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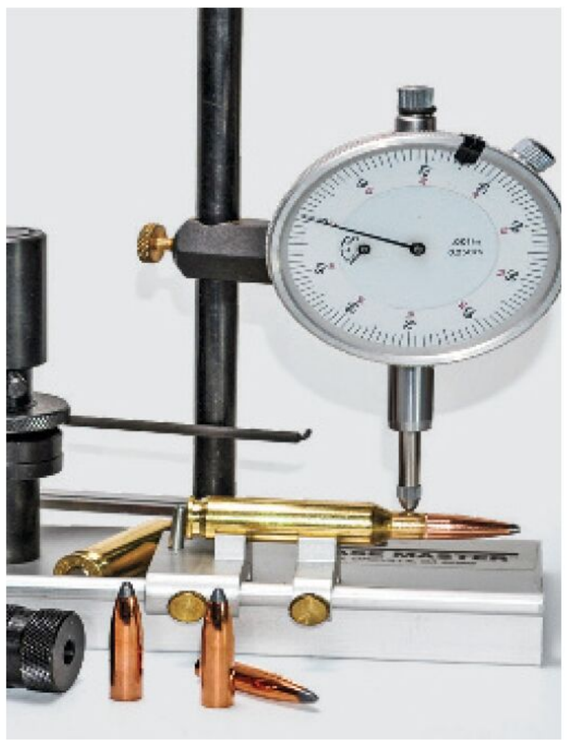

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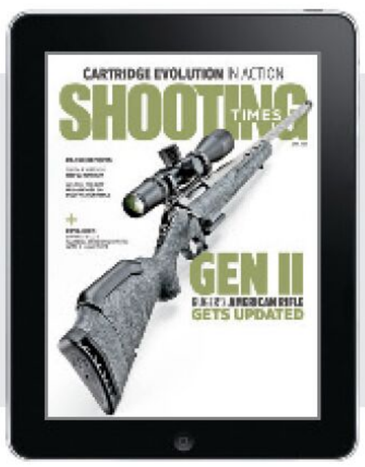

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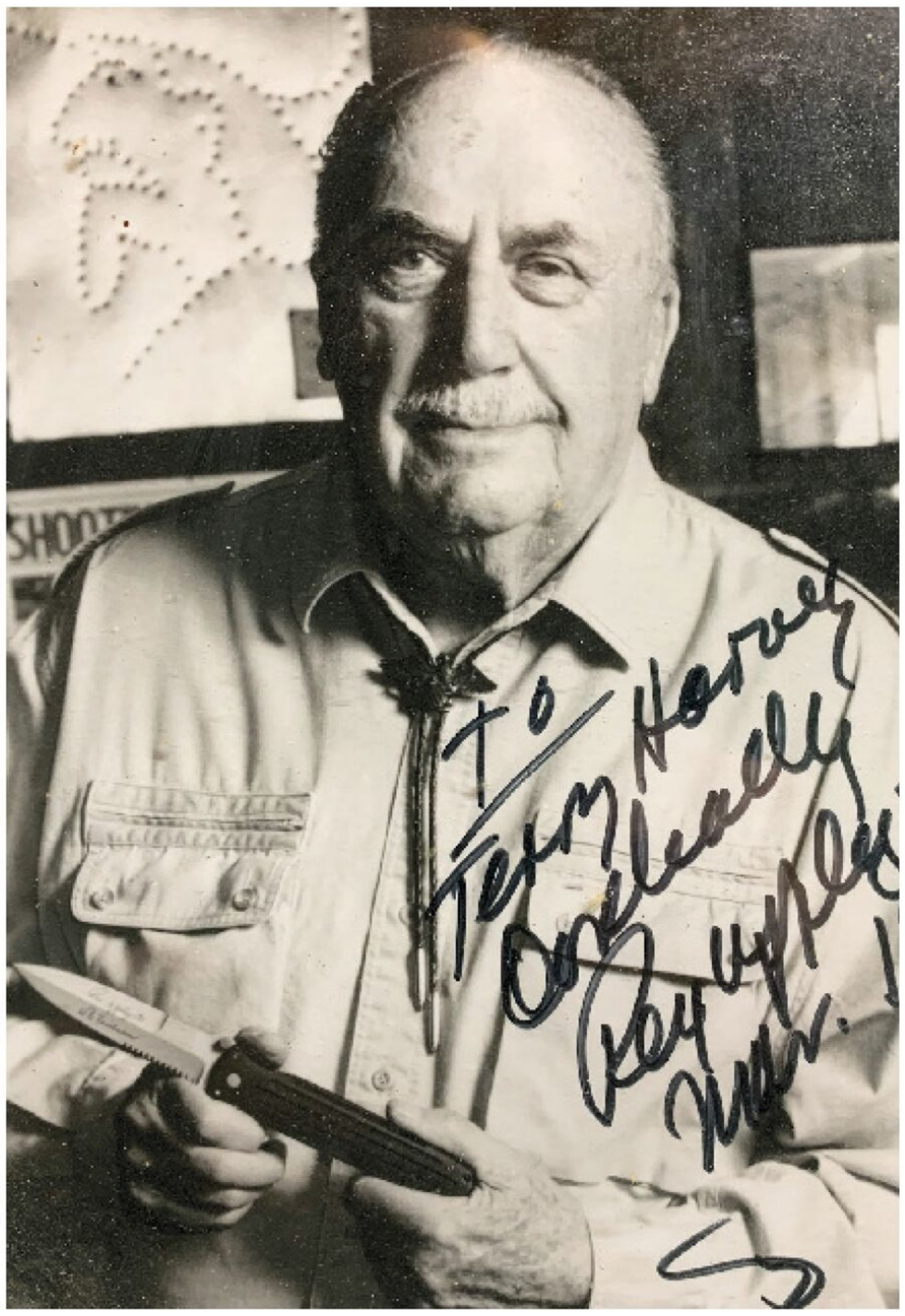
Col. Rex Applegate Was the Real Deal



AFTER READING THE RECENT "HIPSHOTS" COLUMN PROFILING Col. Rex Applegate, I remembered that Mr. Applegate spent a week with our sheriff's department in Athens County, Ohio, in 1996 training on point-shooting. He was the real deal! In the attached photograph, he is promoting the Applegate fighting knife.

Former Deputy Terry Harvey
Via email

My 2 Cents Worth

I just received my February issue of ST and read with delight Dr. Miller's article on the Smith & Wesson .357 Magnum Model 686 Plus. It was a very nice write-up on a fine revolver! I bought one as a Christmas present for myself back in 2021 when it came out as a Talo special edition. Mine is the exact same revolver as described in the article.

I will throw in my 2 cents here and say that the 7.0-inch-barreled Model 686 Plus is one serious shootin' iron! It is arguably the most accurate handgun I have ever owned, and I've owned plenty. When I take it to my local gun club, I always get "wows" from others on the line. It is indeed a keeper.

However, I have had two minor issues. 1) I found the original grips to be too slippery for my taste, so I replaced them with a one-piece Hogue cushion grip. 2) In spite of looking for two years, I cannot find an off-the-shelf shoulder holster for the 7.0-inch-barreled model, and I've stopped short of paying half what the gun's worth for a custom-built rig.

David Moll
Via email

J.C. Higgins Model 50 and .300 Blackout

Great articles in the February 2024 issue! My dad passed down his .270 Win. J.C. Higgins rifle to me. I always wondered about who made it, and now I know. I did not expect it would be FN! Thanks for the great information.

Regarding the .300 Blackout, it's a fun gun, and I have loaded rounds with bullets weighing from 110 to 220 grains. Subsonic is awesome! Understanding the limitations in case volume and length, I wondered if anybody has loaded lightweight bullets to longer lengths to minimize bullet "jump" to the lands (usually a shorter jump is more accurate). It would require chamber measurement and attention to seating depth. Overall, the article provided great information. I look forward to *Shooting Times* magazine each month.

