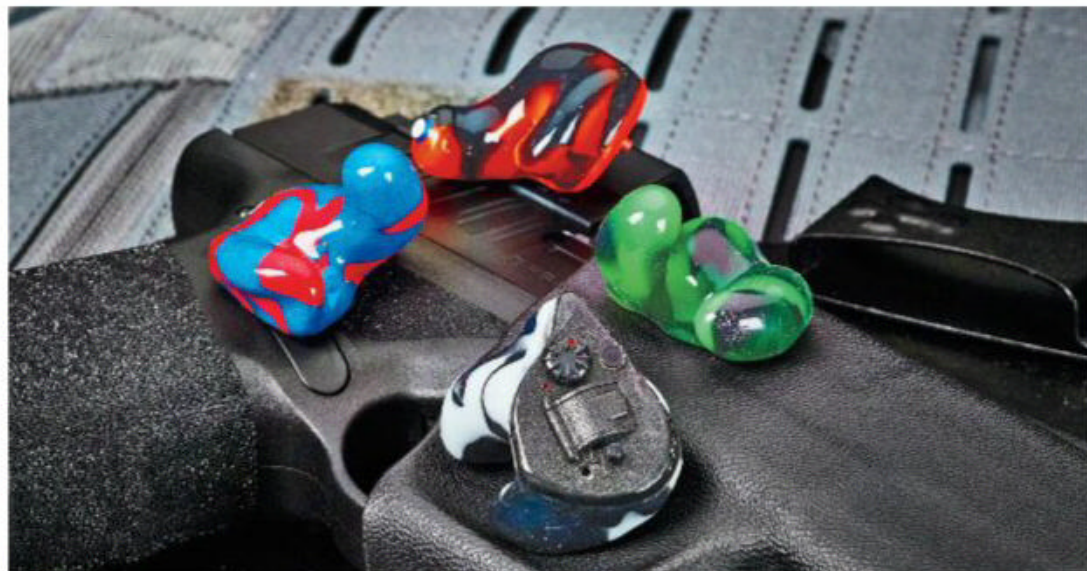


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READERS SPEAK OUT

NEW GUNS & GEAR

ASK THE EXPERTS



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needs covered with a line of products ranging from solid silicone earplugs to high-tech electronic hearing devices. The top-of-the-line electronic hearing devices are the Flexx Pro (MSRP: \$1,199), which feature soft flexible shells, volume control, four tone settings, and waterproof Nano coating. They are programmable for the user's hearing loss. The Versa-Fit Trophy Ear devices feature the same circuitry as the Flexx Pro units but come in a universal fit design. (MSRP: \$699). And the Custom Solid Ear Plugs are made of a soft but rigid material that allows maximum comfort and are offered in a variety of wild colors (MSRP: \$110).

**MSRP: \$110 to \$1,199 depending on model**  
trophyear.com



## Brownells 6mm ARC Barrels

Brownells has introduced a line of exclusive AR-15 barrels chambered in Hornady's new 6mm ARC. Using the same bolt and magazine as the 6.5 Grendel, the 6mm ARC capitalizes on the enhanced ballistics of 6mm bullets. The Brownells barrels are made by Ballistic Advantage and Faxon, and they are offered in 14.5-, 16-, 18-, 20-, 22-, and 24-inch lengths in SPR, DMR, and heavy barrel profiles. Twist rates are 1:7 or 1:8.

**MSRP: \$199.99 to \$280.99 depending on configuration**  
brownells.com



## Berger 6mm 108-Grain Elite Hunter Bullet

Berger says its new 6mm 108-grain Elite Hunter bullet was developed for hunters and long-range enthusiasts seeking a high-BC projectile that delivers massive hydrostatic shock. It has a G1 BC of .559, a hybrid ogive, a J4 jacket, a boattail, and an overall length of 1.260 inches. The company says it requires a 1:8 or faster twist and pairs well with guns chambered in 6mm Creedmoor, 6mm BR, 6x47 Lapua, .243 Winchester, 6mm Remington, 6XC, and many 6mm wildcat cartridges.

**MSRP: \$48.99**  
bergerbullets.com



## Hornady 6mm ARC

Tested, selected, and fielded by a specialized group within the U.S. DoD for its multipurpose combat rifle program, Hornady's new 6mm ARC utilizes high-BC bullets to deliver exceptional performance for hunting, match shooting, and personal protection from AR-15 rifles and carbines.

Based on a necked-down 6.5 Grendel case, the 6mm ARC's initial loadings propel 108-grain ELD bullets at 2,750 fps with 1,813 ft-lbs of energy (24-inch barrel), 105-grain BTHP bullets at 2,750 fps and 1,763 ft-lbs (24-inch barrel), and 103-grain ELD-X bullets at 2,800 fps and 1,793 ft-lbs (24-inch barrel). It's being offered in Hornady's Match, Black, and Precision Hunter lines of ammunition.

**MSRP: \$29.67 (Match),  
\$29.37 (Black),  
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# S&W Model 57 Mountain Gun Differences?

**Q:** I'M A LONGTIME SUBSCRIBER AND ENJOY *SHOOTING Times* magazine. I couldn't wait to read Payton Miller's recent article on the S&W Model 57. I own a Model 57 Mountain Gun. Are there any differences in my Mountain Gun as compared to a standard-production Model 57 of the same era? My gun is a 57-5.

**Gene Bayer**  
Via email

**A:** Smith & Wesson produced its Mountain Gun series of double-action revolvers in the 1990s, with .41 Magnum Model 57 Mountain Gun, .41 Magnum Model 657 Mountain Gun (stainless steel), .44 Magnum Model 29 Mountain Gun, .44 Magnum Model 629 Mountain Gun (stainless steel), .45 Colt Model 25 Mountain Gun, and .45 Colt Model 625 Mountain Gun (stainless steel) offerings. The most significant characteristic of the Mountain Gun revolvers was their 4.0-inch tapered barrels. The Model 57 Mountain Gun originally came with smooth, finger groove wood stocks; an all-black, fully adjustable rear sight; and a black ramp front sight.

**Joel J. Hutchcroft**

## Bullets & Powder for .38-40 WCF?

**Q:** I read Lane Pearce's reloading column on the .38-40 WCF in the July issue and have a couple of questions for him. Where did he obtain the Winchester .38-40 JSP cannellured bullets? Where did he get his IMR SR4759 powder?

**Charles Baesler**  
Via email

**A:** I got a supply of around 500 of those bullets from a contact at Winchester about 25 or 30 years ago. I think they are out of production now, but regular JHP 10mm bullets are readily available, and both CH and Corbin make cannellure rolling tools that allow you to make all the .38-40 jacketed bullets you want.

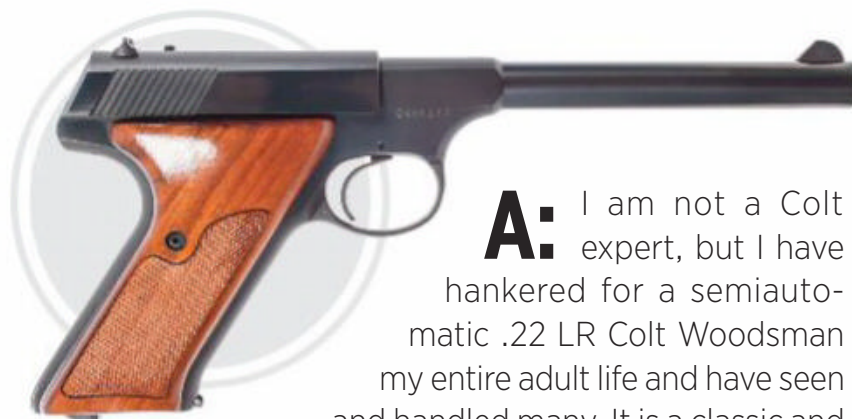
I picked up the SR4759 powder at my local gunshop the last time I was there, knowing that it is hard to find now that it has been discontinued for a second time.

**Lane Pearce**

## Colt Huntsman Vs. Colt Woodsman?

**Q:** What is the difference between a Colt Huntsman and a Colt Woodsman, and why does one cost more than the other?

**Wyatt Horsch**  
Via email



**A:** I am not a Colt expert, but I have hankered for a semiautomatic .22 LR Colt Woodsman my entire adult life and have seen and handled many. It is a classic and has become a favorite among gun collectors, driving up the cost. The Huntsman is the same type of pistol, but it has some differences. For one, many of the Woodsman pistols had an adjustable rear sight and an adjustable front sight. The Huntsman has a fixed rear sight and a fixed front sight. The Woodsman was produced in at least three series from 1927 until 1977, while the Huntsman was produced from 1955 until 1977, with approximately 400 being put together from spare parts and sold in 1983. The Huntsman was built on the 3rd Series frame and came with 4.5- and 6.0-inch barrels. It did not have a hold-open function, and pistols up to serial number 141094-C wore black plastic grips (later pistols had walnut grips). Total production was more than 100,000.

**Joel J. Hutchcroft**

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## SHOOTER'S GALLERY

THE SHOOTIST

THE BALLISTICIAN

THE RELOADER



# Japanese Type 99 Arisaka

Strong, durable, and powerful, this bolt-action battle rifle had a short but honorable service life. **BY JOSEPH VON BENEDIKT**

**JUST A FEW OF THE RIFLES THAT PARTICIPATED** in World War II could claim the distinction of being an Imperial battle tool and the personal property of the Emperor. Japan's Type 99 was one of them.

Introduced to service in 1939, the Type 99 was chambered for the 7.7x58mm Japanese cartridge. With a 0.312-inch bore, it was nominally a .30-caliber rifle intended to replace the 6.5x50 cartridge in Japan's Type 38 rifle. War stress curtailed the transition, and both battled through the war. While only in service until 1945, there were some 3.5 million Type 99s manufactured.

As with many of the late-war battle rifles, those manufactured in the final year of World War II, termed "Last Ditch" Type 99s, are particularly crude, exposing the massive time-saving and cost-cutting efforts being employed by Imperial armories.

Nine different armories manufactured Type 99s, in four different variations. Most common are the Short

Rifle, like the one shown here. Long Rifles, Paratroop Rifles, and Sniper Rifles were all limited variants.

One of the most commonly known historic tidbits on the Type 99 is the Imperial chrysanthemum found atop the front receiver ring. Nicknamed "mums," these marks designated the rifle as the personal property of the Emperor. On most Type 99s, the mum has been defaced or ground off. Collectors disagree on the reason for this, but many believe the marks were removed or destroyed to protect the Emperor's honor.

Many—even most—of the thousands of Type 99 rifles brought to America were carried back by servicemen returning from the South Pacific. I think that adds a bit of panache to the Type 99.

### Mechanicals

In ways, the Type 99 is similar to the cock-on-close Model 96 Mauser action; however, the Type 99 is considered an extremely strong bolt action. A massive,

Type 99 Arisaka battle rifles utilize a unique, disc-shaped safety, and their stocks were finished with the resin of the urushi tree. Joseph's rifle is chambered for the 7.7x58mm Japanese round.



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Mauser-type, non-rotating claw extractor provides controlled-action feeding. Dual, opposing lugs provide lockup. There is no thumb cutout in the left side of the action, although there is a stripper clip guide in the rear receiver ring. A large, Mauser-type lever allows the bolt to be easily removed.

The largest departure from the Mauser norm is the use of a large, knurled, disc-shaped safety that also serves as a bolt shroud. It's meant to be engaged using the palm of the right hand in a swift, aggressive move in which the shroud is pressed forward and rotated to the right. It can't be done with just the thumb.

A hinged floorplate caps the bottom of the magazine and features a unique rearward-sliding latch located inside the top front of the trigger guard. Load, function, and fire the Type 99 like any other Mauser-type bolt action.

The rear sight is unique. Of flip-up ladder design, the robust sight utilizes apertures rather than notches, enabling a very clear sight picture. Notches in the side of the ladder assist in precise placement of the slider, which is marked to 1,500 meters, and caliper-type, fold-out wings provide aiming solutions for shooting at aircraft. Unfortunately, the wings on my rifle were removed at some point in the past.

Wood stocks were made from beech or some variety of Japanese walnut or katsura wood. I don't know which was used on my rifle, but the grain structure does not appear to be beech. The finish is said to be the resin of the urushi tree, of the poisonous sumac family. It's extremely durable when cured, but sanding off the finish creates a toxic dust.

According to one source, the Type 99 was the first mass-produced rifle to have chrome lining in the bore. This combated the corrosion prevalent in the South Pacific's salt-sea air, which was exacerbated by the corrosive ammunition of the time.

TYPE 99 ARISAKA ACCURACY & VELOCITY				
AMMUNITION	VEL. (FPS)	E.S. (FPS)	S.D. (FPS)	50-YD. ACC. (IN.)
7.7x58, 25.9-in. Barrel				
Norma 174-gr. SP	2507	50	15	1.56
NOTES: Accuracy is the average of three, five-shot groups fired from a benchrest. Velocity is the average of 15 rounds measured 12 feet from the gun's muzzle.				

Provenance

One of three vintage battle rifles I purchased in the Brownells retail store in Grinnell, Iowa, the Type 99 shown here is a nice example. Manufactured in the Toyo Kogyo arsenal sometime between 1939 and 1945, it's in excellent condition inside and out, and it came with a poorly fitting Type 30 bayonet (which were issued to all Japanese infantrymen regardless of whether they were issued any firearm) and a traditional-type canvas sling that appears unused. I'm not expert enough to tell, but I suspect it's a reproduction.

Precisely dating the year of manufacture is difficult. Toyo Kogyo made around 557,000 Type 99s in blocks of 99,999, over a five- or six-year period. Each block was assigned a symbol to accompany its serial number. This particular rifle was made late in the third block, so I assume it was made somewhere around the middle of the war.



I tested my Type 99 at a range of 50 yards, and even my middle-age eyes were able to resolve the aperture rear and pyramid-type front sight easily. Five-shot groups averaged around 1.5 inches. I say that's not bad for an 80-year-old battle rifle. Point of impact with the 174-grain Norma softpoint bullets was an inch or so left and about four inches high, which would put bullets centered on target at about 300 meters—quite a useful battle zero and workable for hunting as long as you keep in mind that the mid-range trajectory at 100 yards is about seven inches high.

The two-stage trigger pull weight was stout, averaging a tad over eight pounds. Function was stellar, and balance was quite good, too. In all, the Type 99 is a nice, serviceable bolt-action battle rifle that served Japan briefly, but honorably.

Rangetime

Ammunition for the 7.7 Japanese round is not particularly easy to come by, nor is it cheap. Norma and PCI offer current-made factory ammo, and you can find a variety of surplus stuff on gunbroker.com.

Norma sent me a few boxes of its 7.7 load for this report. It features a 174-grain softpoint bullet well suited for hunting big game and excellent, reloadable brass cases.

TYPE 99 ARISAKA

MANUFACTURER	Toyo Kogyo
TYPE	Bolt-action repeater
CALIBER	7.7x58mm Japanese
MAGAZINE CAPACITY	5 rounds
BARREL	25.9 in.
OVERALL LENGTH	44 in.
WEIGHT, EMPTY	8.3 lbs.
STOCK	Beech, walnut, or katsura wood
LENGTH OF PULL	12.5 in.
FINISH	Blued barrel and action, urushi resin-finished stock
SIGHTS	Ladder-type rear; windage-adjustable winged pyramid-type front
TRIGGER	8.25-lb. pull (as tested)
SAFETY	Rotating disc/bolt shroud



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## SHOOTER'S GALLERY

THE SHOOTIST

THE BALLISTICIAN

THE RELOADER



# Muzzle Flash and Other Distractions

Even though muzzle flash has more effect on an observer than a shooter, reducing flash is always a good idea.

BY ALLAN JONES

**WHEN I WAS “CSI BEFORE IT WAS COOL,”** WE investigated every officer-involved shooting and were usually able to interview the officers. It helped us better understand armed police engagement, training, and, yes, ammunition.

Our terminal ballistics evaluation of police ammo using gelatin testing began with a series for the Dallas PD. It involved 15 kinds of .38 Special ammo that was available in the early 1970s. Our primitive photo-electric chronograph screens required us to set the range lighting to “fairly dark,” just enough for safe gunhandling and data recording.

One .38 Special load tested was, shall we say, “enlightening” for all the wrong reasons. I fired the first one and heard an expletive uttered behind me that I won’t repeat. My lab partner who was recording data was blinking from the bright yellow-white flash.

I was focused on the target so didn’t experience the flash as much, but I did notice more recoil. The load posted nearly 200 fps higher velocity than similar .38 Special ammo.