Dale Nalder
Meridian, ID

Don't Count Out Charter Arms

I just finished reading Terry Wieland's column in the February issue titled "Just-Right Rugers." He stated, "You can't find a .44 Special revolver that is as compact and light as it might be. For concealed-carry purposes, where a .44 Special could be particularly desirable, this is a market waiting to be tapped." I beg to differ with that statement because I have one that I carry daily. It is a five-shot Charter Arms Bulldog On Duty Model 74410. It has a hammer shroud to enable double action/single action, it weighs 21 ounces, and it has a 2.5-inch barrel. To me it is a comfortable pocket revolver with more than adequate power to stop almost any assailant, and it is stainless steel and very affordably priced. It also carries a lifetime factory warranty. If you are looking for a big-bore pocket pistol, do not count out Charter Arms.

Wayne Miles
Northport, AL

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2024 *Hodgdon Annual Manual*

Hodgdon Powder Co.'s 2024 edition of the *Annual Manual* introduces Ramshot's Grand magnum rifle powder, Hodgdon's Perfect Pattern shotshell powder, and Hodgdon's High Gun shotshell powder; features tons of load data and updates for 70 rifle and pistol cartridges; and includes authoritative articles by Layne Simpson, Lane Pearce, Steve Gash, Joseph von Benedikt, and Frank Melloni. Plus, a special tribute to Bob Hodgdon, who passed away in 2023, pays homage to his leadership and many contributions to the industry. More than 6,000 loads, including over 1,000 12-gauge loads, are offered. The 2024 *Hodgdon Annual Manual* is available on newsstands nationwide and online through hodgdon.com and osgnewsstand.com.

MSRP: $14.99
hodgdon.com

Walther Polymer-Frame PDP Match

In addition to a new steel-frame PDP Match, Walther has a new PDP Match with a polymer frame. The polymer-frame PDP Match 9mm pistol comes with a 5.0-inch barrel (1:9 twist); three-dot sights; and an optic-ready, Tenifer-coated slide. The pistol also features Walther's Dynamic Performance trigger, Walther's Performance Duty texturing, an enhanced aluminum magwell, and three 18-round magazines. The polymer-frame PDP Match weighs 26.9 ounces. It's offered with 10-round magazines for locales where magazine capacity is restricted.

MSRP: $1,099
waltherarms.com

Blackhawk/Eylar BH Series Cases

Blackhawk has collaborated with Eylar to unveil a new line of lockable branded hard cases specifically designed as tactical solutions for the storage and protection of gear and equipment, including rifles, handguns, gun belts, optics, accessories, and cameras. Key features of the hard cases include waterproof and shockproof construction, multiple layers of customizable protective foam, and snap-and-grasp latches. Each case comes with one layer of perforated pull-and-pluck foam, and some models have built-in solid roller wheels. Various sizes are available in black or gray colors. They are covered by Blackhawk's limited lifetime warranty.

MSRP: $32.99 to $199.99 depending on the size
eylar.com

Burris FastFire C

Burris has a new 1X FastFire C red-dot optic that's specifically built for subcompact and micro-size pistols. Powered by a CR2032 battery, the FastFire C features "always-on" technology, a 25,000-hour run time, a 6-MOA red dot, automatic reticle brightness adjustment, five manual brightness settings, a low profile, and a removable rear sight. It fits the RMSc footprint, and it is shockproof, fogproof, and water-resistant. With its reinforced composite polymer housing, it weighs 0.4 ounce. The dot is adjustable for windage and elevation, and the unit measures 1.61x0.99x0.98 inches.

MSRP: $276
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450B1563.A (.450)	16" STAINLESS STEEL, 1:24 TWIST	9.1 LBS	36.5" RETRACTED
350L1563.A (.350)	16" STAINLESS STEEL, 1:16 TWIST	9.1 LBS	36.125" RETRACTED

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PHOTO BY MARK FINGAR

Everlast Recoil System & Sleeved Barrel?

Q. Steve Gash wrote about the Nighthawk Marvel Model 1911 in the February issue, and it was an excellent article. I have a couple of questions about that magnificent Model 1911.

The author mentioned the Everlast Recoil System and the two-piece sleeved barrel setup, but he didn't explain those features in any detail, and he didn't give the reasoning behind the sleeved barrel. He did state that Mr. Marvel showed the gunsmiths at Nighthawk how to fit the barrel, but there was nothing said about the advantage or disadvantage of this barrel system.

Can he tell me more about the sleeved barrel setup and the recoil system?

Hunter Stafford
Via email

A. Over the past 20 years, Nighthawk Custom (NHC) in Berryville, Arkansas, has become well known for producing top-notch Model 1911 pistols. This did not occur by accident. In the beginning, NHC worked with several legends in the world of 1911s, and one of those experts was Bob Marvel. NHC owner Mark Stone consulted with Marvel to develop procedures to make sure the firm's pistols are held to the highest standards. NHC gunsmiths went to Marvel for weeks of training, and in addition, Marvel went to the NHC campus for more training.

One of the things Marvel helped NHC develop is the Everlast Recoil System. This is essentially a full-length guide rod, a reverse plug, and a stronger recoil spring. According to NHC, the Everlast Recoil System uses a flat-wire recoil spring, a special guide rod, and a plug that allows shooters to shoot a minimum of 15,000 rounds before the need to change recoil springs. One of the key benefits is how it handles felt recoil. Normally, when the gun is fired and the slide starts to move rearward, the standard recoil spring continues to increase resistance until it is fully compressed. The spring in the Nighthawk Custom/Bob Marvel Everlast Recoil System maintains a steady, consistent resistance from the time the slide begins moving rearward all the way through the cycle. The result is a less-pronounced muzzle flip. The guide rods and plugs are fully machined from premium-grade 416 stainless-steel billet. With a one-piece guide rod, there are no threads to work loose. In addition, the backside of the guide rod has been beveled to prevent contact with the lower lugs.

The Marvel pistol doesn't use a regular bull barrel. Instead, it is a unique two-piece sleeved barrel. The precisely machined sleeve is much longer than a barrel bushing, and it is screwed onto the barrel and fitted perfectly to the slide. For a regular Model 1911 bushed barrel to function properly, there has to be a slight tolerance between the bushing and the barrel. The two-piece sleeved Marvel system is completely hand-lapped, eliminating that tolerance and creating 100 percent contact between the barrel and the slide. This better fit provides a terrific lockup and exceptional accuracy.

I'll also add that while the Nighthawk Custom Bob Marvel pistol is a Commander-length gun, it has full-length rails. This gives a full 5-inch stroke, which also enhances accuracy. All these features create a synergy to achieve the NHC goal: the best Model 1911 pistol that human hands can produce.

NHC's key policy of "one gun, one gunsmith" is well known. These are not just "limited production" handguns; they are truly hand-built, custom-built pistols, and the NHC gunsmiths' attention to detail shows in the way their pistols perform.

Steve Gash ST

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Savage Super Sporter .30-06

This distinctive bolt-action hunting rifle was a departure from the Mauser 98-based norm that held sway in the early 1900s.

BY JOSEPH VON BENEDIKT

THE SAVAGE SUPER SPORTER HAD DUAL, OPPOS-ing locking lugs, but they were located amidships on the bolt, rather than at the front end like most Mauser, Springfield, Winchester, Remington, and other bolt-action designs.

Super Sporters came in two variations. A plain-Jane model was dubbed the Model 40, and a slightly fancier version with checkering on the grip and fore-end and a factory-mounted peep sight was named the Model 45. Neither, however, had the model number marked anywhere on the rifle—all were simply designated "Super Sporter" rifles.

Both models were made from 1928 to 1940. I've been unable to locate any serial-number records with which to date the rifle I used for this report. From what I can tell, between 18,000 and 20,000 were manufactured, of which about 6,000 were the upgraded Model 45s.