We photographed these flash effects in a completely dark room. Most of the images were black except for a small flash preserved in white. The flashy load was a flash bulb. The image showed all the room details, including legible box labels. When we expanded testing to magnum revolver cartridges, it was clear the .38 Special load was not alone. We had to ask ourselves if an issue we saw in the lab translated to a problem in the street. We soon had the chance to ask—with that same .38 Special load.

One evening after sundown, a man in a car fired on an officer through the driver’s window, forcing the officer to respond. The officer returned fire with three of those flashy .38 Specials. I interviewed the officer and asked about muzzle flash and recoil. “What flash? What recoil?” he answered. “All I remember is a hailstorm of glass headed my way that had a bullet in it somewhere!”

That response echoed through nearly every subsequent interview. I found only one where flash and blast temporarily disabled an officer, and that officer never fired.

A most dramatic muzzle flash comes from naval artillery pieces. Some can emit a flash that is up to 150 feet long.





Two officers approached a suspect, who pulled a gun. The officer who related the story dropped to a kneeling position while drawing his sidearm. His partner did a quick-draw and fired from the hip. That put a .357 Magnum revolver about a foot from the kneeling officer's head. "Good thing my partner hit the guy," the officer said, "because I couldn't see or hear for about 15 minutes!"

Yes, there is a flash/blast effect, but it's not as significant to the shooter as to the observer. Although this could be a useful side-effect of stress-fueled target fixation, reducing flash is always a good idea.

In the mid-1990s there was a renewed interest in developing better police ammunition, including reducing muzzle flash. The thermo-chemical origins of muzzle flash have long been understood. Tenney L. Davis discusses it in *The Chemistry of Power & Explosives* (John Wiley & Sons; New York; 1943) and mentions efforts to create low-flash propellants going back to the adoption of smokeless fuels.

The primary concern was for artillery pieces. Davis states that a 12-inch naval rifle can emit a flash that is up to 150 feet long. That's one-quarter the length of old battleships that mounted them. Reflections on clouds could be seen for 30 miles.

Chemists like Davis always understood that irrespective of the size of the tube, flash is primarily a burning gas cloud rather than partially burned propellant particles. Today's high-speed photography of small-arms flashes supports that, capturing billows of flame not a mass of burning particles. Typically, most glowing particles photographed are powdered aluminum from the primer.

Nitrocellulose propellants carry their own oxygen supply, but it is consumed in the initial deflagration. Flammable gases like hydrogen and carbon monoxide are pushed down the barrel and starved of oxygen. When these super-heated gases meet oxygen in the air in front of the muzzle, the gas cloud ignites.

Flash can be controlled by firearm alterations like flash hiders; modifying powder charge weights; or with chemistry, either in the form of additives or modifying the suite of explosives that form a propellant's "base."

Changes in charge weight work because one unit of burning propellant generates a predictable amount of gas. All other things equal, doubling the charge weight doubles the gas volume produced. Adjusting charge weights to reduce flash without losing velocity is tricky work. Lower weights may be ballistically efficient only with faster-burning propellants, and those may not give enough velocity to make specs.

Additives usually fall into a broad chemical family known as salts. Many of these, such as potassium chloride, are corrosive. Fortunately, flash suppression salts are usually in small quantities, below what corrosion requires. They gave good flash control by lowering the flame temperature but often exacted a small performance penalty. Still, most salts are hygroscopic (they absorb moisture), complicating the manufacturing process.

We all know about single-base and double-base propellants. Each "base" is a primary explosive: nitrocellulose in a single-base fuel and nitrocellulose plus nitroglycerin is a double-base product. As early as the 1930s, triple-base propellants were known, adding a third primary explosive. Davis describes a "cool explosive," ammonium nitrate or nitroguanidine, for flash control. Ammonium nitrate generates smoke, so nitroguanidine got the nod for many flash-suppressed propellants.

The strangest flash effect I recall was while qualifying propellants to load .357 Sig Gold Dot factory ammo. One candidate produced little flash for four or five shots, then delivered a beachball-sized firestorm, then reverted to minimal flash for another few rounds before erupting again. This "off-on-off-on" sequence was absolutely predictable. From Davis and other references, we thought the only reasonable explanation was that the barrel was heating up incrementally, requiring several shots before enough heat was added to the system to super-heat the gas. Each big flash pulled the heat out of the system, and it took another four or five shots for it to build up again.

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## SHOOTER'S GALLERY

THE SHOOTIST

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# Don't Forget the .32 Magnum

This centerfire revolver cartridge is one of the author's favorites because it's good for self-defense, the trail, and small-game hunting. **BY LANE PEARCE**

**THE .32 H&R MAGNUM (INTRODUCED IN 1984)** IS a straight-walled handgun cartridge. It's a longer version of the 142-year-old .32 Smith & Wesson and the 124-year-old .32 Smith & Wesson Long cartridges. It has a maximum average pressure of 21,000 psi (almost twice that of its parent cartridges).

With modern, no-lube-required reloading dies, cranking out perfectly safe and reliable .32 Magnum handloads is easily accomplished. Tumble clean, inspect, resize, decap, trim and flare the case mouths, prime, charge, seat, and crimp—you're done. I use an RCBS carbide die set, which will accommodate .32 S&W, .32 S&W Long, and the .32 H&R Magnum.

While .357, .41, .44, and other "real" magnum (35,000+ CUP) handgun rounds typically require a case full charge of propellant with a relatively slow burn rate, load densities encountered for the .32 Magnum are often less than 50 percent. That means you must carefully inspect each charged case after weighing a reasonable sample to make certain you haven't double-charged any.

Starline has all the new brass you might need for reloading. Hornady and Speer offer one or more jacketed bullets. Cast bullets weighing up to 115 grains are suitable, although 98- to 100-grain SWCs are likely

the best choice. Several medium burn rate propellants are available, and you only need standard Small Pistol primers to ignite the relatively light charges.

### The Guns for this Report

I quickly fell in love with the .32 H&R Magnum cartridge when it was introduced 36 years ago. Over the decades I've acquired a lot of handguns chambered for it (the current count is 11!), including Rugers, Dan Wessons, and Smith & Wessons. For this review, I chose a trio of S&W revolvers that represent a broad range of user applications. The 6.0-inch-barreled K-Frame Model 16 is the modern version of the original K32 Masterpiece target model. The 4.0-inch-barreled, stainless-steel J-Frame Model 631 Kit Gun is an excellent choice for a backpack or a tackle box. And the 1.88-inch-barreled J-Frame Model 331 AirLite is best suited for personal defense.

I loaded 50 rounds of each test load and fired three, five-shot groups with the Model 631 and the Model 331 revolvers and four, five-shot groups with the Model 16 revolver from a sandbag benchrest. Because the Model 16 and Model 631 have adjustable sights and significantly longer sight radii, I targeted them at 25 yards. I fired the short-barreled, fixed-sighted Model 331 at

While the .32 H&R Magnum doesn't get the attention it deserves, plenty of handloading components are currently available.





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## Don't Forget the .32 Magnum

12 yards. By the time I finished, I'd shot up about 300 rounds.

Although overall accuracy for all three revolvers was just so-so, the Model 16 recorded several sub-2-inch groups. The 4.0-inch-barreled revolver averaged 2.68 inches overall. The lightweight snubnose Model 331 is an easily concealed carry gun, and its six-shot cylinder provides more than adequate stopping power, but as the chart shows, it's strictly suited for close-up personal defense.

My favorite load of 9.0 grains of W296 behind a 98-grain cast SWC bullet was developed in a 5.5-inch-barreled Ruger Single-Six. It shines in that revolver, but it did just okay in the S&W Model 16. I did not achieve the accuracy level I expected.

One trend I noticed in the results is that the heavier bullets seemed to be more accurate. The Model 16 especially favored the Hornady 100-grain XTP.

The .32 Magnum doesn't get the attention it deserves. If you haven't tried reloading and shooting the .32 H&R Magnum, you're missing a lot of fun. There's myriad reloading component selection and

several excellent handguns. In addition to Federal factory ammo, Black Hills, Buffalo Arms, and HSM also offer several choices. Just like the .38 Special and .357 Magnum are interchangeable in magnum revolvers, you can fire .32 S&W and .32 S&W Long in a .32 H&R Magnum revolver.

The original H&R, Smith & Wesson, and Dan Wesson revolvers have long since been discontinued. Ruger, however, still offers single- and double-action revolvers chambered for the longer .327 Federal Magnum, and you can fire .32 H&R Magnum cartridges in revolvers chambered for it. The .327 Federal is a "real" .32 Magnum cartridge with a maximum average pressure equal to or exceeding the other magnum revolver cartridges. But that's another story. **ST**



Lane fired a trio of Smith & Wesson revolvers for this report, including a Model 16 (top), a Model 631 (center), and a Model 331 (bottom).

### .32 H&R MAGNUM ACCURACY & VELOCITY

BULLET	POWDER		CASE	PRIMER	VEL. (FPS)	ENERGY (FT-LBS)	12-YD. ACC. (IN.)	25-YD. ACC. (IN.)
	(TYPE)	(GRS.)						
S&W Model 331, 1.88-in. Barrel								
Magtech 71-gr. JHP	HS-6	6.0	Star.	CCI 500	961	146	2.23	----
Speer 85-gr. JHP	HS-6	5.6	Fed.	CCI 500	872	144	2.15	----
Clements 98-gr. Cast SWC	2400	7.2	Fed.	WSP	904	178	2.28	----
Clements 98-gr. Cast SWC	Accurate No. 5	4.2	Fed.	WSP	788	135	1.69	----
Clements 98-gr. Cast SWC	W296	9.0	Star.	Fed. 100	889	172	2.48	----
Hornady 100-gr. XTP	Accurate No. 7	6.0	Fed.	CCI 500	816	148	2.42	----
S&W Model 631, 4.0-in. Barrel								
Magtech 71-gr. JHP	HS-6	6.0	Star.	CCI 500	1176	218	----	2.96
Speer 85-gr. JHP	HS-6	5.6	Fed.	CCI 500	981	182	----	2.41
Clements 98-gr. Cast SWC	2400	7.2	Fed.	WSP	1063	246	----	2.65
Clements 98-gr. Cast SWC	Accurate No. 5	4.2	Fed.	WSP	876	167	----	2.45
Clements 98-gr. Cast SWC	W296	9.0	Star.	Fed. 100	1009	222	----	2.75
Hornady 100-gr. XTP	Accurate No. 7	6.0	Fed.	CCI 500	954	202	----	2.88
S&W Model 16, 6.0-in. Barrel								
Magtech 71-gr. JHP	HS-6	6.0	Star.	CCI 500	1218	234	----	2.41
Speer 85-gr. JHP	HS-6	5.6	Fed.	CCI 500	1069	216	----	2.30
Clements 98-gr. Cast SWC	Accurate No. 5	4.2	Fed.	WSP	850	157	----	2.50
Clements 98-gr. Cast SWC	W296	9.0	Star.	Fed. 100	1030	231	----	2.03
Clements 98-gr. Cast SWC	2400	7.2	Fed.	WSP	1067	248	----	1.98
Hornady 100-gr. XTP	Accurate No. 7	6.0	Fed.	CCI 500	994	219	----	1.39

NOTES: Accuracy is the average of at least three, five-shot groups fired from a sandbag benchrest. Velocity is the average of 10 rounds measured eight feet from the guns' muzzles.

All load data should be used with caution. Always start with reduced loads first and make sure they are safe in each of your guns before proceeding to the high test loads listed. Since *Shooting Times* has no control over your choice of components, guns, or actual loadings, neither *Shooting Times* nor the various firearms and components manufacturers assume any responsibility for the use of this data.



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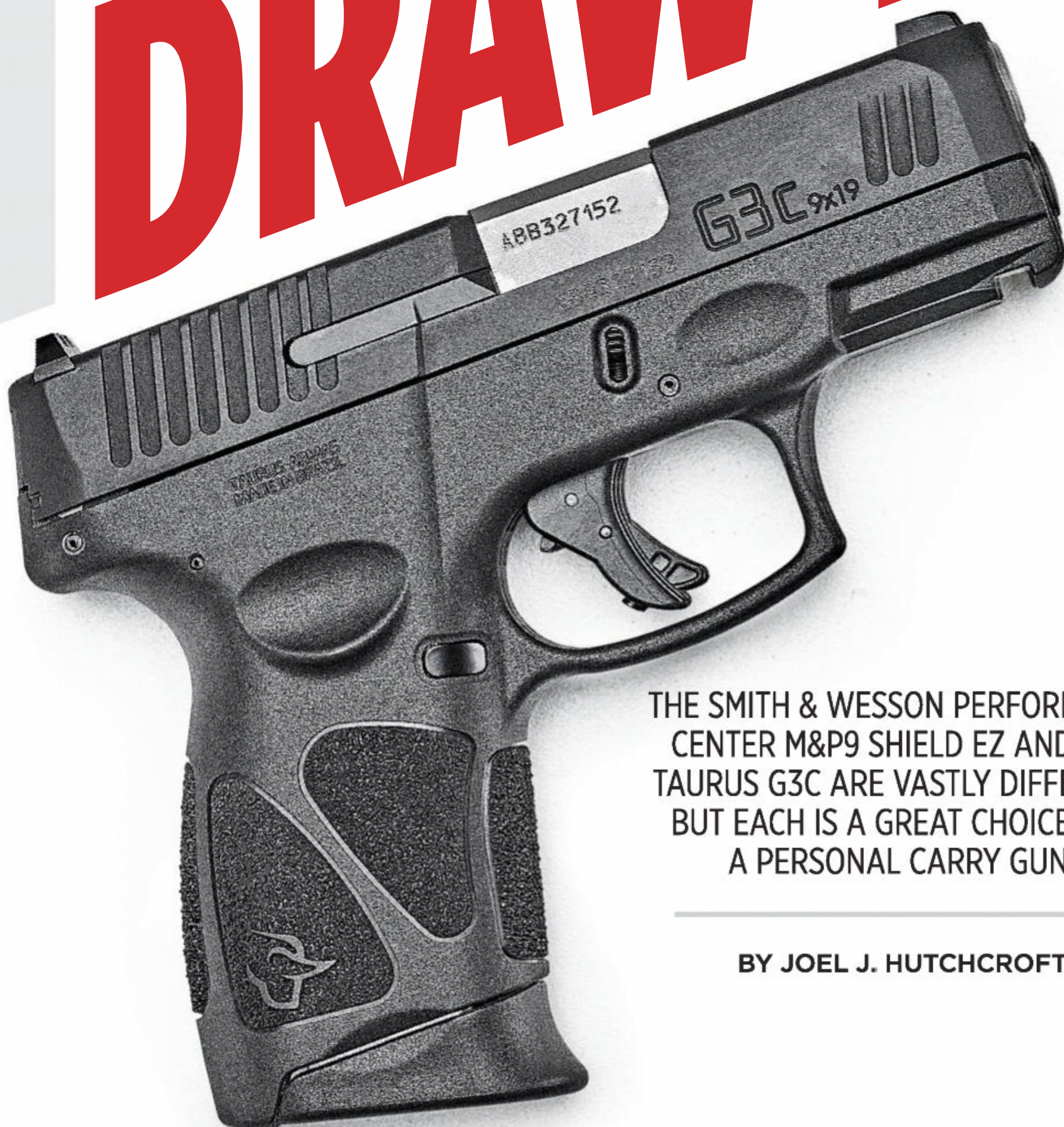


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# A PAIR TO DRAW TO



THE SMITH & WESSON PERFORMANCE CENTER M&P9 SHIELD EZ AND THE TAURUS G3C ARE VASTLY DIFFERENT, BUT EACH IS A GREAT CHOICE FOR A PERSONAL CARRY GUN.

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BY JOEL J. HUTCHCROFT





**L**ET'S BE CLEAR. THIS IS NOT AN APPLES-TO-apples comparison of the Smith & Wesson Performance Center M&P9 Shield EZ and the Taurus G3c pistols. It can't be because they are too different. One is an internal hammer-fired pistol tricked-out by Smith & Wesson's Performance Center, and the other is a box-stock, striker-fired pistol from Taurus. However, both are compact, polymer-frame 9mm semiautos designed for personal protection. And both are good carry guns in their own right. Here's a quick look at them.

## Safety

The first thing I noticed about the S&W Performance Center M&P9 Shield EZ (I'll refer to it as the P-C Shield EZ throughout this report) is the grip safety. It's a lever that extends about two-thirds of the way down the length of the pistol's backstrap. It's pinned at the bottom, so to fire the gun, the shooter squeezes in on the safety. That happens naturally when a firm shooting grip is acquired, so it's not the least bit tricky. When the safety is not squeezed, the trigger mechanism is deactivated. It can be pressed fully to the rear, but the internal parts are not engaged. The lever on my gun is matte silver (so is the trigger, more about it in a moment) and has fine vertical grooves running down its back. You also can have the P-C Shield EZ with a gold trigger and safety lever or a black trigger and safety lever. By the way, S&W sells a standard M&P9 Shield EZ as well, but of course, it doesn't have all the P-C Shield EZ's bells and whistles.

My P-C Shield EZ also has an ambidextrous manual thumb safety. It's optional, so if you prefer no manual safety, S&W has

you covered. If you choose the manual safety, be aware that it does not prevent the slide from moving, so a round can be chambered with the thumb safety engaged. The P-C Shield EZ also has a passive internal firing pin block, and it has a visual and tactile loaded-chamber indicator on top of the slide. When a round is chambered, the indicator sticks up a fraction of an inch, but it's enough to easily be seen and felt.

The striker-fired G3c also has several safety features, including a trigger safety. Like other similar trigger safeties, the G3c's is designed to prevent the trigger from being squeezed unless the shooter's finger has fully engaged and depressed the trigger. The G3c's trigger safety measures 0.19 inch wide (as best as I can measure it), making it noticeably wider than other such trigger safeties.

The G3c has an internal striker block that prevents the striker from moving forward unintentionally—as in a drop or a hard impact—and accidentally striking the primer. When the trigger is squeezed rearward, the striker block is pushed away from the striker.

In addition, the G3c has a manual thumb safety located on the left side of the slide. It is not ambidextrous. Moving it up engages the safety and prevents the trigger from being squeezed all the way as well as preventing the slide from moving rearward. Moving



A PAIR TO DRAW TO

it down allows the pistol to be fired. The G3c's loaded-chamber indicator consists of a view port at the top rear of the chamber. (When a round is chambered, the cartridge case can be seen through the top of the barrel's chamber.)

Another interesting safety feature of the G3c is that its polymer frame has recesses on both sides above the trigger guard that are designed specifically for the shooter to use to rest the trigger finger on when not actively shooting. The company calls them "Taurus Memory Pads," and they keep the trigger finger entirely outside the trigger guard and off the trigger.

Ease of Operation

Both pistols are easy to rack, easy to load, easy to shoot, and easy to disassemble. I'll get to the ease of racking later when I report on the shootability aspects of each gun, but I want to speak to their ease of disassembly and loading here.

Both guns have been designed to make field-stripping quick and easy. Here's how it's done for the G3c. Remove the magazine and be certain the pistol is not loaded by racking the slide and checking the chamber. After returning the slide to its forward position, point the pistol in a safe direction, retract the slide slightly, pull down on the takedown lever from both sides of the frame, and move the slide forward off the frame. Remove the recoil spring assembly from the slide and then remove the barrel.

The P-C Shield EZ takes a bit longer, but not by much. First, make sure the pistol is unloaded and place the manual thumb safety in the up position. Remove the magazine. Draw the slide



The most distinguishing feature of the Smith & Wesson Performance Center M&P9 Shield EZ is the grip safety lever. It is pinned at the bottom and must be fully squeezed for the trigger mechanism to function.



The striker-fired Taurus G3c uses a safety trigger with a wider-than-usual lever. It also has distinctive "Memory Pads" on the frame that are designed to keep the trigger finger off the trigger when not actively shooting.

back and lock it open with the slide stop lever. Rotate the take-down lever located on the left side of the frame down to the 6 o'clock position. Carefully and slowly draw the slide back, letting the slide stop disengage, and then move the slide forward and off the frame. Do not depress the grip safety when moving the slide off the frame; hold the frame by its sides. Remove the recoil spring assembly from the slide and then remove the barrel from the slide.

Both pistols' magazines are easy to load, but the P-C Shield EZ takes the prize here. I'm pleased to see a major manufacturer paying particular attention to this aspect. I'm old enough to have worked with a lot of older semiautomatic pistols whose magazines were honestly real pains in the you know what to load. Many of the pistols had comfortable grips and grip frames for shooting, but it seemed like nobody gave a hoot about how painful loading those magazines was.

The P-C Shield EZ magazine has a load assist button inserted into the follower above the spring, and it really makes loading the magazine a breeze. Tabs on the button stick out slightly on each side of the magazine, so you can use the thumb and forefinger of one hand to pull down on the follower and spring, thereby



G3C	
MANUFACTURER	Taurus taurususa.com
TYPE	Striker-fired autoloader
CALIBER	9mm Luger
MAGAZINE CAPACITY	10 and 12 rounds
BARREL	3.2 in.
OVERALL LENGTH	6.3 in.
WIDTH	1.20 in.
HEIGHT	5.10 in.
WEIGHT, EMPTY	22 oz.
GRIPS	Integral to polymer frame
FINISH	Matte black Tennifer
SIGHTS	Drift-adjustable black rear; fixed white-dot front
TRIGGER	6.85-lb. pull (as tested)
SAFETY	Manual thumb safety; trigger safety; striker block
MSRP	\$305.74



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P-C M&P9 SHIELD EZ	
MANUFACTURER	Smith & Wesson smith-wesson.com
TYPE	Internal hammer-fired autoloader
CALIBER	9mm Luger
MAGAZINE CAPACITY	8 rounds
BARREL	3.83 in.
OVERALL LENGTH	7.0 in.
WIDTH	1.46 in.
HEIGHT	4.85 in.
WEIGHT, EMPTY	23.2 oz.
GRIPS	Integral to polymer frame
FINISH	Matte black Armornite with silver barrel, trigger, and grip safety
SIGHTS	Drift-adjustable Hi-Viz LiteWave H3 rear; Hi-Viz LitePipe front
TRIGGER	5.18-lb. pull (as tested)
SAFETY	Manual thumb safety; grip safety; firing pin block
MSRP	\$588



allowing loaded cartridges to be inserted from the top easy-peasy. It seems like a simple thing, but it is one feature that differentiates the P-C Shield EZ from other small semiautomatic pistol designs.

Other Features

Unlike other striker-fired pistols, the G3c has repeat-strike capability. That means if a round fails to go off the first time, after the trigger resets, the trigger can be squeezed again quickly. It's a great capability for a self-defense gun.

The G3c also can be fired with the magazine removed, as can the P-C Shield EZ. A lot of semiautomatic pistols these days have a magazine disconnect safety built into their mechanisms and will not do that. I prefer a pistol that will fire with the magazine out, especially if it's a self-defense gun.

My G3c came with three flush-fitting, 12-round, double-stack magazines. Taurus also makes the gun available with 10-round magazines. The magazine bodies are metal, and they

have removable polymer baseplates and polymer followers. The followers in my magazines are yellow.

The P-C Shield EZ comes with two eight-round, single-stack magazines. The bodies are stainless steel, and the removable baseplates and followers are polymer (the followers are orange).

Other interesting features of the G3c include a single-slot accessories rail on the frame and three grasping grooves on each side of the front of the slide and eight at the rear of the slide. The top of the slide is flat, and the front and sides ahead of the ejection port are beveled for easy holstering. The polymer grip frame has thumbrests on both sides.

The G3c's grip circumference measures 5.38 inches. I have medium-size hands and can get all three of my gripping fingers fully on it without crowding them. The grip has six panels of fine texturing wrapping all the way around.

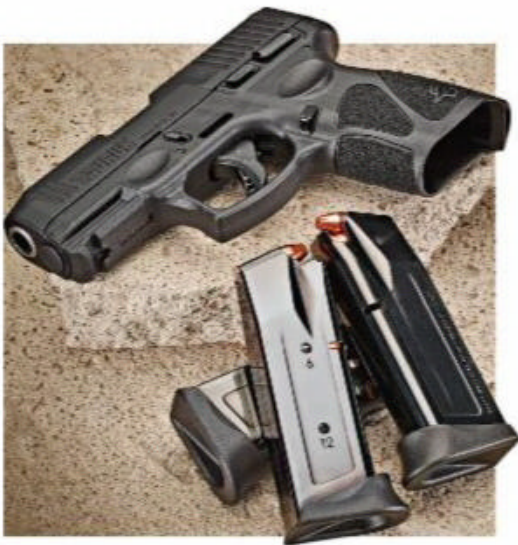
The P-C Shield EZ's grip circumference also measures 5.38 inches with the grip safety depressed. And it also has six panels of fine texturing on the sides, the frontstrap, and the backstrap below the grip safety.

The G3c's sights are polymer, and the rear sight is dovetailed into the slide, so it is drift-adjustable for windage. It is all black and has fine horizontal striations. The square notch is 0.167 inch wide. The front sight is 0.147 inch thick and has a white dot on the post. The sight radius is 5.19 inches.

The P-C Shield EZ's sights are steel and made by Hi-Viz. The rear is called the H3 LiteWave, and it has two green fiber-optic inserts. It is adjustable for windage and elevation. The front sight is called the H3 LitePipe, and it has a single green fiber-optic insert. The housing is 0.155 inch thick, and the rear sight's notch measures



The P-C Shield EZ's single-stack magazines hold eight rounds of 9mm ammo, and they have load assist buttons on both sides of the followers.



Joel's G3c came with three 12-round double-stack magazines, but the pistol is also offered with three 10-round magazines.



0.158 inch wide. The sight radius is 5.50 inches, and both sights are dovetailed into the slide.

The G3c is 6.30 inches long overall, 5.10 inches high, and 1.20 inches wide. The slide proper is 1.0 inch thick. The pistol weighs 22 ounces unloaded. The finish is matte black.

The P-C Shield EZ is 7.00 inches long overall, 4.85 inches high, and 1.46 inches wide. The slide is 1.07 inches thick. The pistol weighs 23.2 ounces unloaded. The finish is matte black. The frame has a three-slot accessories rail, and the slide has five grasping grooves at the rear and seven up front. Well, they aren't actually grooves; they are more like small divots.

The G3c's barrel is stainless steel, the recoil guide rod is steel, and the recoil spring is tuned to deliver an easy recoil pulse while ensuring reliable operation.

As I said earlier, the Shield EZ is offered in a standard-catalog configuration, and some of the features that the Performance Center pistol has that the standard pistol doesn't have include a single port on the top of the barrel at the muzzle end that is exposed when the slide is fully forward; three lightening cuts on each side of the slide; and a unique skeletonized, flat, and grooved trigger—in addition to the Hi-Viz sights I've already described. It also comes with a special cleaning kit that includes a semi-rigid case, a collapsible rod with a rotating T-handle, 10 cleaning patches, a nylon cleaning brush, bronze bore brushes, nylon jags, and nylon slotted tips. It covers .22, 9mm/.357/.38, .40/10mm, and .45 calibers.

## Shootability

Like I said, both pistols are easy to shoot. I ran both through my usual shooting-from-the-bench routine where I fired five, five-shot groups with a variety of factory ammunition and averaged the groups. I also fired five rounds of each load through each pistol for an average velocity, extreme spread, and standard deviation. The results are listed in the accompanying charts.

As you can see, both pistols produced group averages of 4.01 inches or less at 25 yards with loads carrying bullets that weighed from 115 to 150 grains. The G3c's overall average was 3.73 inches, and its best average came with Remington Golden Saber Black Belt 124-grain JHP



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ammo (3.38 inches). The P-C Shield EZ’s overall average was 3.26 inches, and its best average (2.81 inches) was obtained with Speer’s new CarryGun 135-grain Gold Dot G2 ammo. (You can read more about the CarryGun ammo in the Quick Shot on page 66.)

I own a couple of steel silhouettes and some round steel targets in addition to a couple of bouncing reactive targets made of synthetic, so I set up some action-type shooting drills at my personal range and had a really fun afternoon shooting both pistols. I burned up a bunch of ammo; in fact, I pretty much depleted my entire supply of 9mm ammo!

During that phase of the shootout, I found both pistols to shoot comfortably and to be easy to handle in terms of recoil and getting



The G3c comes with polymer sights. The drift-adjustable, all-black rear has fine horizontal striations, and the front has a single white dot.



The P-C Shield EZ comes with Hi-Viz fiber-optic sights that are dovetailed into the top of the slide and a special Performance Center cleaning kit.

on target pretty quickly. I prefer the sights on the G3c because I don’t care for a three-dot setup. But that’s a personal choice, and based on what most gun companies offer, most shooters don’t have any problem with a three-dot system. However, I have to admit the fiber-optic sights on the P-C Shield EZ are quite easy to see in dark lighting conditions, so I’d like to see Taurus put a fiber-optic dot on the G3c’s front sight.

Unlike other striker-fired pistols, the G3c’s slide is pretty easy to rack even though a striker-fired mechanism requires stiffer springs for reliable operation as a rule. Of course, being an internal hammer-fired pistol, the P-C Shield EZ was easier to rack. When I got home from my range, I performed a simple technique to measure the weight required to rack the slides of both pistols. Using a cleaning rod that fit the bores and my RCBS High Range Trigger Tension Scale hooked around the cleaning rod’s handle, I found the P-C Shield EZ required 19 pounds of force to pull the slide fully to the rear, and the G3c required 24 pounds to do it.

By the way, according to my standard RCBS trigger pull scale, the P-C Shield EZ’s trigger pull averaged 5 pounds, 3 ounces, and the G3c’s trigger pull averaged 6 pounds, 13 ounces. That’s the average of five measurements for each gun. Both triggers were fairly consistent, but both had up to 14 ounces of variation between the lightest and the heaviest measurements. Take-up on the G3c was long, but the break was crisp. The reset was not the longest I’ve experienced on a striker-fired pistol, and it was audible. The P-C Shield EZ had almost no perceptible take-up, and reset was quite reasonable.

One more thing. Reliability throughout my shooting session was perfect. I didn’t have a single failure to feed, fire, extract, or eject with either pistol. That’s a testament not only to the reliability of the guns, but also to the ammo. These guns and this ammunition are designed for personal protection, so they ought to function perfectly.

S&W P-C M&P9 SHIELD EZ ACCURACY & VELOCITY				
AMMUNITION	VEL. (FPS)	E.S. (FPS)	S.D. (FPS)	25-YD. ACC. (IN.)
9mm, 3.83-in. Barrel				
Barnes 115-gr. TAC-XPD +P	1017	30	14	3.19
Federal Syntech 115-gr. TSJ	1111	27	11	3.03
Hornady Critical Defense 115-gr. FTX	1069	39	22	3.83
HSM 115-gr. XTP	1015	30	14	2.96
Winchester 115-gr. Silvertip	1155	56	28	3.11
Federal 124-gr. Hydra-Shok	1091	35	19	3.50
Remington Golden Saber Black Belt 124-gr. JHP	1078	33	15	3.69
Speer CarryGun 135-gr. Gold Dot G2	1072	36	14	2.81
Hornady 147-gr. XTP	904	30	11	3.15
Federal Personal Defense Micro 150-gr. HST	880	22	10	3.33
NOTES: Accuracy is the average of five, five-shot groups fired from a sandbag benchrest. Velocity is the average of five rounds measured 12 feet from the gun’s muzzle.				

TAURUS G3C ACCURACY & VELOCITY				
AMMUNITION	VEL. (FPS)	E.S. (FPS)	S.D. (FPS)	25-YD. ACC. (IN.)
9mm, 3.2-in. Barrel				
Barnes 115-gr. TAC-XPD +P	992	34	17	3.66
Federal Syntech 115-gr. TSJ	1061	37	11	3.59
Hornady Critical Defense 115-gr. FTX	1042	30	17	4.01
HSM 115-gr. XTP	999	35	17	3.55
Winchester 115-gr. Silvertip	1130	44	23	3.68
Federal 124-gr. Hydra-Shok	1077	34	18	3.98
Remington Golden Saber Black Belt 124-gr. JHP	1051	37	19	3.38
Speer CarryGun 135-gr. Gold Dot G2	1054	39	15	3.88
Hornady 147-gr. XTP	882	32	12	3.62
Federal Personal Defense Micro 150-gr. HST	857	29	19	3.93
NOTES: Accuracy is the average of five, five-shot groups fired from a sandbag benchrest. Velocity is the average of five rounds measured 12 feet from the gun’s muzzle.				





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# 10 STEPS FURTHER

THE NEW WINCHESTER XPR RENEGADE LONG RANGE SR IS A UNIQUE, FEATURE-PACKED ADDITION TO THE XPR FAMILY.