Several cartridges popular at the time were chambered in the Super Sporter, including the .250 Savage, .300 Savage, .30-30 Winchester, and .30-06 Springfield. The latter seems to be the most common.

Earlier Super Sporter rifles have a magazine release lever located at the lower right side of the magazine well, as shown on this rifle. Later versions have a button located in the right side of the walnut stock, more or less centered over the sidewall of the magazine.

Two types of fore-ends were used. One had a Schnabel-type tip like the rifle shown here; the other had a simple roundnose fore-end tip. From what I've read, both were available at various stages during the production lifespan, so the difference can't really be used to denote earlier or later rifles.

Super Sporters came with a stout steel buttplate, grooved to help it stick to the shoulder, and with the letters "SVG" engraved into the smooth lower area. The steel buttplates must have bit during recoil, because many have been replaced with rubber recoil pads.

This was not a common rifle. Shooters who own them like them for their simplicity, their smooth action, and their unique nature, but not many folks have one.

The Savage Super Sporter (built from 1928 until 1940) may have an awkward, bulky look, but it handles incredibly well and shoots great with ammo it likes.

Mechanicals

As mentioned, the locking lugs are located in the middle of the bolt. The locking-lug recesses are in the rear receiver ring, and the bolt handle serves as a backup lug. Up front, twin extractors click over the cartridge case rim when the bolt goes into battery, providing redundant extraction. A fixed ejector rides in a slot machined into the bottom of the bolt

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at about 8 o'clock; it launches fired cases out the ejection port lightly or powerfully, depending on how fast you work the bolt.

Like many old rifle action types, the Super Sporter's cocking piece has a knurled knob on the rear. This enables the shooter to pull it back and cock the firing pin without opening the bolt, should a primer prove to be reluctant and need another whack.

The safety is odd but cool. It's a steel strap that circles the lower half of the rear receiver ring. Lift the steel tab behind the bolt to engage the safety; press it down to put the safety in the "Fire" position. The far end of the steel strap ends in a tab on the left side of the action; it lowers and raises to expose the words "Fire" and "Safe."

The bottom metal appears to have been stamped out of sheet metal but is nicely finished. The steel magazine is beautifully engineered and features shoulder indents that hold unfired cartridges rearward so their noses don't get banged against the front of the magazine during recoil.

Super Sporter rifles are known for mushy, spongey triggers with more pull weight than is comfortable, but this particular rifle is an exception. Its trigger is nice and crisp and breaks at 2 pounds, 11 ounces.

No scope mounting provision was made for Super Sporters, although many have been drilled and tapped at a later time. Serrations about 0.30 inch wide run down the top of the receiver to reduce glare when shooting with iron sights.

This particular Model 40 Super Sporter must have been retro-fit with the same Lyman peep sight installed on the upgraded Model 45s. It's a very nice petite aperture sight with a quick-detach lever that enables the user to make quick adjustments for various distances. When the Lyman aperture sight was fitted to the receiver, the rear barrel sight was removed, and the dovetail was filled with a nice placeholder. However, the screw-in aperture with the tiny hole is missing.

Provenance

Unlike most of the old rifles I examine, this one has a long and deep history. It belongs to Andy Clawson, a great friend of mine, and it was his grandfathers' rifle. Family lore has it that Andy's grandfather purchased it new in the early 1930s, which dates correctly for the configuration of this Super Sporter. It's been in the family for nearly 100 years, and it's been well cared for.

Rangetime

Posting targets at 100 yards, I fired the Super Sporter over sandbags. Doing my best to resolve the gleaming front brass bead precisely, I achieved a 1.14-inch three-shot group with the first three shots of Hornady 180-grain SSTs. The cluster was two inches above point of aim.

Most of my subsequent groups were not quite that good, owing to eye fatigue. However, the smooth-shooting old rifle averaged less than 2 MOA with two of the three factory loads I tested.

Reliability was stellar with two of the three loads, but the load topped with Nosler 180-grain AccuBond bullets didn't feed well. The polymer tips hung on the edge of the feedramp.

All things considered, Grandpa Clawson's old Savage Super Sporter acquitted itself marvelously. I wouldn't hesitate to hunt with it out to 200 yards or a bit more.

Finding a nice example of a Savage Super Sporter can be difficult, but if you find one, purchasing it typically won't break the bank. This one is valued at about $500. It's a very cool old piece of American firearms history and is about as unique as a vintage bolt-action hunting rifle can be. ST

SAVAGE SUPER SPORTER

MANUFACTURER	Savage Arms Corp.
TYPE	Bolt-action repeater
CALIBER	.30-06
MAGAZINE CAPACITY	4 rounds
BARREL	24 in.
OVERALL LENGTH	44.5 in.
WEIGHT, EMPTY	7.88 lbs.
STOCK	Walnut with aftermarket recoil pad
LENGTH OF PULL	14.5 in.
FINISH	Blued
SIGHTS	Lyman aperture rear, ramped bead front
TRIGGER	2.7-lb. pull (as tested)
SAFETY	Two position

SAVAGE SUPER SPORTER ACCURACY & VELOCITY

AMMUNITION	VEL. (FPS)	E.S. (FPS)	S.D. (FPS)	100-YD. ACC. (IN.)
.30-06, 24-in. Barrel				
Norma 150-gr. SP	2834	81	28	2.36
Hornady 180-gr. SST	2754	36	12	1.80
Jeff Rann 180-gr. AccuBond	2587	96	28	1.64

NOTES: Accuracy is the average of three, three-shot groups fired from a sandbag benchrest using iron sights. Velocity is the average of nine rounds measured nine feet from the muzzle. Ambient temperature: 25 degrees Fahrenheit. Elevation: 4,600 feet.

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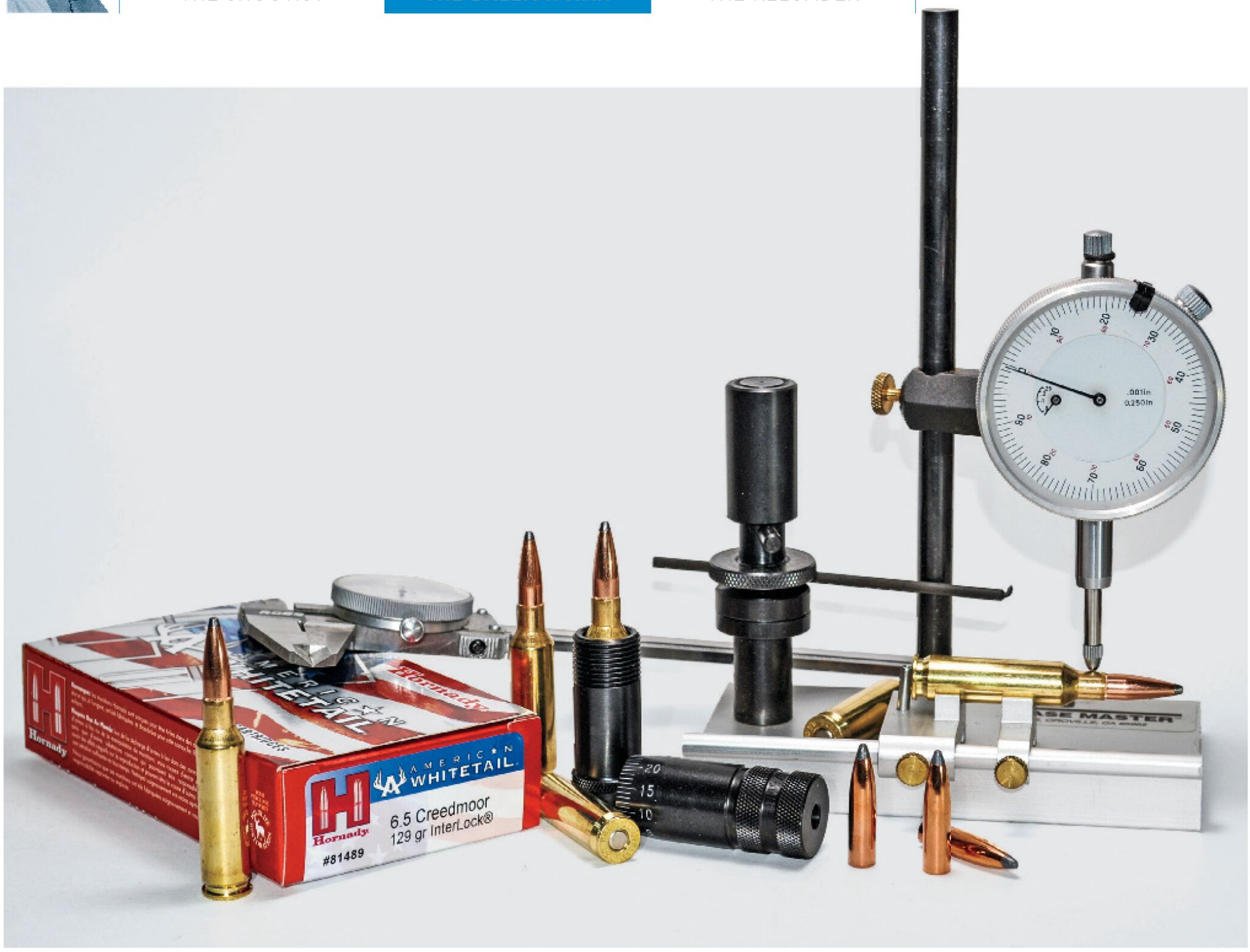