BY STEVE GASH

**L**ET ME CUT RIGHT TO THE CHASE. Winchester has a new member in its XP Rifle family that has a set of unique features all its own. In fact, Winchester proudly states that the new XPR Renegade Long Range SR “...goes 10 steps further with all the accuracy features you need for long-range shooting...”

I had the pleasure of reviewing the initial XPR (2015) and the XPC (2017) rifles, so when I heard about the new XPR Renegade Long Range model, I wasted no time placing an order for one. I was pleased when it arrived at my dealer’s door.

As with the other XP Rifles, the Renegade is built at the Browning factory in Viana do Castelo, Portugal, and imported by BACO (Browning Arms Co.). The Renegade is available chambered for seven of today’s most popular cartridges: .243 Winchester, 6.5 Creedmoor, 6.5 PRC, 7mm-08 Remington, .270 Winchester, .308 Winchester, and .300 WSM. Barrel length is 22 inches for all but the WSM and the PRC, which have 24-inch barrels. Twists vary as appropriate by caliber.

When I ordered my Renegade, the caliber I could get the quickest was the .243 Win., so I grabbed it. Not only is the .243 Win. fine for deer and large varmints, but also, in my experience, .243 rifles are usually great shooters.

## High-Tech Features

The Renegade has a bunch of high-tech features that really enhance its shootability. It has a synthetic stock that Winchester calls a Grayboe Renegade Long Range stock. It is well proportioned for shooting prone or

from the bench. It has an upright-profile pistol grip; a wide, flattened fore-end; and, to improve stability from the bench, an undercut buttstock. There are two 0.25-inch spacers for adjusting the length of pull. Three sling-swivel studs are provided: two up front, so a sling and a bipod can be affixed simultaneously, and one at the rear of the buttstock.

The stock rides the bags on a benchrest just fine and makes the rifle easy to control. Best of all, this synthetic stock is plenty stiff and strong, so there are none of the foibles of the flimsy plastic stocks you find on rifles of lesser quality. The buttstock has Winchester’s Inflex Technology recoil pad that redirects recoil energy and moves the comb down, away from the shooter’s face.

The Renegade Long Range SR is built on a short action, and the 22-inch barrel of my .243 rifle has a 1:10 twist. Winchester calls the barrel contour a “sporter,” and even though the barrel mikes a robust 0.750 inch at the muzzle, it looks plumb skinny in the fat stock. The barrel is threaded 5/8-24, a thread protector is provided, and the muzzle has a slightly recessed crown.

The barreled action is secured to the stock by two hefty hex screws. The stout action has a fat, 0.870-inch-diameter bolt with three locking lugs that are about the same diameter. This, of course, gives a 60-degree bolt lift, but unlike some three-lug bolts, the bolt lift is smooth and easy.

The bolt body is coated with Nickel Teflon for smooth operation and corrosion resistance. A tiny sliding extractor is in the lug on the same side as the bolt handle, and a plunger-type ejector sits opposite the extractor. Withdrawing the bolt flips cases out with alacrity.

The bolt has a cocking indicator with a red dot that protrudes under the bolt shroud when the rifle is cocked.



10 STEPS FURTHER



The rifle also has a two-position safety that is positioned at the right rear of the bolt. It locks the bolt closed when engaged; however, a “bolt release” button is located just ahead of the safety. Pushing it allows the bolt to be opened and the chamber unloaded with the safety “On.” It’s a great feature.

The bolt handle itself is a bit longer than on most actions, and the bolt knob is enlarged for enhanced leverage and a positive grip. The knob screws on the threaded end of the bolt handle, so no doubt there are aftermarket bolt handles available for the consummate tinkerer.

The bolt body has a groove in which the bolt release rides, also serving as a bolt guide. There are four flutes in the bolt body that reduce weight and, as Winchester says, “promote cooling.” (I must say I don’t recall ever worrying about a “hot bolt.”)

The receiver is machined from solid bar stock and heat-treated for strength. A steel recoil lug is inletted into the stock to enhance accuracy, and the barrel is completely free-floated in the stock. The barrel is button-rifled, stress-relieved, and headspaced via a barrel nut. Looking at the bore with my Hawkeye borescope revealed the barrel looks smooth and clean, without a lot of extraneous tool marks.

The single-stack detachable box magazine is made of polymer, and it holds three rounds, regardless of caliber. It slips into and out of the action with ease and feeds cartridges flawlessly.



A key feature of the Renegade is its synthetic Grayboe buttstock that can be adjusted for length of pull via two 0.25-inch-thick spacers.

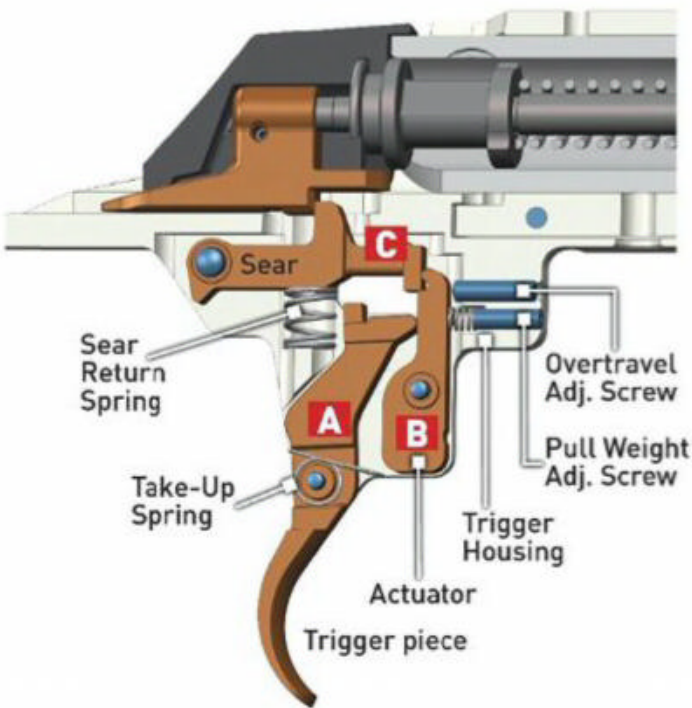
XPR RENEGADE LONG RANGE SR	
MANUFACTURER	Winchester Repeating Arms Co. winchesterguns.com
TYPE	Bolt-action repeater
CALIBER	.243 Winchester
MAGAZINE CAPACITY	3 rounds
BARREL	22 in.
OVERALL LENGTH	42 in.
WEIGHT, EMPTY	8.6 lbs.
STOCK	Synthetic Grayboe Renegade Long Range
LENGTH OF PULL	13.25 in.
FINISH	Perma-Cote matte black barrel, receiver, and bolt handle
SIGHTS	None; receiver is drilled and tapped for scope mounts
TRIGGER	3.34-lb. pull (as tested)
SAFETY	Two position
MSRP	\$1,069.99

The Renegade has Winchester’s M.O.A. trigger system that provides a crisp, lightweight pull. It’s also user adjustable.

Winchester says the slick trigger pull on the Renegade is related to the unique geometry that gives it a two-times mechanical advantage and to the polished and hardened parts of the trigger and its housing. The pull weight on my rifle averages 3 pounds, 5.8 ounces, is very crisp, and varied by only a couple ounces between pulls.

The Renegade doesn’t come with scope mounts, but it is drilled and tapped for bases. These holes are threaded 8-40, so the shooter needs mounts specific for this action. Winchester kindly included

a set of Talley 30mm rings with the rifle (1-inch rings are also available), and I used them to install a Bushnell Engage 4-16X 44mm scope for my range tests. While this particular scope has been discontinued, it is an excellent optic and has survived many hundreds of test rounds on several rifles. The fine crosshairs in the Engage are great for full-light shooting, although they are a bit hard to see in dark woods. They proved to be perfect for testing the Renegade. With scope and mount, my Renegade weighs 10 pounds, 11 ounces, so recoil, at about 6.5 ft-lbs, is hardly noticeable.



Winchester’s M.O.A. trigger system provides a clean, consistent pull and is user adjustable. Steve’s rifle averaged 3.34 pounds of pull.



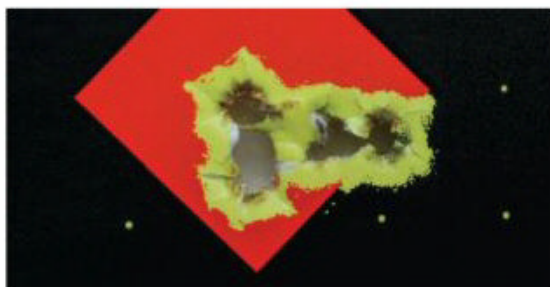
The .243 Winchester XPR Renegade Long Range SR comes with a 22-inch barrel with a threaded muzzle and recessed crown. Twist rate is one turn in 10 inches.

### Top-Notch Shootability

I have two other .243 rifles and have tested several others, so I had a good idea of what to expect. I was not disappointed with the Renegade's performance. But I wanted to explore VihtaVuori's new N555 powder, developed specifically for 6.5mm and 6mm cartridges, so I paired it with several "deer bullets" and threw in one of my pet .243 loads with Alliant's Reloder 19 that I had used in the past.

I'll get to the particulars in a minute, but overall, the Renegade shot like a champ. Just about every load registered a group average of about an inch, and many were less than that. And this is important: They were nice, tight groups, many with all shots touching, with none of that "two here and three there" stuff that indicates a bedding problem somewhere. The free-floated barrel and the stiff stock obviously contributed to the good groups produced by the Renegade.

I ended up testing 13 factory loads and seven handloads. As the saying goes, bullet holes in paper don't lie. The overall group average for all loads was 0.71 inch. The factory fodder registered a 0.73-inch average, with only one load averaging over an inch. The handloads averaged 0.67 inch. The Renegade wasn't picky, as it shot the flyweight 55- and 58-grain bullets just as well as the middle-weight 75- and 80-grain bullets and the 90- to 100-grain deer bullets.



The .243 Winchester Renegade proved to be very accurate with handloads and factory ammo. It averaged 0.74 inch for three, five-shot groups with 20 different loads.

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**Rating of A+**



10 STEPS FURTHER

The best of the prairie dog loads was Winchester’s Varmint-X 58-grain Polymer Tip that averaged 0.58 inch at 3,551 fps. A close second place was Hornady’s Superformance load with the 58-grain V-Max. It registered 3,712 fps and averaged 0.59 inch. Coyotes should quake if a hunter loads up with the Superformance with the 75-grain V-Max, which shot into 0.65 inch.

I have taken a few deer with other rifles chambered to .243 Winchester, and it was quite adequate to the task. Out of the Renegade, the Hornady factory loads with the 95-grain SST and 100-grain InterLock had energies of 1,923 and 1,735 ft-lbs respectively, so they would ably fill the freezer.

Tailor-made handloads add even more versatility to the .243 Win. Some folks scoff at handloading the .243, but I’ve had good success with it, and the Renegade shot my homebrewed ammo quite well. As noted, I tried VihtaVuori’s new N555 powder for many loads, concentrating on bullets weighing from 80 to 100 grains. I am delighted to report that everyone would plug a deer within range.

Throughout all that shooting, the Renegade was 100 percent reliable. There was not a single malfunction of any kind over the course of shooting many test rounds.

At 10 pounds, 11 ounces with scope, I wouldn’t want to tote the Renegade very far over hill and dale, but from a bench whacking distant targets, off a bipod on a coyote-calling set, or in a prairie dog field, it would be pure death and destruction.



The Renegade’s three-lug bolt is fluted and has a bolt guide for smooth functioning. The detachable magazine holds three rounds of ammo.

The Winchester Renegade XPR Long Range SR is a unique, feature-packed addition to the XPR family.

I’m not exactly sure to which segments of the shooting market the Renegade is intended. Long-range shooters, hunters in a Texas deer stand, varmint hunters, coyote callers, informal benchrest shooters? Maybe all of them, as it would work for any of these groups. Maybe it’ll be like an SUV, and we can call it a “crossover.”

In any event, the rifle’s features, the choice of available cartridges, and darn fine accuracy offer a lot of potential to many types of shooters. I don’t have to go out on a limb here to predict that the new Winchester XPR Renegade Long Range SR is going to be a hit.

ST

WINCHESTER XPR RENEGADE LONG RANGE SR ACCURACY & VELOCITY									
BULLET	POWDER		CASE	PRIMER	COL (IN.)	VEL. (FPS)	S.D. (FPS)	ENERGY (FT-LBS)	100-YD.
	(TYPE)	(GRS.)							ACC. (IN.)
.243 Winchester, 22-in. Barrel									
Berger 80-gr. Varmint	VV N555	42.4	Rem.	WLR	2.706	3049	16	1652	0.77
Nosler 80-gr. Ballistic Tip	VV N555	42.4	Horn.	WLR	2.681	3005	18	1604	0.60
Hornady 85-gr. InterBond	VV N555	41.7	Horn.	WLR	2.722	2989	11	1687	0.75
Hornady 90-gr. ELD-X	VV N555	41.0	Horn.	WLR	2.725	2883	21	1661	0.63
Berger 95-gr. Classic Hunter	VV N555	40.0	Rem.	WLR	2.722	2861	14	1727	0.72
Nosler 95-gr. Partition	Reloder 19	42.1	Horn.	Fed. 210	2.670	2801	9	1655	0.59
Speer 100-gr. Grand Slam	VV N555	39.5	Rem.	WLR	2.695	2827	8	1775	0.66
Nosler Varmageddon 55-gr. FB HP	Factory Load				2.452	3589	29	1573	0.73
Hornady Superformance 58-gr. V-Max	Factory Load				2.575	3712	21	1775	0.59
Winchester Varmint-X 58-gr. Polymer Tip	Factory Load				2.560	3551	27	1624	0.58
Hornady Superformance 75-gr. V-Max	Factory Load				2.612	3425	10	1954	0.65
Hornady Superformance 80-gr. GMX	Factory Load				2.630	3278	15	1909	1.18
Federal 85-gr. Copper	Factory Load				2.628	2990	25	1688	0.98
Nosler Custom 85-gr. Partition	Factory Load				2.605	3060	34	1768	0.83
Federal 90-gr. AccuBond	Factory Load				2.660	2894	24	1674	0.66
Nosler Custom 90-gr. AccuBond	Factory Load				2.693	3219	24	2071	0.72
Hornady Superformance 95-gr. SST	Factory Load				2.620	3019	20	1923	0.65
Remington 95-gr. AccuTip	Factory Load				2.613	2833	9	1693	0.65
Browning BRX 97-gr. Matrix Tip	Factory Load				2.660	2920	7	1837	0.64
Hornady American Whitetail 100-gr. InterLock Spirepoint	Factory Load				2.604	2795	14	1735	0.67
NOTES: Accuracy is the average of three, five-shot groups fired from a benchrest. Velocity is the average of 10 rounds measured 10 feet from the gun's muzzle. Range temperatures were 58 to 69 degrees Fahrenheit.									
All load data should be used with caution. Always start with reduced loads first and make sure they are safe in each of your guns before proceeding to the high test loads listed. Since <i>Shooting Times</i> has no control over your choice of components, guns, or actual loadings, neither <i>Shooting Times</i> nor the various firearms and components manufacturers assume any responsibility for the use of this data.									





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# THE MOST UNDERRATED BIG BORES

EFFECTIVE, EFFICIENT, AND AFFORDABLE, THE .375 RUGER AND .416 RUGER ARE TWO OF THE BEST DANGEROUS-GAME CARTRIDGES AROUND.

BY JOSEPH VON BENEDIKT

**W**HEN THE MONSTROUS COASTAL BROWN bear didn't drop from the impact of a second .338 bullet, the guide's .416 Ruger roared. The bear didn't shudder from the impact or flip over dramatically, it just slumped to the ground and didn't move, adrenaline and tenacity walloped clean out of it by the big projectile.

In 2007 and 2008, Ruger teamed up with Hornady to introduce two cartridges that may be the most underappreciated big-bore rounds currently available. First came the .375 Ruger. Built using an all-new cartridge design that fits into standard, .30-06-length actions, the .375 Ruger outperforms the legendary .375 H&H ballistically and provides hunters the additional advantages of shorter, lighter rifles and faster-functioning bolts.





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## MOST UNDERRATED BIG BORES

Just a year later, the Ruger-Hornady team necked up the .375 Ruger case to .416 and created a cartridge that offers ballistics identical to the classic .416 Rigby and popular .416 Remington Magnum. While it doesn't outperform either ballistically, it offers advantages over both. Unlike the .416 Rem. Mag., which requires a true magnum-length action, and the .416 Rigby, which requires an action that is both long *and* larger than normal in diameter, the .416 Ruger fits comfortably in a .30-06-size action.

While neither cartridge has caught on hugely among the African hunting cognoscenti, both have loyal followings in Alaska. Much of that is certainly due to how well Ruger has supported the cartridges with purpose-designed rifles for hunting the Far North.

### .375 Ruger

According to one source, the .375 Ruger has about 4 percent more propellant capacity than the better-known .375 H&H. As a result, it provides a bit more velocity. Several years ago I was researching a cartridge for use in big bear country and asked master gunmaker Lex Webernick of Rifle's Inc. whether an Ackley Improved version of the .375 H&H was worth the effort. He shrugged and said, "If you want more velocity, just use the .375 Ruger."

To achieve that 4 percent greater capacity, Hornady designed a cartridge case that is beltless, with nearly no body taper and a steep 30-degree shoulder angle. Case head diameter is 0.532 inch—same as the .375 H&H and all its derivatives right down to the 7mm Remington Magnum and other popular deer and elk cartridges. Using that case head size was a savvy decision because it made all standard-length actions with a 0.532-inch-diameter magnum boltface compatible with the Ruger big-bore rounds.

Maximum average pressure rating is 62,000 psi. As spec'd when submitted to SAAMI, the .375 Ruger utilizes six rifling grooves with a twist rate of one turn in 12 inches.

Initially, Hornady offered three bullet weights typical to the .375 realm: a 270-grain



The shorter .375 Ruger (left) outperforms the legendary .375 H&H ballistically. It is an exceptional all-around cartridge and great for one-gun use on all game.

flatnose Spirepoint, a 300-grain controlled-expansion roundnose, and a 300-grain full metal jacketed roundnose flatpoint. The heavy roundnose designs are classic for use on Cape buffalo in Africa, which are commonly shot inside 100 yards, and exit the muzzle at about 2,660 fps. The slightly lighter 270-grain Spirepoint is pushed by Hornady's proprietary Superformance propellant blend, and at 2,840 fps, it offers a bit more range.

As of last year, the company rounded out the .375 Ruger options with a monometal 250-grain GMX in the Outfitter ammo line, which features nickel-plated cases sealed around the primer and case mouth against moisture.

Offering best-in-class toughness and weight retention, a polymer tip, a boattail for enhanced aerodynamics, and excellent velocity (2,800 fps at the muzzle), the GMX is a superb bullet capable for use on the biggest bears and Cape buffalo, and it has downrange reach that surpasses its predecessors, making the .375 Ruger a legitimate 400-yard cartridge. That's a massive benefit for mixed-bag hunting when a moose or a kudu might appear while glassing for bear or while tracking buffalo.

It generates an impressive 4,350 ft-lbs of energy at the muzzle. Zeroed at 200 yards, it impacts about eight inches low at 300



With a robust laminate stock configurable for length of pull and stainless metal that shrugs off corrosion, Ruger's Hawkeye Guide Rifle in .375 Ruger is an excellent choice for use in the Far North.



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## MOST UNDERRATED BIG BORES

yards and 23 inches low at 400 yards, where it is still cooking along at more than 2,000 fps with a healthy 2,250 ft-lbs of wallop.

Two additional companies produce outstanding .375 Ruger factory ammo. Swift offers its High Grade Dangerous Game ammo stoked with a 300-grain A-Frame bullet. It's loaded fairly mild and is rated to produce about 2,550 fps at the muzzle. That's about 50 fps faster than Swift's .375 H&H load.

DoubleTap Ammunition offers four different .375 Ruger loads, including Barnes TSX bullets in 235-, 250-, and 270-grain weights as well as the Nosler 260-grain AccuBond. The latter is rated to generate 2,900 fps and has the highest ballistic coefficient (BC) of any .375 Ruger factory load, making it an excellent choice for all-around work on a variety of game in Alaska.

To showcase what the .375 Ruger can really do, this load produces 4,877 ft-lbs of energy at the muzzle. Zeroed at 200 yards, it impacts about seven inches low at 300 yards and 21 inches low at 400 yards. There, it's still traveling nearly 2,150 fps and carries 2,650 ft-lbs of energy.

Cartridges sometimes languish and die because they are not supported with a good variety of factory ammo. As you can see, that's not a problem with the .375 Ruger. Another reason cartridges die is when shooters can't obtain factory-chambered rifles. Fortunately, Ruger offers several different versions built on its excellent controlled-feed Hawkeye action, and none of them costs enough to break the bank.

The Guide Rifle features a 20-inch stainless-steel barrel and action, express-type sights, a barrel-band

Sporting the same stainless-steel barrel and action as the Guide Rifle but clad in a Hogue OverMolded stock, the Hawkeye Alaskan is another favorite among Alaska guides.



The .416 Rigby (left), the capable .416 Rem. Mag. (center), and the compact, high-performance .416 Ruger (right) are triplets in terms of ballistic performance, but the .416 Ruger fits and functions in smaller, sleeker rifles.

front swivel stud, a removable muzzle brake, and a robust laminate wood stock. Impervious to the elements, it rules in Alaska, particularly since cost is \$1,279—a real bargain considering all the features and corrosion-resistant construction.

Dubbed the Alaskan, a similar rifle sports an identical stainless-steel barreled action fitted to a black Hogue OverMolded synthetic stock.

More aesthetic but less resistant to the elements is the Hawkeye African. It sports a longer 23-inch barrel, very nice express sights, and a barrel-band swivel stud. It's finished in a highly polished, lustrous blue and fitted to a slender walnut stock sporting an ebony fore-end cap and lines reminiscent of fine British safari rifles.

This spring, my Alaska guide friend Jordan Voigt was in the market for a new backup rifle for guiding brown bear hunters in Alaska. The easy choice was the Hawkeye Guide Rifle because the laminate stock is undoubtedly the most robust of those available. More difficult was deciding between the .375 Ruger and the .416 Ruger. The latter offers considerably more authority, but the .375 is no pussycat itself and offers dramatically greater reach.

I related to him an experience in which an acquaintance of mine put a couple bullets into a monster Kodiak bear, but it got away over a ridge. The next time the bear came into view, it was 350 yards away and laboring up a second ridge. My acquaintance, who struggles with a degenerative disease that affects his ability to shoot accurately past 100 yards or so, failed to connect again. So did his guide, who was packing an iron-sighted rifle that was plenty powerful but impossible to shoot precisely at longer ranges.

Thankfully, the bear expired just over the far ridge and was recovered. However, the experience showcased the value of a bear rifle with reach—particularly for guides that may have to help a client put down a tenacious bear putting considerable distance between itself and the hunter.

Voigt opted for the .375 Ruger and installed a Leupold 1-6X VX-6HD scope in QD rings. With it, he can dependably shoot a bear anywhere between four feet off the muzzle and 400 yards.

### .416 Ruger

Last year I had the opportunity to travel to Mozambique and hunt Cape buffalo with Zambeze Delta Safaris. My hunting partners were Neil Davies of Hornady, Matt Willson of Ruger, and Logan Killam of Trijicon. Craig Boddington put the trip together and hunted with us.





Because I've long admired the cartridge, I chose a Ruger Hawkeye African chambered in .416 Ruger. Not just any Hawkeye African, though. Currently, no bolt-action centerfire rifles are being built by Ruger's Custom Shop, but Ruger's Director of Product Management and marketing guru Mark Gurney offered to have the Custom Shop build me an upgraded Hawkeye African.

The primary enhancement was in the stock. The quality of wood is breathtaking! But before firing it much, I had action-bedding expert Roland Black reinforce the lovely wood through the stock's wrist with a rod, pillar- and glass-bed the action, and free-float the fore-end.

Figuring I may have to depend on the rifle to save my bacon should events go awry, I worked the .416 out thoroughly. For a quite-light big bore (7.8 pounds), the rifle shoots amazingly. Hornady's DGX Bonded factory ammo routinely groups at or less than 1.5 inches at 100 yards. Handloads tuned to the rifle edge below an inch.

Rated at 2,400 fps, the 400-grain DGX Bonded and Solid bullets produced nearly 2,440 fps in my rifle, and muzzle energy was awesome, producing 5,327 ft-lbs of authority. I zeroed at 100 yards, making drop at 200 yards about six inches, and although I could reliably hit eight-inch steel plates at 250 yards, I wasn't going to shoot at a Cape buffalo that far away.

For comparison with the sleeker, faster .375 bullets, retained velocity at 400 yards is just 1,485 fps. Remaining energy, at 1,960 ft-lbs, is well below that of the .375s.

To my surprise, recoil wasn't bad, particularly with the included muzzle brake installed. I deliberated whether to hunt with the brake on. Running speed and accuracy tests with and without it conclusively decided the issue for me. I can fire an aimed shot nearly once per second with the brake. Without it, I'm literally half as fast. Plus, I'd be wearing TETRA Hunt's new electronic hearing protection/enhancing devices. As long as my PH stuck his fingers in his ears, the additional blast would be okay.

# OWN THE MOST IMPORTANT COIN OF CHRISTIAN HISTORY

## 1,600-YEAR-OLD COIN FROM THE FIRST CHRISTIAN EMPEROR

**C**onstantine the Great was the world's first Christian Emperor. But he didn't start out that way...

Ruling from A.D. 307 to 337, Constantine began as many of his reign as a worshiper of Sol Invictus, "The Unconquerable Sun." But after a vision of the Cross led to his victory at the legendary Battle of the Milvian Bridge, and later to him being crowned sole Emperor of the Roman Empire, Constantine shifted his beliefs.

Believing that Sol Invictus and Christ were one and the same, Constantine legalized Christianity, allowing it to flourish. He merged the worship of Sol Invictus and Christ, creating religious practices still observed by modern-day Christians. And he authorized the striking of this Nummus coin—the first true coin of a Christian Empire, and thus the most important coin of Christian history.

### TWO RELIGIONS BECOME ONE

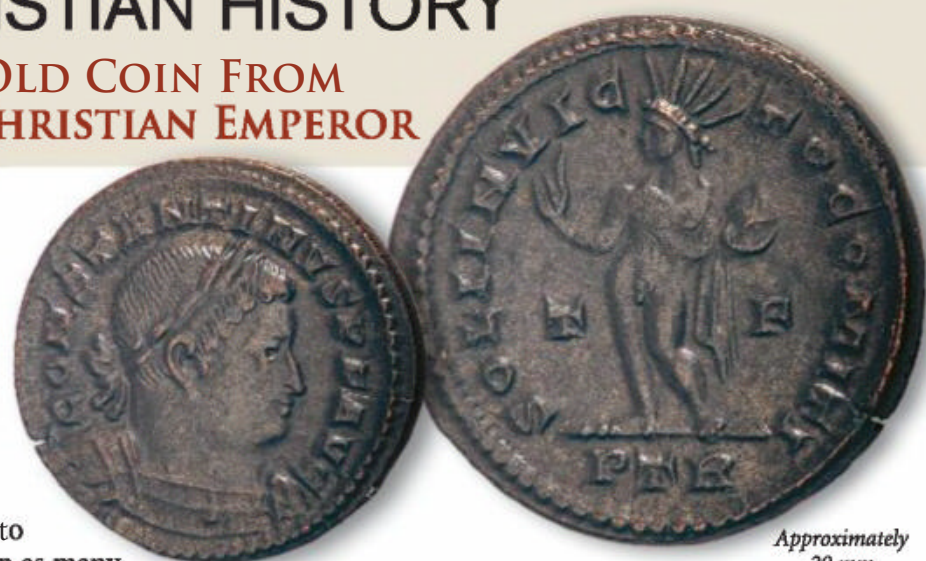
To help convert the Romans, Constantine associated Sol Invictus with Christ:

- ☀ On December 25th, the Romans honored Sol with a winter solstice feast. Under Constantine, this became a celebration of Christ (Christmas).
- ☀ In A.D. 321, Constantine declared "Sun Day" as a day to rest and worship Sol Invictus. Upon converting, Constantine kept Sunday as the new Christian day of rest (instead of Saturday).
- ☀ Constantine merged the celebration of Christ's resurrection with that of the vernal equinox, moving Easter to the Sunday after the first full moon of the equinox.

### FROM "SUN GOD" TO "SON OF GOD"

We recently located a cache of these 1,600-year-old coins, each featuring Sol Invictus on its obverse. This was a savvy move by Constantine, who was converting the Roman Empire to Christianity with a merging of religions.

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Approximately 20 mm

Constantine used the image of Sol Invictus to spread the Christian gospel, this is truly the first coin of Jesus Christ!

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## MOST UNDERRATED BIG BORES

Just a few weeks later, I crawled on hands and knees across the sunbaked clay plains and waded through the startlingly cold chest-deep water of the Zambeze Delta swamps. Buffalo were in the offing, and swirling white egrets above the herd lured us deeper. Swamp-grass stubble wore holes through my canvas trousers, then through all seven layers of the skin on my kneecaps. I didn't care.

Hours later, sunburnt, exhausted, shredded by the sawgrass and jagged-baked clay, but jubilant, we hunkered down 60 yards from the herd. Even I could see the monster of a bull bedded in its center. Boddington whispered, "It's 45 inches for sure...maybe 46!"

Unfortunately, while on the edge of fully mature, the bull's boss had slightly soft corners where it came together atop his forehead. I was hunting with America's Dean of Cape buffalo, Mr. Boddington himself, and had come to greatly respect my PH Garth Robinson. Besides, I have my own set of ethics. No matter how magnificent the wide bull was, I couldn't break the buffalo hunter's hard-bossed creed and shoot the slightly immature bull.

We studied the herd of nearly 100 animals for three hours, looking for a suitable bull. Evening was coming, and we were many long hours from camp, through treacherous swamp terrain. I won't call it infested, but buffalo, hippo, and crocodiles were aplenty.

Just when we thought we'd seen all the bulls in the herd, Robinson stiffened. "Big bull!" he whispered. "Massive...huge boss!" Guiding me in via three white egrets perched atop a nearby cow, he showed me the bull. His body and boss were so big that to me

his horns themselves looked small. Doubting, I asked for Boddington's input. "Shoot that bull *now!*" was his response.

Naturally, I'd waited too long. The bull merged with the herd, leaving no shot. I'd been instructed to load Hornady's expanding DGX Bonded bullets because hunters often must shoot buffalo bulls with cows standing behind them—a disconcerting thought—and we couldn't have bullets passing through. Safari owner Mark Haldane and the other PHs assured me that the DGX Bonded wouldn't exit, and I decided to just do as I was told. That was enchanting but unfamiliar territory to me.

As evening drew close, the herd began to move about and stretch. Maneuvering to find the big-bossed bull again, we nearly blew the herd. Then their innate curiosity and aggressiveness took over and they advanced, coming back toward our position.

Finally, the heavy-bossed bull stood broadside and exposed. My .416 Ruger roared, and I poured it on, emptying the rifle, reloading, and firing again as the bull soaked up 400-grain bullets. Then he lay still in the short Zambeze swamp grass, the African evening sun bleeding beyond and his herd rallying in the dust behind him.

Half the night later, around the late fire back at camp, Boddington told me that although he's shot over 100 buffalo, he's never taken one with a boss that big. It measured 16.5 inches—truly an old warrior. His width, at 36 inches, is the only thing that's average about that wonderful old buffalo.

There's nothing at all average about the cartridge that took him down him, though. Although the .375 Ruger and .416 Ruger are barely over a decade old and may not achieve the notoriety of their big-bore predecessors, they are magnificent cartridges that provide sterling performance. **ST**

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Superbly balanced, reliable, and accurate, Ruger's Hawkeye African rifle in .416 Ruger is one of the finest bolt-action dangerous-game rifles the author has had the pleasure of firing.







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# CASE

## PRECISION RELOADING, PART 2

# PREPARATION

PREPARING CASES FOR HANDLOADING IS TIME-CONSUMING, BUT IT CAN RESULT IN BETTER-PERFORMING AMMUNITION.

BY LAYNE SIMPSON

**A**CHIEVING HALF-minute-of-angle accuracy with an accurate rifle can come fairly easy with nothing more than standard reloading tools and off-the-shelf components, along with a bit of bullet jump and powder-charge juggling. But once that level of accuracy is reached, improvements in accuracy usually come slowly, most often in very small increments. Some things we do when precision-loading ammunition will prove to be more important than others, but each one can contribute to minor decreases in group size.