An Accurate Cartridge Is...

After years of analyzing rifle cartridges and their ballistics, our resident ballistician says there is no single factor that makes a cartridge accurate. **BY ALLAN JONES**

Rifle chamber specs, head-spacing, bullet/cartridge design, even the shooter himself, are all factors that can have an effect on how accurate your favorite cartridge can be.

FOR MANY RIFLE SHOOTERS, IT'S ALL ABOUT the accuracy, and that's good. I've heard the question for years: "What's the most accurate rifle cartridge?" That is like asking an artist, "What is a beautiful woman?" No single factor makes a woman beautiful or a cartridge accurate.

As I've discussed here before *ad nauseam*, we must first assume that accuracy is properly evaluated. "Hunting accuracy" is putting the first shot from a cold bore where you want it. That is different from a true accuracy evaluation of a firearm or different ammo lot. The latter seeks to show what product consistently puts multiple shots into the smallest area. Proper evaluation takes statistics; at minimum, sample size must be sufficiently large to ensure your confidence in the repeatability of the results.

Some of my biggest mistakes as a young reloader and rifle shooter were caused by a lack of proper sample size. But I learned and moved on. At least two, five-shot groups averaged, or one 10-shot group are about minimum for the hobby shooter to have acceptable confidence in accuracy.

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6.5mm 100 gr.
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With my confession of past statistical sins now out of the way, let's look at the basic question. First, do some cartridges have an accuracy advantage over others? In the real world, and with factory ammo, yes, but with conditions.

Industry case dimensions must be capable of allowing chambering factory cartridges in the tightest in-spec chambers. Factory ammo for bottleneck cartridges that headspace on a rim or a casehead belt tends to let the shoulder position "float." That's because headspace's primary task is defined as creating a firm support for the firing pin blow for reliable ignition.

Excessive shoulder float can have a negative effect on both accuracy and case life. I've measured factory belted ammo and found the setback between case shoulder and chamber shoulder between 0.014 and 0.024 inch. For nonbelted bottleneck rifle cartridges, that same setback was seldom more than 0.005 inch.

If I were not a handloader, I would choose a bottlenecked, nonbelted rimless cartridge for top accuracy from factory ammunition. Handloaders have far more options for overcoming issues with rimmed and belted cartridges.

We know some bullets, properly tested, consistently group better. In my youth, in-house factory rifle bullets were pretty basic—definitely not match grade. Then about 30 years ago, the big ammomakers started buying rifle bullets from the mainstream component brands. At Speer, we saw striking accuracy improvements in other brands' factory rifles with those bullets. Thus, bullets are not the contributors to mediocre accuracy in factory ammo they once were.

The big factor can be the firearm itself. Like ammomakers, riflemakers have to use standard chamber specifications to ensure any in-spec ammo will fit and fire safely in their rifles.

I've seen plenty of examples where cartridges with a poor accuracy reputation shot remarkably well in firearm types different from the original. When I proposed that Speer make a 9mm Luger match bullet in 1990, an experienced bullet engineer said, "Nine millimeter and match are an oxymoron!"

Yet weeks later we were at the range with some sales reps. There were "midi" clay pigeons arrayed across the backstop at 110 yards, and the reps were having a ball whacking those 3-inch disks at 300+ feet on the first shot. They were shooting the least expensive Blazer 9mm ammo we made—and using my T/C Contender.

The 7.62x39mm cartridge has never been considered a tackdriver in the rifles for which it was conceived. However, a friend had a custom Remington XP-100 bolt-action pistol in that caliber that posted some stunning 100-yard groups even with surplus FMJ ammo.

Even the venerable .30-30 cartridge could do well in the right platform. In lever guns it took a lot of work, including handloading tricks, to approach 2-MOA groups. A friend bought one of the inexpensive Remington Model 788 bolt rifles that were offered in .30-30, and that rifle changed my mind about the idea of an "accurate cartridge." As shipped and with a skinny barrel, his Model 788 could do sub-MOA and better.

All this is laying a path to the rifle itself. We know that individual rifles with consecutive serial numbers can group differently due to tiny variations in bore roughness, stock bedding, and headspacing. Reviewing what I wrote on chamber throats in a recent column on the .260 Remington, I keep seeing the influence of this key accuracy factor that starts just in front of the chamber.

Handloaders who have found better rifle accuracy by adjusting bulletseating length within limits are already taking advantage of this. I have a Remington Model 700 Classic in .250 Savage that could group no better than 2.75 inches at 100 yards with two brands of factory 100-grain ammo. Yet minutes later, 100-grain handloads I'd seated out farther without engaging the rifling grouped impressively. One handload did 0.65 inch, and the other grouped just under one inch from the box-stock Remington rifle.

The 6.5 Creedmoor and 6.5 PRC both have great accuracy reputations in bolt rifles, and they have almost identical throating specifications. Other 6.5mm/.264 cartridges have abrupt throats designed around old or cartridge-specific bullet designs and may struggle to group well.

Anyone with internet access can view recommended throating guidelines on the saami.org website. Click on "Technical Specifications," then either "SAAMI Standards" or "New & Revised Cartridge & Chamber Drawings."

Any cartridge can be made to be accurate, either through handloading or putting it in a different action type. To me, that makes the "accurate cartridge" question not a unique cartridge attribute but a system-wide issue. Chamber specs, headspacing, and bullet/cartridge design are all factors that can be relevant.

And that system has one more critical factor, and it's found just behind the buttplate—the shooter. Learn to effectively test accuracy and don't let preconceived notions, even mine, substitute for sitting at the bench and squeezing triggers. ST

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Firing in a custom revolver with interchangeable cylinders shows that the .32 H&R and the .32 WCF produce comparable ballistics, whereas the .327 Federal Magnum is more powerful.

.32-Caliber Cartridges Compared

A *Shooting Times* reader asked how .32-caliber cartridges really compare, and Lane provided these answers. **BY LANE PEARCE**

READER RICK WALLACE INQUIRED ABOUT THE .32 H&R Magnum, the .327 Federal Magnum, and the .32-20 Winchester (a.k.a. .32 WCF), wanting to know how they all stack up in terms of performance. A short answer is, "They're all interesting, but their ballistic performances are different." I guess that's why I've owned at least two dozen .32-caliber rifles and handguns over the last 40 years. Each one has distinctly individual characteristics, and I've enjoyed shooting them all.