Some rifles respond nicely to some things we do, and others don't. But we will never know until we try. And while accuracy improvements in a precision-built custom rifle can often be predicted fairly closely, the same does not hold true for many mass-produced rifles. We must also be realistic. While a few tenths of an inch improvement in accuracy and a 25-fps reduction in velocity spread



Some precision rifle shooters sort cases by weight and others do not. Digital scales make the task go quickly, so there really isn't a good reason for not doing it.

can be very important to a 1,000-yard benchrest shooter, they are less important to the hunter who refuses to shoot at game beyond ethical distances. Due to their smaller targets, varmint shooters probably benefit more from precision handloading than big-game hunters.

Preparing cases is time-consuming, but it can pay off. There are two primary goals. The first goal is to arrive at a batch of cases that when chambered, consistently hold the axis of a bullet as close as possible to perfect alignment with the axis of the bore of the barrel. The other goal is to minimize shot-to-shot variation in velocity. A maximum variation of 20 fps is good, but 10 fps is better.

### Sorting

When you're rounding up a batch of cases, make sure they are all unfired and made by the same manufacturer. Even better if the same lot number is on all packaging. A close visual inspection will eliminate any cases with slightly off-center flash holes or other imperfections.



Most short-distance benchrest competitors shoot the 6mm PPC formed by necking up and fire-forming Lapua .220 Russian brass. I get the impression that sorting cases by weight is not as popular there as among those who shoot to 1,000 yards and beyond. Whether sorting is beneficial has long been debated, but as popular thinking goes, a heavier case has less capacity than a lighter case of the same caliber due to more material retained during the forming process. In other words, between two .308 Winchester cases, the one with the slightly thicker wall and/or web will have less capacity, and when the same charge-weight of powder is fired in the two cases, pressure and velocity will be a bit higher with the heavier case.

Is the capacity difference enough to matter? I believe the answer to that depends on the quality of the cases used, but considering how quickly weight-sorting can be accomplished with a good digital scale, I totally understand why its proponents insist on doing it. Some sort cases into small groups weighing exactly the same and keep them that way throughout their service life. Others sort them into batches with weight within each batch varying a slight amount.

Sorting cases by weight is not an exact science simply because, contrary to popular belief, the capacities of two cases weighing exactly the same can differ a bit in water capacity. Even when the web and the wall thickness of cases are exactly the same, there can be slight variations in the amount of material in their rims. This is why some competitive shooters sort cases by weighing them after they have been fired and then weighing them again after they are filled to the brim with water. (For obvious reasons this is done with the fired primer still in the case.)

Some shooters run the fired cases through a sonic cleaner and then through a digital dryer prior to weighing them. Others don't. Either way, after the cartridges are capacity-sorted with water, they are placed in the dryer.

## Sizing

The next step is to full-length resize with a standard, no-bushing die. Trimming to the exact same length is important at this point because case neck length determines the cutter travel distance of an outside neck-turning tool. Because the mouth of the case serves as a stop for the tool, all necks must be of the exact same length. How much the wall of the neck should be thinned is determined by the chamber neck diameter of the barrel.

The barrels of rifles used by 100- and 200-yard benchrest shooters have chamber necks small enough to require considerable neck wall thinning. A popular chamber neck diameter



After virgin cases are full-length resized, they are trimmed to the exact same length.



A Vernier ball micrometer capable of measuring to 0.0001 inch is used to check case neck wall thickness and variations of same. It is an essential tool to have when neck-turning cases.

for the 6mm PPC is 0.262 inch, although some are a bit smaller or larger. The usual cartridge neck diameter with a 0.243-inch bullet seated is 0.260 inch for a 0.262-inch chamber throat. Having 0.001 inch of space all around the neck of the cartridge gives it room to expand enough to release its grip on the bullet during firing. This means that for a 0.262-inch chamber, case neck wall thickness is reduced to 0.0085 inch. The RCBS Vernier ball micrometer I use for measuring neck-wall thickness is capable of accuracy within 0.0001 inch.

While such small chamber necks are popular among short-distance benchrest shooters, they are seldom seen in other types of rifles. But precision-built target rifles put together for shooting at great distances often have chamber necks of smaller diameter than the typical factory-built rifle. Among other things, the closer chamber neck diameter is to cartridge neck diameter, the less brass is worked during firing and resizing. When rounding up Bartlein barrels to be chambered to 6mm Creedmoor and 6.5 Creedmoor for a 17-pound switch-barrel rifle, I wanted chamber neck diameters to be 0.002 inch



## CASE PREPARATION

or so larger than Lapua brass neck-turned just enough to uniform wall thickness. That turned out to be 0.2728 inch for the 6mm Creedmoor cases and 0.2927 inch for the 6.5mm Creedmoor cases. So I ordered chamber reamers that cut neck diameters of 0.275 inch for the former and 0.295 inch for the latter.

### Neck-Turning

Uniforming neck-wall thickness accomplishes two things: It closely aligns the axes of the bullet and the case, and equally important, it makes neck tension on bullets closer to the same for the entire batch of cases, which goes a long way toward keeping shot-to-shot velocity spread low.

When performing this operation for a factory-built rifle with SAAMI chamber dimensions, your goal is to keep carefully adjusting the cutter blade of the turning tool until material is being removed from the thick section of the neck and the



The Sinclair NT-4000 Premium neck-turning tool uses interchangeable mandrels for cases of various calibers. An expander die with a mandrel about 0.001 inch larger than the mandrel of the turning tool is needed.

blade is lightly touching but not actually removing brass from the thin section. As a result, a minimal amount of material is removed, and the wall of the neck will be the same thickness all the way around.

There was a time when this was not practical for factory rifles because when the neck wall of a case was thinned, full-length resizing dies were sometimes incapable of reducing neck diameter enough for adequate tension on a seated bullet. That prob-

lem vanished with the introduction of bushing-style dies by Wilson, RCBS, Redding, Hornady, Forster, and others. Use a digital caliper or a micrometer to measure the diameter of a case with a bullet seated and then choose a sizing bushing 0.002 inch smaller. In other words, if cartridge neck diameter is 0.268 inch, you would need a bushing with an interior diameter of 0.266 inch.

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Velocity spread can sometimes be reduced by trying different amounts of case neck tension on the bullet, and I would go a step further by also having 0.267-, 0.265-, and 0.264-inch bushings on hand. While a bushing only 0.001 inch smaller than cartridge neck diameter is sometimes used when loading match ammo, more case neck tension should be applied to ammo that will be used for hunting.

Several bench-mounted tools are available. Hornady has the Neck Turn Tool, while Lyman, RCBS, and Forster offer turning attachments for their case-trim tools. Small hand tools are available from RCBS, K&M Precision, Sinclair International, and Forster. I bought one from barrelmaker Paul Marquart during the 1970s, and I am still using it.

Through the years I have accumulated several because having one for each rifle eliminates the task of resetting the cutter. Having two for the same rifle is not a bad idea if a considerable amount of brass has to be removed. For my benchrest rifle in 6mm PPC with a 0.262-inch chamber neck, one tool is permanently set for the first rough cut, and another is set for the finishing cut.

Hand tools can be used with a small clamp-style case holder, but for large quantities of cases, power is better. A cordless drill or screwdriver capable of running in the 400- to 500-RPM range works fine. The 0.250-inch hex shaft of the Sinclair #05-200 driver works with either, and it accepts Sinclair case holders available for cartridges of various rim diameters. Simply clamp the power tool into a padded bench vise, press the switch, and shave away brass.

Hand tools come in all sizes, and in addition to being more comfortable in the hand, a larger model like the Sinclair NT-4000 does not heat up as quickly when a power tool is used. Its cutter depth and micrometer-style cutter travel adjustments are accurate to 0.0001 inch.

A snug but not overly tight fit between the inside of the case neck and the mandrel of the turning tool is important. This is achieved by running each case through a standard full-length resizing die with its expander button removed, and then through a Sinclair expander die. Its 7/8-14 threads work with about any reloading press.

The mandrel of the expander die should be 0.0005 to 0.001 inch larger



than the mandrel of the turner. Applying a small dab of sizing wax to both mandrels between cases prevents binding. A carbide mandrel in the turning tool is better than stainless steel. If the tool becomes warm to the touch, take a break and allow it to cool off.

Case feed and removal speed are important. Go too fast and spiraled marks will be left on the neck of the case. The finished surface should be quite smooth. With a case still spinning, give its neck a final light polish with 0000-grade steel wool.

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## CASE PREPARATION



Most primer pocket uniforming cutters come with a handle and using it is fine for a few cases. However, the cutter can be removed from the handle and because its threads are the same as those on the stations of power case-prep centers, like this one from Hornady, the process goes much faster and is a lot easier on the hands.

Adjusting the tool to cut slightly into the shoulder of the case at its juncture with the neck is important. If the cut is correct, you should see a tiny shoulder at the beginning of the neck. A magnifying glass or eye loupe magnifier helps. But don't overdo it because if the cut is too deep, the case may separate there during firing.

If the cut is not slightly into the shoulder, a ring, or "donut," will appear inside the case at its shoulder/neck juncture after the case is fire-formed. It can usually be seen by using a flashlight to peer inside the neck of the case. It can also be felt by pushing a flat-based bullet far enough into the neck of a fired case for its base to reach the shoulder/neck juncture.

If overall cartridge length is such that the base of a seated bullet is positioned forward of the donut, don't worry about it. If bullets are seated deeper than that, the donut should be removed with a custom reamer sized to remove it without removing material from the inside surface of the case neck.

As mentioned earlier, to ensure the exact same cut depth into the shoulders of all cases, they should be trimmed to the same length prior to neck-turning. If you are uneasy about ending up with a bunch of cases with the dreaded donut affliction, make the cut into the shoulders of three cases and load and fire them twice in your rifle. Then take a look inside the necks of the cases.

### Uniforming Primer Pockets

I once shot an extremely accurate prototype rifle in .223 Remington with a firing pin that could be adjusted to vary the amount of energy it delivered to a primer. When it was adjusted to deliver the same impact for each shot, groups measured less than a half-inch. When the firing pin was adjusted to deliver lighter and heavier impacts between each shot, accuracy went to pot.

That should have come as no surprise. Years before I had read an article written by Sinclair International founder Fred Sinclair, who was also a top-ranked benchrest shooter at the time. According to



Deburring the interior of the flash hole is a rather delicate operation and is best done by hand rather than with a power tool. An adjustable stop on this tool prevents the removal of too much material.

his tests, primer seating depth variations can vary firing pin strike energy by as much as 20 percent. This can cause variations in primer flame intensity, and that can cause variations in propellant ignition that can increase velocity spread. This is why uniforming primer pockets is an important step of precision handloading.

As a case is formed at the factory, the bottom of its primer pocket is slightly rounded, while the bottoms of primers are flat. A small carbide cutter is used to flatten the bottom of the primer pocket and cut it to uniform depth. It can be done by hand, but the shank of the cutter will have 8-32 threads and removing it from its handle and attaching it to one of the stations on a power case-prep center makes the job both faster and easier. A stop shoulder on the tool prevents it from cutting the primer pocket too deeply.

### Deburring Flash Holes

I prefer to perform the final step by hand. The punch used to form the flash hole of a case at the factory sometimes leaves a small burr inside the case that can constrict primer flame travel. Lyman, RCBS, Hornady, Forster, Sinclair, and other companies offer this type of tool. The burr is not as likely to appear in Lapua cases, but I give them the same treatment anyway because the tool cuts a shallow bevel on the inside of the flash hole. When purchasing this tool, keep in mind that the flash holes of some cases made by Lapua are smaller than the American standard and require a smaller-diameter cutter. Those that spring to mind are 6.5x47 Lapua, 6mm Creedmoor, 6.5 Creedmoor, and .220 Russian. Redding offers deburring tools for both flash hole diameters, and an adjustable stop controls the cutting depth of the tool.

\*\*\*

With a batch of prepared cases now in hand, in the next, and final, installment of this series I will take a close look at loading them for the best possible accuracy.

ST





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IS NOT AN  
OPTION**

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# RUGER 10/22

## AT 300 YARDS

SHOOTING A .22 LR RIFLE  
AT 300 YARDS IS JUST AS  
CHALLENGING AS SHOOTING  
A .300 WIN. MAG. RIFLE  
AT 1,000 YARDS.

BY LAYNE SIMPSON

**W**HILE LONG-DISTANCE COMPETITIVE SHOOTING with centerfire rifles receives most of the publicity, ringing steel and drilling paper with rifles in .22 Long Rifle at various distances continues quietly to grow in popularity at a faster pace. This is due to the fact that once target distance exceeds 300 yards, places to shoot become quite limited and often are many miles from home. In addition to that, the equipment tab for F-Class, Precision Rifle Series, and other long-distance shooting sports is more than many shooters can squeeze into their budgets. And if you're thinking .22 LR competition is only for younger shooters, you would be wrong. Older riflemen who have participated in various centerfire competitions for many years and have grown





weary of recoil, muzzle blast, expensive ammunition, and short barrel accuracy life have switched to the .22 LR.

The Practical Rimfire Challenge (PRC) is similar to PRS, but only the .22 LR cartridge is used. Each match has a variety of timed stages that require shooting from various positions, with target distances ranging from 25 to 300 yards. Bolt-action and semiautomatic rifles are in separate divisions.

But the really good thing about .22 LR competition is most of the matches that have been held across the country through the decades are not as challenging as the PRC. Types of matches and their rules vary considerably. The gun club I am a member of has held .22 LR benchrest matches at 50 and 100 yards for many years. Reactive steel targets of various sizes are used, and round count during a match is seldom fewer than 100 rounds. The implementation of several rifle categories does a good job of leveling the equipment playing field, so you and your Marlin 39A won't be shooting against a Remington 40X. Optional 200- and 300-yard matches are being discussed.

## The 10/22 Competition Rifle

After decades of sitting back and observing professional and amateur gunsmiths build precision rifles around the Ruger 10/22 action, the guys in Ruger's Custom Shop have joined the chase with the 10/22 Competition. While it's quite suitable for various types of competitive shooting, do not be misled by the name. Weighing only 6 pounds, the little rifle is an excellent candidate for small-game hunting and varmint shooting, too.

The receiver is CNC-machined from heat-treated and stress-relieved Type 6061-T6511 aluminum bar stock, and it has a black hard-coat anodized finish. The Picatinny rail is 5.5 inches long, and its 30-MOA slant indicates the rifle is intended for shooting at both short and long distances.

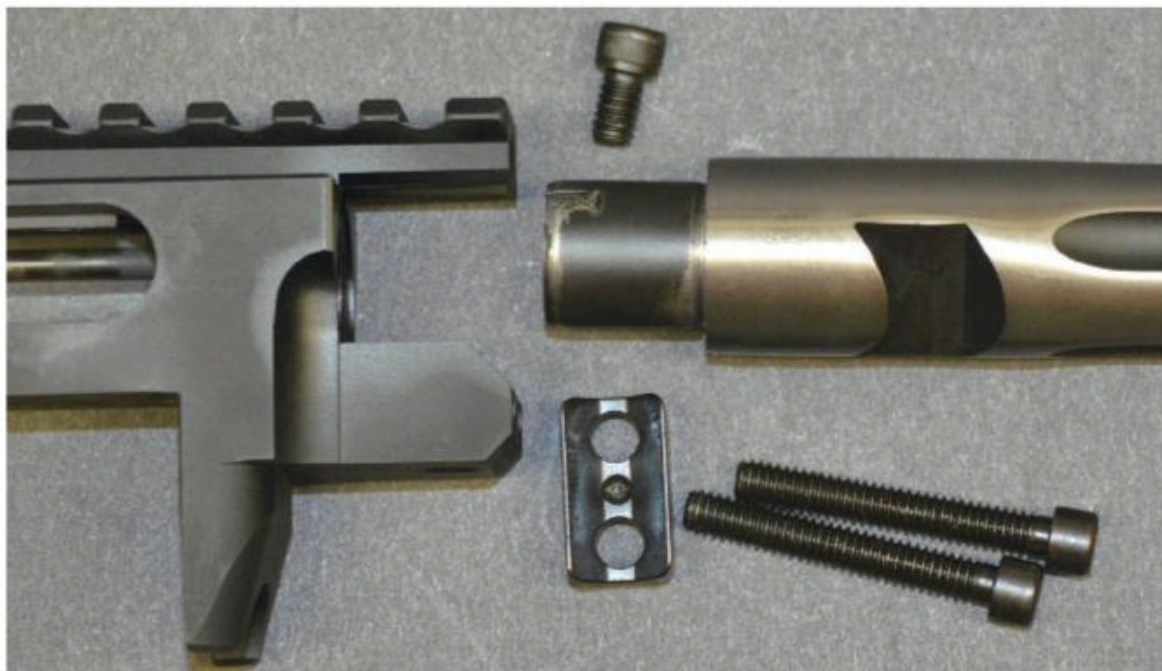
The Competition version differs from the standard-production 10/22 in several ways. Rather than being attached to the receiver with screws, the rail is an integral part of the receiver. An opening at the rear of the receiver offers the option of using a cleaning rod to clean the bore of the barrel from its chamber end. Doing so

### CUSTOM SHOP 10/22 COMPETITION

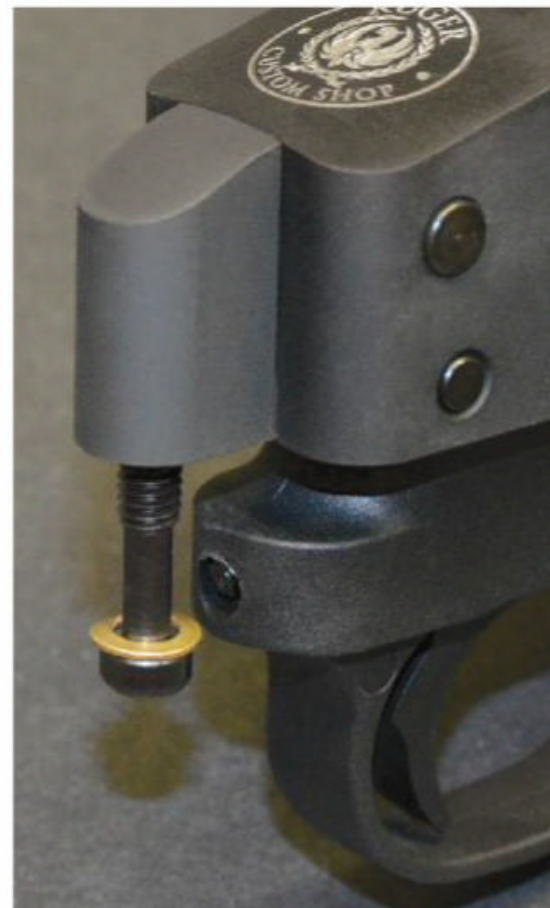
MANUFACTURER	Sturm, Ruger & Co., Inc. ruger.com
TYPE	Blowback-operated autoloader
CALIBER	.22 LR
MAGAZINE CAPACITY	10 rounds
BARREL	16.125 in.
OVERALL LENGTH	35.75 in.
WEIGHT, EMPTY	6 lbs.
STOCK	Laminated hardwood
LENGTH OF PULL	13.5 in.
FINISH	Black hard-coat anodized receiver, stainless-steel barrel
SIGHTS	None; integral optics rail
TRIGGER	3.3-lb. pull (as tested)
SAFETY	Two position
MSRP	\$899



## RUGER 10/22 AT 300 YARDS



Making the 30-MOA rail an integral part of the receiver increased its rigidity, and equally important, it made room at the front of the receiver for the threaded hole of an additional upper barrel retainer screw. The screw is positioned parallel with the barrel, and when tightened, the underside of its head bears on a small shoulder machined into the top of the barrel. Retention force is equalized by applying the same amount of force against the barrel as the V-block at the bottom of the barrel.



Free-floating the heavy barrel required the addition of an aluminum bedding block at the rear of the receiver. A bolt (shown here in the bedding block) reaches through the stock and screws into the bedding block. With the second bolt added, both ends of the receiver are pulled firmly into the stock.

requires removing the barreled action from the stock and then removing the trigger housing and bolt from the receiver. The rear bedding block also has to be detached from the receiver. Or you can forego all that and use a pull-through cleaner as I prefer to do.

The 10/22 Competition has a 16.125-inch cold-hammer-forged, six-groove, stainless-steel barrel with a 1:16 twist. Four deep flutes run almost its entire length. The barrel measures 0.920 inch at the muzzle compared to 0.595 inch for the standard-production 10/22. The muzzle has 1/2-28 threads, and an included 16-port brake increases overall barrel length to 17.63 inches.

Chamber dimensions are quite close to the Bentz chamber, which has long been used by gunsmiths who specialize in building super-accurate 10/22 rifles. Its diameter is a closer fit with the .22 LR cartridge than the sporting chamber seen in most rifles, and being shorter, it positions the bullet of a chambered round closer to the rifling. The bullet does not engage the rifling as in a match chamber, but free-travel prior to rifling engagement is considerably less than in a sporting chamber.

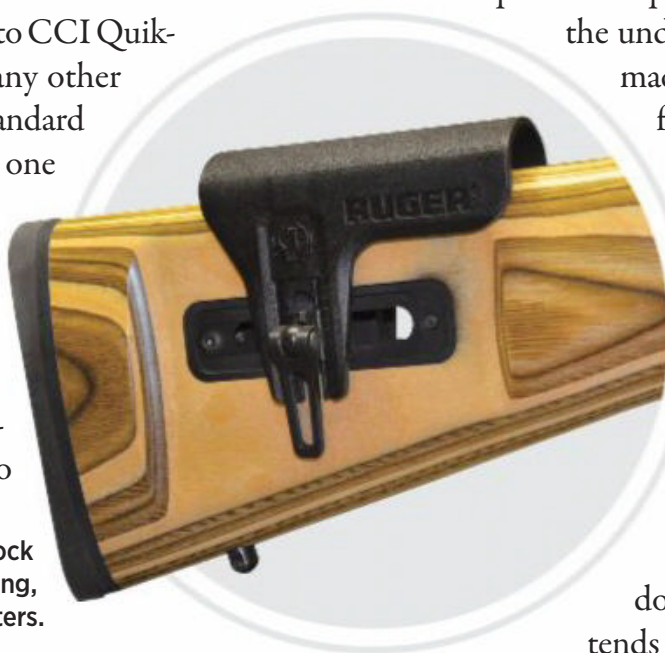
The instruction manual warns against the use of CCI Stinger ammunition. The same applies to CCI Quik-Shok, Aguila Super Maximum, and any other ammunition with cases longer than is standard for .22 LR ammunition. Chambering one of those cartridges in a Bentz chamber could force the mouth of the case hard into the rifling leade, with the increased grip of the case on the bullet resulting in a dramatic rise in chamber pressure.

With the barrel shank of the standard-production 10/22 inserted into

the receiver, it is secured by a steel V-block held in place by two screws. Tightening the screws pulls the barrel hard against the face of the receiver with all force exerted only against the bottom of the barrel. This has long been a satisfactory design detail for the standard rifle because it has a very light barrel. It also works fine with a heavy barrel, if the barrel is fully supported by the fore-end of the stock.

The guys at Ruger chose to free-float the barrel of the 10/22 Competition, but its weight stressed the barrel opening of the receiver more than it was designed to handle. Making the optic rail an integral part of the receiver increased its rigidity, and equally important, it created room for the threaded hole of an additional fastener called the “upper barrel retainer screw.” The screw is positioned parallel with the barrel, and when tightened, the underside of its head bears on a small shoulder machined into the top of the barrel. Retention force is both increased and equalized by applying the same amount of force at the top of the barrel as the V-block applies at the bottom of the barrel.

Necessary design modifications did not end there. On the standard 10/22, a single bolt screwed into an extension at the front of the receiver holds the stock and barreled action together. Again, this is fine when a light barrel is used, but the installation of a heavy free-floating barrel exerts a heavier downward load on the front of the receiver and tends to lever the rear of the receiver upward. That



The synthetic cheekrest of the laminated stock is adjustable for height and fore-aft positioning, and it suits both right- and left-handed shooters.





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## RUGER 10/22 AT 300 YARDS

issue was addressed in the 10/22 Competition by attaching an aluminum bedding block to the rear of the receiver. A second action bolt at the rear reaches through the stock just behind the trigger guard and screws into the bottom of the bedding block. With the second bolt added, both ends of the receiver are pulled firmly into the stock. Checked with a torque driver, the two bolts had been torqued to just over 20 inch-pounds.

The CNC-machined steel bolt is heat-treated, has a black nitride finish, and is a close fit with the receiver. Fully retracting the bolt and then pushing on the lever at the front of the trigger guard locks the bolt in that position. Pulling the oversized bolt handle a bit to the rear and then releasing it allows the bolt to move forward into battery. An oversized ambidextrous magazine release wrapping around the front of the trigger guard is an easy reach for the trigger finger, without having to shift that hand's grip on the stock. A push on the lever gravity-drops an empty magazine without a hitch. It works equally well with Ruger 10- and 25-round magazines.

The 10/22 Competition has Ruger's fairly new BX trigger. I compared it with a trigger of original design on a standard 10/22 of current production, and 10 pulls of the BX trigger measured with a Lyman Digital Scale averaged 3.3 pounds. Average pull weight for the standard trigger was 4.9 pounds. In addition to being lighter, the BX trigger had no detectable creep, but there was some overtravel. The standard trigger had a bit of creep and about the same amount of overtravel.

In a shooting world overflowing with synthetic stocks, the laminated wood stock with its natural coloration is like a breath of fresh air. The fore-end is nicely shaped for offhand shooting and for resting over a sandbag. Posts for quick-detach sling swivels are there with the front post in the right place for attaching a Harris folding bipod. The synthetic cheekrest is quick-adjustable for height as well as fore-aft positioning. It is equally suited to both right- and left-handed shooters. Inletting for the barreled action is as clean and precise as I have ever seen.

### Shooting to 300 Yards

When shooting the 10/22 Competition out to 300 yards, I used only Lapua and SK ammunition. They are loaded in the same factory although on different production lines. All bullets in Lapua and SK ammo are coated with the same type of lubricant, and using them exclusively eliminated the necessity of cleaning and shooting in the barrel each time a different load was fired.

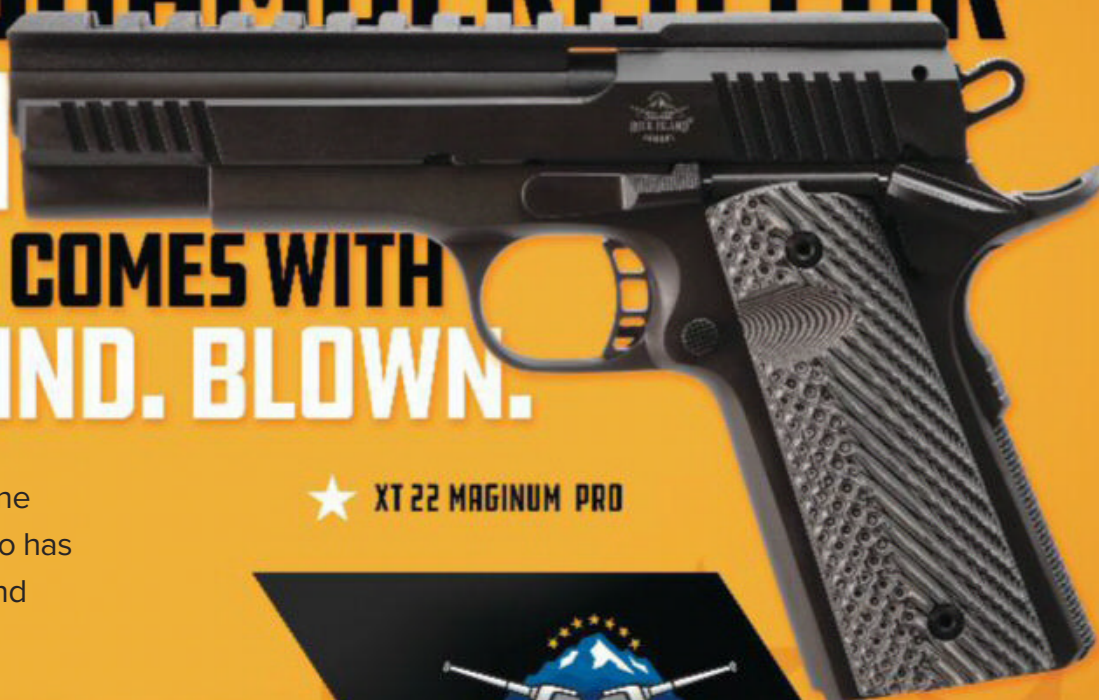
Reticle elevation travel in high-magnification scopes with one-inch tubes will vary, but 40 MOA total or 20 MOA from optical center is a realistic average. When mounted on the 30-MOA rail of the 10/22 competition, or when special rings are used on rifles without a rail, few if any one-inch scopes will have enough elevation for shooting the .22 LR at uncommon distances. If the reticle has range-compensating hash marks, it will further extend range of the scope, but it still may not be enough.

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RUGER 10/22 AT 300 YARDS

Scopes with larger tubes have room for more reticle travel, so I used Weaver six-screw tactical rings to attach a Trijicon 5-50X 56mm AccuPower scope with a 34mm tube. Total reticle elevation travel is 100 MOA, or 50 MOA both ways from optical center. Even so, with the 10/22 Competition zeroed at 300 yards, the reticle was only 3.75 MOA (30 clicks) from bottoming out. Parallax adjustment ranging from 10 yards to infinity makes the Trijicon scope equally suitable for centerfire and rimfire competition. Optical quality is beyond excellent.

After shooting groups at 50 yards, I shifted the rifle to the 100-yard berm, aimed at a small pebble, and squeezed the trigger. The high magnification of the scope enabled me to easily spot where the bullet impacted. With the rifle resting solid for no movement, I placed the intersection of the crosshairs on the pebble and then lowered the reticle to the spot where the bullet had impacted. That got the rifle on paper, and a few more clicks put it dead on the aiming point of the target. Doing the same got the rifle on paper at 200 and 300 yards as well.

If the rifle had been mine and my intention was to shoot it in PRC competition, I would have set the return-to-zero stop of the scope for 50 yards because bullet points of impact there and at 25 yards are practically the same. I would have then recorded turret positions for zeroes at 100, 150, 200, 250, and 300 yards. The return-to-zero stop feature of the Trijicon scope is easily set—remove the elevation turret body, loosen the three retention screws of the zero-stop disc, push the disc downward to its lower position, rotate it clockwise until it stops, and retighten its screws.



Lapua and SK .22 LR ammunition are made at the same factory but on different production lines. The bullets of all loads have the same type of lubricant, and that eliminated the need for cleaning the barrel each time loads were switched.

The turret body is then placed back on at its zero position and its retention cap installed. Each complete rotation of the turret moves the reticle 10 MOA.

Bullet drop at uncommonly long distances for the .22 LR is not the big issue because known distances and any good scope with accurate and repeatable elevation adjustments can handle that. Wind is a much bigger challenge. Bullet drift in a 10mph crosswind at 100, 150, 200, 250, and 300 yards is approximately 4, 8, 14, 21, and 31 inches. It's actually far more complicated than just that; rather than blowing at a constant velocity and direction, both can vary considerably from one second to the next. The windage adjustment turret of the Trijicon scope can be set for half-rotation (5 MOA) restriction or for unrestricted rotation as I used it.

The rapid-fire capability of the 10/22 Competition enabled me

to quickly send bullets downrange each time my Graham wind flags indicated a chosen condition had returned. If the condition held for five seconds, I usually got off 10 shots. When shooting the .22 LR at distance, getting off all shots during the same condition is more important than using up the time with precision aiming. If my condition did not hold long enough, I got off the trigger until it returned and then finished shooting the group. If I misread a flag and several bullets got pushed far from their mates, immediate corrections were made. The accuracy shown for each load is for the five best 10-shot groups among several groups fired at the four distances.

I consider keeping bullets from the .22 LR close together at 300 yards to be as challenging as shooting the .300 Winchester Magnum at 1,000 yards. It can be frustrating while at the same time being lots of fun for not a lot of money. Using accurate ammunition in an accurate rifle wearing an excellent scope along with good wind flags makes it even more enjoyable.