The .32 H&R is not really a magnum cartridge compared to the .357, .41, and .44 Magnums. Federal partnered with Harrington and Richardson to develop this round in the 1980s. H&R revolvers are not nearly strong enough to accommodate typical magnum revolver pressures. The .32 H&R Magnum is simply a stretched .32 S&W Long case with only a modest boost in operating pressure. The SAAMI maximum average pressure (MAP) is 21,000 psi. That's just a little more than half the typical magnum round.

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The .327 Federal Magnum is a different beast altogether. Introduced in 2008, it's not just a stretched version of the .32 H&R round. The .327 Federal case is both stouter and stronger to accommodate a more than doubled MAP (45,000 psi). That's also more than 25 percent greater than the MAP of the typical magnum revolver cartridge. The .327 Federal's ballistics compare favorably with .357 Magnum performance; however, because of the smaller case diameter, similar size revolvers can accommodate an extra round in the cylinder.

The .32 WCF originated in the early 1880s when blackpowder was the universal propellant. As the .32-20 name suggests, the case was charged with 20 grains of compressed propellant. SAAMI pressure standards didn't exist back then, but the ingredients of blackpowder weren't as energetic as smokeless powders, so chamber pressure was modest.

When ammunition standards were established by SAAMI around 1926, much more powerful smokeless propellants were in common use. The .32-20's current MAP is specified as 16,000 CUP, which is quite a bit lower than the .32 H&R Magnum and significantly less than the .327 Federal Magnum. The .32-20's slightly bottlenecked case is 1/8 inch longer and nearly 1/16 inch larger in diameter than the .327 Federal. Although the .32-20's case capacity is greater, the availability of many vintage firearms precludes increasing .32-20 factory ammo's performance.

Many years ago, ammo companies offered high-velocity .32-20 factory loads topped with 80-grain jacketed bullets. The cartridge case heads were actually marked to indicate the significantly more powerful rounds. I don't know just how much the MAP was increased, but that high-velocity option has long since been abandoned.

I reviewed my range records and prepared a chart of test loads that have performed well in my guns. All results listed are for firing them in the same revolver. It's a Bowen Custom Ruger Old Model Blackhawk that was converted to .32-20 and later fitted with an interchangeable cylinder for .327 Federal, which

.32-CALIBER CARTRIDGE ACCURACY & VELOCITY

BULLET	POWDER (TYPE)	POWDER (GRS.)	CASE	PRIMER	VEL. (FPS)	E.S. (FPS)	S.D. (FPS)	ENERGY (FT-LBS)	15-YD. ACC. (IN.)
.32 H&R Magnum, 7.5-in. Barrel									
Hornady 85-gr. XTP JHP	Universal	4.5	Fed.	Fed. GM100	1249	18	7	295	1.27
Clements 100-gr. Cast SWC	Accurate No. 7	5.9	Fed.	Fed. GM100	1129	43	16	283	0.88
Clements 100-gr. Cast SWC	Unique	4.1	Fed.	Fed. GM100	1115	24	11	276	1.13
Federal 85-gr. Hi-Shok JHP	Factory Load				1105	42	16	231	1.00
Black Hills 90-gr. LFP	Factory Load				858	30	14	147	1.05
.327 Federal Magnum, 7.5-in. Barrel									
Hornady 100-gr. XTP JHP	2400	13.6	Fed.	Tula SPM	1628	36	14	589	1.09
Hornady 100-gr. XTP JHP	Power Pistol	8.5	Fed.	Tula SPM	1549	52	21	533	1.38
Speer 115-gr. Gold Dot	Accurate No. 9	11.5	Fed.	CCI 550	1487	45	14	565	0.98
Speer 115-gr. Gold dot	W296	12.0	Fed.	CCI 550	1321	24	7	446	1.24
Federal 85-gr. Hydra-Shok	Factory Load				1525	57	17	439	1.84
Speer 100-gr. Gold Dot	Factory Load				1660	42	13	612	1.16
.32-20 Winchester, 7.5-in. Barrel									
Remington 100-gr. Swaged LFP	Accurate 5744	9.0	Rem.	CCI 500	963	72	39	206	1.81
Remington 100-gr. Swaged LFP	Accurate No. 5	5.0	Rem.	CCI 500	1037	68	34	239	1.02
Lyman No. 311008 115-gr. Cast RNFP	Reloder 7	14.9	Starline	Rem. 6½	1184	138	46	358	1.00
Magnus 115-gr. Cast RNFP	Unique	5.0	Rem.	CCI 500	1183	71	24	357	1.04
Winchester 80-gr. JSP	Factory Load				1150	113	35	235	1.60
Remington 100-gr. LFP	Factory Load				912	94	31	185	0.96
Winchester 100-gr. JSP	Factory Load				765	105	34	130	1.23

NOTES: All loads were fired in a Bowen Custom Ruger Old Model Blackhawk with interchangeable cylinders. They should not be fired in any vintage handgun or original or replica Winchester 1873-type lever-action rifle.

Accuracy is the average of five, five-shot groups fired from a sandbag benchrest. Velocity is the average of 10 rounds measured eight feet from the gun's muzzle.

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 assumes any responsibility for the use of this data.

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also accepts .32 H&R. As you can see, many of the .32 H&R and .32-20 loads are comparable, and as you would expect, the .327 Federal achieves higher ballistics. Caution: Do not use these handloads in any vintage revolver or an original or replica 1873 Winchester rifle.

Handloading Tips

Unlike Federal's two .32 Magnum cartridges, the .32-20 requires quite a bit more attention when handloading. The .32 H&R and .327 Federal cases are straight-wall cases, so resizing is readily accomplished by inserting each one into and out of a carbide- or nitride-coated sizer die. However, the .32-20 is a typical 19th-century blackpowder round. It has a tapered case body with a distinctly smaller-diameter neck. Just like any other bottlenecked case, you must full-length resize in a precision-machined, tool-steel die and apply lube before pressing the case into the die. Too little lube, and it might seize in the die. Then you'll have to employ a stuck-case-remover device to clear the jammed brass from the die. Of course, the stuck case is not usable after it's removed.

Because the low-pressure .32-20 brass is not as robustly constructed as the two modern magnum cases, inadvertently bumping the case mouth on the die will almost surely damage the case so badly it can't be salvaged. And if you apply too much lube when resizing, you'll likely create a dent in the case shoulder. Depending on the size of the defect, the case may be weakened so that it will rupture when the round is fired.

Even if you are careful with how much lube you apply, as it accumulates in the die, dents will form. You must routinely inspect each one after sizing and flush the die with acetone or other solvent and blow it dry before tiny imperfections get too big. Then you start over and repeat the process of "seasoning" the now-clean, bare-steel die to avoid sticking a case with too little lube and, if you overdo it with applying lube, denting the shoulder!

The .327 Federal Magnum can be handloaded to duplicate and exceed .32-20 pressures with much less frustration. ST

PHOTOS BY **MICHAEL ANSCHUETZ**

A FRESH TAKE

ROST MARTIN IS A FRESH NEW TEXAS-BASED GUN COMPANY, AND ITS NEW 9MM RM1C IS A FRESH NEW SEMIAUTOMATIC PISTOL.

BY JOEL J. HUTCHCROFT

IT'S NOT OFTEN THAT WE HERE AT *SHOOTING TIMES* GET TO report on a brand-new gun from a brand-new company, so I'm especially excited about this project. The gun is the RM1C, and the company is Rost Martin.

Rost Martin is based in Texas, and the principals are Chris and Stefany Toomer. Chris served five years as an infantry officer in the United States Marines, deploying with the 3rd Battalion, 3rd Marines, before going to business school. Stefany is the daughter of Springfield Armory CEO Dennis Reese. I've been acquainted with Mr. Reese for more decades than I care to admit, and I well remember Stefany when she was much younger. It's cool to see her now running her own gun company. I guess I'm getting pretty long in the tooth. By the way, Springfield Armory has nothing to do with the Rost Martin company.

Excellent Features

The new RM1C is a compact, polymer-frame, striker-fired, 9mm semiautomatic pistol. It competes with the Glock 19, SIG SAUER P365, and Springfield Armory Hellcat. It has a 3.77-inch barrel with 1:10 twist, and it comes with two magazines. One magazine holds 15 rounds of 9mm ammo, whereas the other holds 17 rounds by virtue of an extended baseplate/bumper pad. The pistol is 4.92 inches tall, 1.23 inches wide, and 7.96 inches long. It weighs 21.1 ounces.

RM1C	
MANUFACTURER	Rost Martin rostmartin.com
TYPE	Striker-fired autoloader
CALIBER	9mm Luger
MAGAZINE CAPACITY	15 and 17 rounds
BARREL	3.77 in.
OVERALL LENGTH	7.96 in.
WIDTH	1.23 in.
HEIGHT	4.92 in.
WEIGHT, EMPTY	21.1 oz.
GRIPS	Integral to polymer frame
FINISH	Black nitride slide, black frame
SIGHTS	Black U-notch rear, white-dot front
TRIGGER	4.9-lb. pull (as tested)
SAFETY	Trigger safety lever
MSRP	$459

The new Rost Martin RM1C is a compact polymer-frame, striker-fired, 9mm semiautomatic pistol with a 3.77-inch barrel and high-capacity magazines.

The RM1C comes with a striated U-notch rear sight. The pistol's slide is optic ready and comes with a Trijicon RMR mounting plate.

The pistol's front sight has a single white dot, and the post is angled to facilitate a snag-free draw. Note the glare-reducing striations on the slide's top.

The pistol's steel slide has wide grasping grooves at the front and the rear. It has glare-reducing striations on top. And it is finished in matte black nitride.

The rear sight is dovetailed into the slide, and it has a U-shaped notch and fine horizontal striations. The front sight also is dovetailed into the slide. It has a single white dot, and it is angled to help facilitate a snag-free draw. By the way, the pistol fits holsters for similar-size Glock pistols, but CrossBreed, DeSantis, and BlackPoint already have holsters specifically for the new RM1C.

The top of the slide is cut for installing a red-dot optic, which is *de rigueur* these days. The optic cut fits the Trijicon RMR mounting plate, and our sample came with an RMR already installed.

The polymer frame has an integral accessory rail with three cross-slots. You can get it in black, Flat Dark Earth, and Stone Gray colors. Our sample is the black one.

The frame has textured areas on the grip, the front of the trigger guard, and on both sides of the frame where the trigger finger can rest. Rost Martin calls the texturing pattern Responsive Grip Texture (RGT). It is a proprietary laser-stippled texture, and it is effective while not being too aggressive.

The backstrap of the grip frame can be switched, and the pistol comes with three different backstraps. They wear the

The polymer grip frame features Rost Martin's proprietary laser-stippled Responsive Grip Texture. The gun comes with three interchangeable backstraps.

The compact RM1C comes with two steel magazines. One holds 15 rounds of 9mm Luger ammunition, and with an extended baseplate/bumper pad, the other holds 17 rounds.

RGT texturing. The bottom of the grip frame is flared for easier magazine insertion.

Speaking of the magazines, the RM1C comes with two high-capacity magazines. The bodies are steel, the followers are synthetic, and the baseplates/bumper pads are synthetic. As I said earlier, one magazine holds 15 rounds of 9mm ammo, and with its extended baseplate/bumper pad, the other holds 17 rounds. The backs of the magazines have numbered witness holes.

The trigger has a flat face, and the mechanism incorporates a trigger safety lever similar to other striker-fired pistol designs. However, unlike the majority of such triggers in other pistol designs, the RM1C's trigger has a trigger pull weight less than 5 pounds. Most of the most recent striker-fired pistols I've handled have had trigger pulls quite a bit heavier than 6 pounds. The RM1C's trigger pull averaged 4 pounds, 15 ounces over a series of five measurements with an RCBS trigger pull gauge. It had some take-up, but it broke crisply and consistently.

The trigger has a flat face, and the mechanism utilizes a trigger safety lever. Our sample's trigger pull averaged 4.9 pounds, which is notably less than many striker-fired pistols on the market.

The RM1C disassembles much like a Glock striker-fired pistol. However, the procedure does not require the trigger to be squeezed.

Commendable Accuracy

I put the RM1C through my standard protocol of firing five, five-shot groups from a benchrest at 25 yards with as many factory loads as I could get my hands on. Luckily, I was able to obtain six different loads, ranging in bullet weight from 115 grains to 147 grains. They are listed in the accompanying shooting results chart.

As you can see, all loads averaged 3.50 inches or less. Overall average accuracy was 2.75 inches, and at 2.00 inches, my best average came with Nosler Match Grade 124-grain JHP ammo. That load's average velocity was 1,111 fps from the pistol's 3.77-inch barrel measured 12 feet from the gun's muzzle with a Competition Electronics ProChrono Digital chronograph.

My second-best average accuracy was achieved with some old Hornady

The new 9mm Rost Martin RM1C was reliable, comfortable to shoot, and acurate. It averaged 2.75-inch five-shot groups at 25 yards with six different factory loads.

Critical Defense 115-grain FTX ammunition. The five-group average for it was 2.25 inches. That load produced an average velocity of 1,061 fps.

The third-best average accuracy came with Hornady Critical Duty 135-grain ammo. The five-group average for it was 2.75 inches, and the average velocity was 1,129 fps.

Two loads from Winchester averaged 3.00 inches for their five, five-shot groups at 25 yards. They were the Active Duty 115-grain FN FMJ and the Defender 147-grain JHP loads. Their average velocities were 1,300 and 952 fps, respectively.

And bringing up the rear in terms of accuracy was the SIG SAUER 147-grain FMJ ammo. Its average velocity was 1,021 fps, and its group average was 3.50 inches. Still, that accuracy is well under the old, established self-defense standard of 4.25 inches at 25 yards.

I also fired the RM1C at a self-defense distance of seven yards. At that short range, firing a full magazine of each factory load produced essentially one large, ragged hole in the man-size B27 target.

Function was 100 percent throughout my entire shooting session, both for accuracy at 25 yards and rapid-fire at seven yards. Point of impact was right on the money at seven yards, and muzzle jump and recoil were easy to manage.

A lot of situations call for a compact pistol with a high magazine capacity. The new Rost Martin RM1C meets those needs. It's accurate, reliable, and comfortable to shoot. With its very reasonable MSRP of $459, it is a fresh take on the compact 9mm pistol genre, and Rost Martin is a fresh new gun company. ST

ROST MARTIN RM1C ACCURACY & VELOCITY

AMMUNITION	VEL. (FPS)	E.S. (FPS)	S.D. (FPS)	25-YD. ACC. (IN.)
9mm, 3.77-in. Barrel				
Hornady Critical Defense 115-gr. FTX	1061	35	14	2.25
Winchester Active Duty 115-gr. FN FMJ	1300	29	15	3.00
Nosler Match Grade 124-gr. JHP	1111	33	16	2.00
Hornady Critical Duty 135-gr. FlexLock	1129	22	10	2.75
SIG SAUER 147-gr. FMJ	1021	27	18	3.50
Winchester Defender 147-gr. JHP	952	40	21	3.00

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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BEST OF THE LOT

THE AUTHOR SAYS SPRINGFIELD'S MODEL 2020 REDLINE LIGHTWEIGHT BOLT-ACTION RIFLE IS THE EPITOME OF MODERN HUNTING RIFLES.