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RUGER CUSTOM SHOP 10/22 COMPETITION ACCURACY & VELOCITY

AMMUNITION	VEL. (FPS)	E.S. (FPS)	ACC. (IN.)
50 YARDS			
SK Semi-Auto 40-gr. LRN	1063	27	0.420
SK Biathlon Sport 40-gr. LRN	1056	26	0.452
Lapua Center-X 40-gr. LRN	1019	21	0.499
SK Long Range Match 40-gr. LRN	1061	27	0.510
SK Rifle Match 40-gr. LRN	1002	46	0.528
SK Standard Plus 40-gr. LRN	1029	38	0.539
SK Flatnose Target 40-gr. LFN	1039	29	0.570
Lapua X-ACT 40-gr. LRN	1031	30	0.611
Lapua Midas + 40-gr. LRN	1058	27	0.637
100 YARDS			
SK Long Range Match 40-gr. LRN	1061	27	1.087
SK Biathlon Sport 40-gr. LRN	1056	26	1.144
SK Semi-Auto 40-gr. LRN	1063	27	1.253
Lapua Center-X 40-gr. LRN	1019	21	1.604
200 YARDS			
SK Biathlon Sport 40-gr. LRN	1056	26	4.361
SK Long Range Match 40-gr. LRN	1061	27	4.474
300 YARDS			
SK Long Range Match 40-gr. LRN	1061	27	6.337
SK Biathlon Sport 40-gr. LRN	1056	26	6.843

NOTES: Accuracy is the average of the best five, 10-shot groups fired from a benchrest over a Harris folding bipod and a rear bunny bag. Velocity is the average of 10 rounds measured 12 feet from the gun's muzzle.

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## QUICKSHOT

# Mossberg 510 Youth Mini Super Bantam 20 Gauge

BY STEPHAN LEDEBOER

### “DAD, I WANT TO GO HUNTING.”

I did a double take as my son, Jack, stood there with a serious expression on his face. I am not an avid hunter, and I was surprised that he had brought this up. I enjoy the occasional fall grouse hunt with my father and brother in Michigan. Finding the time to do that, however, has become more difficult as we’ve all gotten older and have families and other responsibilities. Consequently, we had not made that trip for the two years prior to this conversation, so I didn’t know where Jack’s statement came from. After some prodding, Jack said that one of his classmates was hunting deer before school that fall, and he thought it sounded exciting and wanted to give it a try.


So last Christmas my wife and I decided to give Jack his first gun. I figured it should be a shotgun, and I thought 20 gauge would be best. Jack is 11 years old, so I didn’t think he would enjoy the heavier recoil of a 12-gauge gun, and I knew he could do any sort of hunting we wanted to do with the 20 gauge. He and I took the hunter safety course together, and during it he got to handle a few different types of guns. Together, we decided a pump gun would be the way to go.

It just so happens that my favorite shotgun is a Remington Model 870 pump gun, and as art director of *Shooting Times*, I’ve worked with a lot of different guns, but I wanted Jack to get his hands on as many different shotguns as he could before settling on one. We started frequenting local gunshops and trying out

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MANUFACTURER	O.F. Mossberg & Sons mossberg.com
TYPE	Pump-action shotgun
GAUGE	20, 3-in. chamber
MAGAZINE CAPACITY	3 rounds
BARREL	18.5 in.
OVERALL LENGTH	34.75 in.
WEIGHT, EMPTY	5 lbs.
STOCK	Synthetic
LENGTH OF PULL	10.5 to 11.5 in.
FINISH	Blued barrel and action, black stock
SIGHTS	Dual bead
SAFETY	Two position
TRIGGER	6.5-lb. pull (as tested)
MSRP	\$431





The 510 Youth gun has a 10.5-inch length of pull, which can be lengthened by 1 inch with the included spacer.

several brands and models. Jack chose the Mossberg 510 Youth Mini Super Bantam in 20 gauge. It was a good selection because its reduced dimensions and light weight are sure to make his shooting experiences more enjoyable.

The 510 Youth Mini Super Bantam has a synthetic buttstock with a 1-inch-thick recoil pad that's nice and soft. But the really important aspects of the buttstock are that it has a smaller grip size, a reduced trigger-to-grip distance, and a shorter length of pull (10.5 inches) that can easily be lengthened with a spacer as the shooter grows. It can go up to 11.5 inches. The gun also has what Mossberg calls

an "EZ-Reach" forearm, which is located closer to the receiver, making it easier to operate for shooters of smaller stature. And the 510 Youth Mini Super Bantam comes with sling-swivel studs, one on the buttstock and one on the end of the magazine tube.

At 18.5 inches, the barrel is pretty short, too. And it comes with a vent rib, dual bead sights, and three screw-in Accu-Set chokes (Full, Mod, and IC). The two-position safety is located on top of the receiver within easy reach. The trigger pull on Jack's gun is consistent and averages 6.5 pounds, according to an RCBS trigger pull scale. It varied from 6 pounds to 6.75 pounds over five measurements.

Overall length is 34.75 inches, but of course that will change when length of pull is increased. The gun weighs 5.0 pounds, unloaded. And the magazine tube will hold three rounds. It's offered in a couple of camo finishes (Mossy Oak Break-Up and Muddy Girl), but Jack chose the all-black model.

Maybe best of all, the 510 Youth Mini Super Bantam 20-gauge shotgun didn't cost an arm and a leg. The current retail price is listed at \$431.



Jack still has a dream to hunt bigger game, but we agreed to start small. He can't wait to use it on grouse this fall. And neither can I!

ST



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## QUICKSHOT

# Fobus Evolution Holster

BY JOEL J. HUTCHCROFT

### THE HIGH-DENSITY POLYMER

Fobus Evolution holster is available to fit a plethora of handgun makes and models (semiauto pistols and revolvers), and the one I've been using fits full-size and compact Smith & Wesson M&P pistols in 9mm, .40 S&W, and .45 ACP. According to the Fobus website, my holster will also fit CZ P-06, Diamond-back DB FS Nine, and Smith & Wesson SD9 VE and SD40 VE pistols. It's offered in right-hand and left-hand versions, and it can be had with a variety of attachment styles, including paddle, belt, roto-belt 2.25, roto-paddle, and ankle.

The Evolution holster is molded carefully to fit the handgun and utilizes passive retention. It has one retention-adjustment screw, and the retention-adjustment screw is not preset, allowing the user to adjust the retention pressure to his or her personal preference.

The holster also features a steel-reinforced rivet and a protective sight channel. On most models, the paddle has a rubberized insert for additional stability.

The Evolution holster has a one-piece body and a low profile for concealability. It is comfortable, lightweight, and durable, and it retains my pistol well, without needing an external strap. At a retail price of \$38.99, it's a good value.

Fobus has been producing holsters since 1978, and it is proud to be Israel's leading holstermaker. It was the first company to introduce injection-molded polymer holsters and was developed for the Israeli Military and Special Services. All Fobus holsters and mag pouches carry a lifetime warranty.

**MSRP: \$38.99**

[fobusholster.com](http://fobusholster.com)



31





# LS10

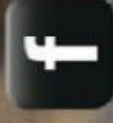
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# QUICKSHOT



## Speer 9mm Gold Dot CarryGun Ammo

BY JOEL J. HUTCHCROFT

**OPTIMIZED FOR COMPACT AND SUBCOMPACT PISTOLS, SPEER'S** new 9mm Gold Dot CarryGun ammo features the recently developed Gold Dot G2 bullet. The Gold Dot G2 has the bonded UNICOR design of the original Gold Dot but with new skives and a shallow nose cavity filled with elastomer rather than the original hollowpoint. The elastomer prevents barrier materials from filling the nose cavity and provides more consistent performance through tough barriers like wood and steel. The skives promote reliable expansion and effective energy transfer while maintaining straight-line penetration. According to the company, the new bullet style has achieved the highest FBI protocol evaluation scores of any ammunition ever tested.

The Gold Dot G2 was developed to perform in full-sized handguns, and Speer engineers modified and redesigned it specifically for use in shorter-barreled compact pistols. That's what the new CarryGun line is all about. The engineers came up with lighter-weight G2 bullets that reach optimal velocity out of short-barreled pistols, thereby producing consistent expansion and exceptional barrier penetration.

For example, the 9mm CarryGun load carries a 135-grain G2 bullet instead of the 147-grain G2 bullet found in 9mm Gold Dot G2 duty ammunition. The .40 S&W CarryGun ammo fires a 165-grain bullet as opposed to the 180-grain offering in the G2 duty load. And the .45 ACP +P CarryGun bullet weighs 200 grains instead of the 230-grain G2 duty bullet.

I've been shooting the 9mm CarryGun ammo, and as you can see from the results listed in the accompanying chart, it is

accurate and produces consistent velocities, extreme spreads, and standard deviations. It is loaded with what Speer calls "advanced powders" for ballistic consistency in nickel-plated cases for reliable feeding and with sealed CCI primers for dependable ignition. I fired 60 rounds of CarryGun through two compact pistols and didn't have a single malfunction.

**MSRP: \$28.99**

[speer-ammo.com](http://speer-ammo.com)

ST

### SPEER 9MM GOLD DOT CARRYGUN ACCURACY & VELOCITY

AMMUNITION	VEL. (FPS)	E.S. (FPS)	S.D. (FPS)	25-YD. ACC. (IN.)
<b>S&amp;W P-C M&amp;P9 Shield, 3.83-in. Barrel</b>				
Speer CarryGun 135-gr. Gold Dot G2	1072	36	14	2.81
<b>Taurus G3c, 3.20-in. Barrel</b>				
Speer CarryGun 135-gr. Gold Dot G2	1054	39	15	3.88
NOTES: Accuracy is the average of five, five-shot groups fired from a sandbag benchrest. Velocity is the average of five rounds measured 12 feet from the guns' muzzles.				





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## SHOOTER'S SHOWCASE

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# Stonehenge's Triumph

In 1883 the great-granddaddy of all rifle tests took place. As such, it presaged every modern rifle test. **BY TERRY WIELAND**

Holland & Holland won the *Field* Rifle Trials of 1883 and proudly engraved that distinction on barrels until the 1930s. The prototypical H&H double rifle had rebounding hammers and a Jones underlever.

IN THE FALL OF 1883, *THE FIELD*, A BRITISH SPORTS magazine, sponsored a competition among riflemakers that was destined to go down in history. Under the guidance of its legendary editor, Dr. J.H. Walsh, who went by the pen name “Stonehenge,” the magazine conducted what became famous as the “*Field* Rifle Trials.”

The purpose was to pit the best riflemakers against each other under controlled conditions and determine, scientifically and in full public view, which rifles were better. At the time, British big-game hunters were in the field pursuing some very serious critters, from elephants in Abyssinia to tigers in the Indian hills to rhinoceroses in South Africa. It was barely 20 years into the cartridge era, and prospective hunters leaving for the Colonies—army officers, adventurers, and penniless

younger sons—needed to know what was good and what was not.

The full story of the trials is told in volume two (rifles) of Walsh’s *The Modern Sportsman’s Gun and Rifle*, published in 1884. In my book, *Great Hunting Rifles* (Skyhorse, 2019), I condensed the tale to one quite long chapter, but here we have space for only a précis of that. Still, for those unfamiliar with the trial, it’s worth the effort because it presaged every modern rifle test—and this took place almost 140 years ago!

Dr. Walsh was a polymath and vigorous advocate of rigorous scientific testing. He conducted the first *Field* test in 1858 (muzzleloaders versus breechloaders), and by 1883 he and his staff had the process down pat. His assistants included, among others, a ballistician from



the Royal Small Arms factory at Enfield Lock and a prominent meteorologist. Their purpose—aside from simply deciding which rifles were best—was to test actual trajectories against calculated ones using mathematical formulae, the accuracy of the Boulangé chronograph, the validity of group size versus string measure, and several lesser questions. Every day, at precisely 11:30 a.m., atmospheric conditions were measured, including barometric pressure, wind direction, wind strength in relation to the north-south alignment of targets, and temperature readings from both “dry and wet bulb” thermometers. Dr. Walsh was nothing if not thorough.

Originally, the test was for big-game rifles, but it was expanded into 10 categories, from rook rifles up to four-bore doubles. History records that Holland & Holland won every category, although it also notes the fact that notable rifle-makers like Westley Richards, Rigby, and Lancaster declined to participate. It’s generally conceded that, their published excuses aside, they saw no reason to risk their hard-won reputations against Holland’s growing prowess.

Their excuses were soon forgotten, but H&H never let anyone forget the results, even going to the extent of engraving “winner of all the field trials” on its barrels as late as the 1930s.

One of the finest Holland rifles to emerge from the contest was chambered for the .500 Holland & Holland Express. It’s a caliber that became, and remains, a specialty of the company to this day. Oddly, it was one category Holland & Holland did not win overwhelmingly; Lincoln Jeffries took first place at 50 and 100 yards, while Adams & Co. won at 150 yards, but H&H finished second at all three distances, and its average took first place overall. *Whew!*

Another strange point is that we do not know exactly what load was used. It was a 3¼-inch cartridge case, but the actual powder charge and bullet weight were a closely guarded secret—so close that there is, to this day, no record of it. I was assured by Russell Wilkin, the now-retired technical director, that H&H itself does not know. The closest we can come is the formula engraved on the barrels of the rifle shown here, which is “Charge 5 Drams, Case 3¼ Inches.”

The .500 became *the* lion and tiger rifle of the late blackpowder era—Jim Corbett carried one early in his tiger-hunting career—and Holland’s was the *crème de la crème*. With rebounding hammers and its positive Jones underlever, it was one of the greatest hunting rifles ever built, and it laid the foundation for the entire family of Holland & Holland Nitro Express doubles that followed. **ST**



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with the store because it would not sell him goods on credit. Thomas was armed to the hilt with a dirk knife and a sixshooter. Apparently, he had once told his compadres that he would carry his gun to town if he so desired, and no man or officer of the law would take it from him.

With a snoot full of who-hit-john, Thomas accosted store clerk Mack Killibraw. Killibraw took up an axe handle and would have used it on Thomas had Mr. Witzleben not taken it from him. Anyway, during the fracas, the town marshals were summoned, and they arrived in time to catch Thomas going for his gun.

As Marshal Phillips entered the store from the front, Killibraw grabbed Thomas's hand to keep him from drawing his revolver. Phillips, with his own revolver drawn, ordered Thomas to, "Throw up your hands."

Thomas turned, faced Phillips, and calmly made a move to draw his gun. Phillips fired, whereupon Thomas dropped down partially behind the store counter. Phillips again told him to put his hands up. He refused again.

By then Assistant Marshal Wood had entered the store from a side door, and after Thomas refused to

throw out his guns, Phillips commanded Wood to shoot. Wood did as he was ordered, hitting Thomas clean in the head with a shot from his revolver. Thomas died from his wounds the next morning. An autopsy showed Phillips's bullet had hit Thomas in the left breast, passed through, and came out to the right of his spine. Wood's bullet entered Thomas's skull to the left of the junction of the parietal bones and the occipital bone, passed through the brain, lacerating it, and exited through the middle of the forehead.

I don't know how many times Thomas had a run-in with officers of the law, but his last one was on that fateful Saturday in 1884 when he met up with Marshals Phillips and Wood. Being a fan of Western movies, I can see the encounter playing out in my mind with possibly John Wayne as Marshal Phillips, Ken Curtis as Assistant Marshal Wood, and Bruce Dern as Oscar Thomas.

No doubt about it, even though he was inebriated, Thomas was stubbornly true to his word. No man or officer took his gun away from him. At least not while he was breathing. ST

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## SHOOTER'S SHOWCASE

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# A Bellicose Boozer

Sometimes in the Old West, too much alcohol led to a deadly shootout. **BY JOEL J. HUTCHCROFT**

In a scene that could be right out of a Western movie, a drunken Oscar Thomas met his end when he refused to surrender his gun to town marshals over a credit dispute at a dry goods store.

**NOT ALL OLD WEST OUTLAWS WHO MET THEIR** end in a gunfight were bloodthirsty, hardened killers. Some were just mean drunks. One such miscreant was Oscar Thomas. As historical accounts portray, the shootout that snuffed out Thomas's life plays like a scene from a Western movie.

I first learned of Oscar Thomas, Marshal John Phillips, and Assistant Marshal Bedford "Ben" Wood through *Shooting Times* writer Lane Pearce. Lane's good friend Tom Odom had written an article about Marshal Ben Wood for the Spring 2005 edition of *The Rampant Colt*. Subsequently, I did some digging and found a book written by Joseph W. Snell and Nyle

H. Miller in 1963 called *Why the West Was Wild: A Contemporary Look at the Antics of Some Highly Publicized Kansas Cowtown Personalities*. It includes a colorful account of the incident.

Not much is known about Thomas's life, but he had a habit of heading into town, imbibing to excess in the spirits, and becoming belligerent with companions as well as with townsfolk. He was pretty rough around the edges, and when he was drunk, he did a lot of big talking.

On November 15, 1884, Thomas made a beeline to the store of Wirtzleben & Key on Main and Sixth streets in Caldwell, Kansas. He had an ongoing beef





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