BY JOSEPH VON BENEDIKT

SPRINGFIELD'S NEW LIGHTWEIGHT BOLT action is one of the most honest precision hunting rifles I've shot. It not only meets the company's 0.75-MOA accuracy guarantee, but it does so with eight of the 10 factory loads I tested in it.

This rifle is the epitome of the modern hunting instrument. It's designed for precision, yet it's built to be light enough to pack into the mountains. To help us inconsistent humans make the most of the lightweight rifle's precision, the stock is engineered with ergonomics that minimize our ability to screw up the shot.

In short, the Model 2020 Redline is an off-the-shelf rifle that performs with semicustom rifles that retail for twice as much.

For shooters familiar with Springfield's excellent Model 2020 Waypoint, the Redline is a similar rifle, built using the same model action; same make carbon-jacketed barrel; and same trigger, trigger guard, and magazine well. The Redline's stock is significantly different, and available barrel lengths are much shorter (16- and 20-inch versions instead of 22-inch versions for the Waypoint). Redline rifles are made to be lighter and a bit less expensive than the Waypoint.

Concept and Components

In case you're not familiar with Springfield's line of bolt-action hunting rifles, let's start with the action—the heart of the rifle—and unpack this fine shootin' iron.

This is a premium action, the equivalent of many semicustom actions. Receivers are machined from steel bar stock—after heat-treating. Machining post-heat-treat requires running the machines slower and diligently maintaining cutting-tool edge sharpness, but that results in a truer product than when machined pre-heat-treat.

Springfield's Model 2020 action is smooth-operating and reliable. The pinned, full-length optic rail is a nice feature for strength and convenience. The magazine well is AICS-compatible, and the mag release in the front of the trigger guard is protected but easily activated.

The bolts feature dual, opposing locking lugs, harking back to the proven Mauser design. A robust 0.25-inch-wide extractor is dovetailed into the ejection-side locking lug in the 3 o'clock position, and it reliably hauls fired cases from the chamber. This location is the best for any extractor, and you'll never have ejected cartridge cases angling up and bouncing off your scope's windage turret and back into the action—a condition all too common with modern precision scopes and their oversize side turrets.

As for the ejector, it's a spring-activated plunger located at about 8 o'clock in the boltface.

The bolt bodies are fluted to reduce weight and to provide a place for detritus to accumulate rather than potentially gumming up the function. The bolt handle runs completely through the bolt body, in full diameter. It's a super-strong handle-to-bolt attachment; you'll never break that handle off. I've seen brazed-on Remington 700 bolts broken off by excited sportsmen with a stubborn shell stuck in the chamber. That won't happen with the Redline.

The bolt shroud is a sleek, petite part that lends to the racy lines of the Redline. A rectangular rear section of the firing pin protrudes from its rear, providing a clear visual and tactile indication when the action is cocked.

Springfield chose the proven TriggerTech Field model trigger for the Redline. It's user-adjustable from 2.5 to 5 pounds. My rifle's trigger came from the factory set at precisely 3 pounds, 10 ounces. I tested pull weight with my Lyman digital trigger gauge and found less than 2 ounces of variation over a series of five measurements. That's nice and consistent.

The bottom metal features contemporary, squared styling. The Redline comes with a nice, flush-fitting, three-round MDT polymer magazine, and the magazine well is a well-engineered design optimized for AICS-pattern magazines. I ran the rifle with the MDT mag and also with a 10-round double-stack ARC (American Rifle Company) steel magazine; both worked perfectly. The mag release is incorporated into the front of the trigger guard, and it is secure yet readily activated.

Most of the metal parts are finished in a nice OD green Cerakote. The bolt is nitride, and the aluminum optic rail pinned and screwed to the top of the receiver is finished in a matte black hardcoat anodizing.

Springfield Armory uses carbon-fiber-jacketed barrels by BSF on all Redline rifles. These are clearly great barrels, and I've never heard of one that doesn't shoot well. The two I've tested (a 6mm Creedmoor Waypoint and this 6.5 Creedmoor Redline) both achieved half-MOA accuracy under fairly rigorous tests.

Unlike most barrels with a carbon-fiber exterior, BSF does not wrap its barrels with carbon-fiber strands in an adhesive, let it cure, and then grind the carbon fiber to correct profile. Rather, BSF builds barrels with a roll-wrapped carbon-fiber sleeve, and the barrel is "tensioned." Tensioning a barrel suspends a steel core inside a shell and applies stretch to the core using a shell that's ever-so-slightly longer than the core. It's an

MODEL 2020 REDLINE

MANUFACTURER	Springfield Armory springfield-armory.com
TYPE	Bolt-action repeater
CALIBER	6.5 Creedmoor
MAGAZINE CAPACITY	3 rounds
BARREL	20 in.
OVERALL LENGTH	40.5 to 41.75 in.
WEIGHT, EMPTY	6.25 lbs. (as tested)
STOCK	Grayboe Trekker composite
LENGTH OF PULL	13.25 to 14.25 in.
FINISH	Green Cerakote action, olive with black webbing stock
SIGHTS	None, full-length optic rail
TRIGGER	3.6-lb. pull (as tested)
SAFETY	Two position
MSRP	$2,299

old accuracy-enhancing technique that long-range revolver silhouette competitors used.

Inside the carbon-fiber jacket the steel core is fluted, allegedly to aid cooling, and does not contact the carbon fiber at any point between its ends.

Now, this method of suspending and tensioning a steel barrel in a jacket is touted to do two things: increase accuracy and keep the barrel cooler. I'll buy the first claim because it's been proved by thousands of shooters over the years and because I've seen how these rifles shoot.

However, in a very distant life I was a firefighter, and heat-conduction training suggests that trapped air insulates, rather than conducting heat. I'd bet dollars to donuts that these barrels appear to stay cool, but that the dead-air space inside actually insulates the core and inhibits fast cooling.

That said, it just doesn't matter. Why? Because the Waypoint and Redline flat-out shoot. Groups are small, and accuracy does not degrade over long, hot shot strings.

Up front, the Redline barrels are threaded 5/8-24 and come fitted with a nice SA radial muzzle brake. For shooters who prefer recoil to muzzle blast, a thread cap is included. Savvy shooters will put both the brake and the thread cap in the spare-parts drawer and install a suppressor.

Interestingly, the breech of the barrel appears to have a longer steel shank than is necessary, particularly considering the Redline's purpose as a lightweight hunting rifle. The steel shank extends about 4.15 inches forward of the receiver. Carbon-fiber barrels by Proof Research and other makers generally have less than 2 inches of all-steel diameter before transitioning to the carbon-fiber wrap. Unless the long steel shank is a crucial element of the tensioned barrel construction, the long shank seems a needless increase in weight.

As mentioned earlier, the Redline comes with a choice of 16-inch or 20-inch barrel. This is clearly a model meant to serve two shooter demographics: hunters who want compact, easy-maneuvering rifles and hunters who intend to use a suppressor.

Initially, just two calibers are offered: 6.5 Creedmoor and .308 Winchester. I ordered the 20-inch barrel chambered in 6.5 Creedmoor. It's not quite as compact and maneuverable as the 16-inch version, but it is short enough to pair beautifully with a suppressor and generates enough velocity to be useful at Western hunting distances.

Now we come to the most visually unique part of the Redline—the Grayboe Trekker stock. Grayboe was founded by a member of the McMillan family, so it's rooted in stock-making royalty. Stocks are not made from carbon fiber or fiberglass using the traditional hand-laid process; rather they are constructed using a proprietary process that saves time. Saved time means lower cost and ready availability.

Composite-stock connoisseurs gently suggest that Grayboe is a glorified injection-molded stock with some fiberglass mixed

The muzzle threads of the tensioned, carbon-jacketed BSF barrel are 5/8-24, making it easy to swap the radial brake for the included thread protector or to install a suppressor.

Grayboe's Trekker composite buttstock features unique cutouts to reduce weight and excellent engineering to provide precision-enhancing ergonomics. Note the little blue bubble level installed in the tang area.

in. Me, I'm not so negative. If the stock performs well, I like it. And I've been impressed with every Grayboe stock I've put my hands on. They do tend to be heavier than premium hand-laid carbon-fiber stocks. The Trekker model used on the Redline is specced at 28 ounces, which is the upper end for most precision mountain-rifle stocks these days.

Most arresting about the Trekker stock is the big bite cut out of the bottom of the buttstock. It's to reduce weight and is groundbreaking. The near-vertical grip is slender and feels great; more importantly, it positions the shooting hand and wrist torque-free. Grayboe installs a blue anticant bubble level in the stock just aft of the action tang. It's hard to see while in shooting position, but it's cool nonetheless.

The top of the comb is high, helping position the eye properly behind the scope. A sling-swivel stud is secured in the steeply angled toe of the stock. Perhaps best of all, the Trekker comes with five quarter-inch stock spacers, so you can set your length of pull to frame-fitting perfection. Aft, a deep, squishy rubber recoil pad moderates recoil.

Up front, the fore-end is generously free-floated around the barrel. So generously, it is one of the few complaints I've heard about Grayboe stocks. Most have huge fore-end channels, and some shooters consider the gap between the barrel and the stock unsightly. Others express concern that water, snow, and dirt will accumulate there. You'll never have to worry about stock-to-barrel contact throwing a shot, though.

Finger grooves extend down each side of the fore-end, giving it a comfortable, secure feel in the support hand. The fore-end bottom is flat and is fitted with two sling-swivel studs, allowing you to install a traditional bipod and still have a sling attachment point.

Range Results

To wring out the Redline at the range, I installed one of Burris's very innovative Veracity PH scopes (see the accompanying sidebar) in Nightforce low-height rings on the factory-mounted optic rail. Even with the scope mounted as low as possible to the rail, there was a 3/8-inch gap between the scope's bell and the barrel. The Redline's action is compatible with any Remington 700-type scope bases, and if I were going to keep it, I'd remove the Picatinny optic rail and mount the scope much lower and tighter to

BURRIS VERACITY PH SMARTSCOPE

Once programmed via Bluetooth with your rifle's ballistics, a HUD (heads up display) inside this scope tells you what distance you're dialed to. No need to take your eye from the scope when hunting; just reach up and turn the turret until the distance displayed inside matches the range to your target.

The Burris Connect app pairs with the scope to upload ballistic profiles and environmental conditions. Once done, put away your phone; it's not needed to use the scope. The elevation turret dial is super-precise, and the HUD digital display shows your choice of yards, meters, or MOA. It also reads shot angle, rifle cant, and battery level.

How about reliability with advanced electronics on board? Veracity PH scopes are built wilderness-tough. They're waterproof, nitrogen-purged, and have solid one-piece 30mm main tubes. Plus they're backed by Burris's Forever Warranty.

This is a FFP (front focal plane) scope, with a reticle that gets bigger and smaller as you zoom the scope in and out. To make it usable in low-light conditions, the reticle features crosshairs thin in the center and progressively thicker away from center. Magnification range is 4X to 20X. The objective lens diameter is 50mm.

The elevation turrets are equipped with a zero-stop mechanism. Total elevation adjustment is 70 MOA. The windage turret is capped, and there's a nice combined parallax focus knob and power/Bluetooth/illumination control knob on the left side of the scope.

Does the Veracity PH work without power? You bet it does. Burris is rooted in the Rocky Mountain West, and redundant reliability is paramount. Just operate the scope like any other with an elevation turret. Plus, you can create and print a backup ballistic drop "hard card" chart using the Burris Connect app.

This cool new smartscope provides tip-of-the-spear innovation. It's tough, optically great, and ergonomic. Length: 15 inches. Weight: 28 ounces. Battery: 2x CR2450.

MSRP: $1,199

burrisoptics.com

the barrel using Talley Lightweight Alloy one-piece ring/bases. That would allow a much better cheekweld, and it would reduce weight by a few ounces.

Stock length of pull was just about right for me, so I opted not to install any additional spacers. However, I spun the radial muzzle brake off and screwed on a Gunwerks 6IX suppressor. It's a lightweight, durable can that weighs only 11 ounces and is just 6.2 inches long. Given the light-but-precise nature of the Redline, I picked a Spartan Pro Hunt TAC bipod and installed the included adapter on the front swivel stud.

With a double stack of 6.5 Creedmoor ammunition, I sallied off to the range, braving 25-degree Fahrenheit temps and sideways-blowing snow. If the Redline could strut its stuff in these conditions, I figured, it was a winner.

After bore sighting, I fired a three-shot group at the 100-yard target. It measured 1.19 inches. The next group measured 0.64 inch, and the third—without allowing the barrel to cool—measured a tidy 0.49 inch.

After that first three-shot group out of a clean barrel, the rifle shot only two other groups that measured more than an inch—out of 30. Every single one of the 10 factory loads I tested averaged less than one MOA (1.047 inches). Eight of the 10 met Springfield's 0.75-MOA accuracy guarantee. That's exceptionally good—typically in such tests two or three meet the accuracy protocol.

Even more impressive, I ran each different load through the rifle—three consecutive three-shot groups—without allowing the barrel to cool. This is an aggressive test that reveals whether accuracy degrades or point of impact shifts as the barrel heats up. Neither occurred. It's a testament to the quality of the BSF barrel.

Another beneficial attribute that I noted with interest is the Redline's tendency to put different loads from different manufacturers and with different bullet weights on the same point of aim at 100 yards. That's a really desirable characteristic in a hunting rifle.

I alternated between the included three-round magazine and my double-stack 10-round ARC magazine while conducting accuracy testing, and I watched carefully for any proclivity to misfeed or malfunction in any way. There was none. Reliability was perfect—rarer than one would anticipate, particularly in detachable-magazine-type actions fed by a variety of magazines.

My only observation was that when the three-round magazine was fully loaded, it took considerable pressure to seat it fully into the action when the bolt was closed. It could be done, but I couldn't just slap it into place and expect it to click in and stay. This is a fairly common feature of small, flush-fit magazines built to fit AICS magwells, so it's nothing to be concerned about.

Recoil, with the suppressor installed, was negligible. The 6.5 Creedmoor is mild to begin with, and when housed in an ergonomic, suppressed rifle, it's a pussycat to shoot.

As I write this it's the very end of 2023. This year I've tested myriad new rifles in 6.5 Creedmoor, most from reputable brands and most touting new carbon-fiber barrels and technology. Without hesitation, I'll state that the new Redline is by far the best of the lot. ST

Excellent accuracy was the norm with Springfield's 6.5 Creedmoor Model 2020 Redline. Eight out 10 factory loads tested produced sub-0.75-MOA accuracy.

SPRINGFIELD MODEL 2020 REDLINE ACCURACY & VELOCITY

AMMUNITION	VEL. (FPS)	E.S. (FPS)	S.D (FPS)	100-YD. ACC. (IN.)
6.5 Creedmoor, 20-in. Barrel				
Hornady 95-gr. V-Max	3086	65	21	1.03
Federal 130-gr. Berger OTM	2745	19	6	0.62
Barnes Precision Match 140-gr. OTM	2634	37	12	0.73
Federal Fusion 140-gr. Bonded SP	2674	48	17	0.73
Hornady American Gunner 140-gr. BTHP	2582	43	12	0.77
Nosler 140-gr. Ballistic Tip	2713	31	9	0.54
Hornady 140-gr. ELD Match	2616	36	11	0.68
Winchester 142-gr. ABLR	2624	43	17	0.50
Hornady 143-gr. ELD-X	2649	41	14	0.59
Hornady 147-gr. ELD Match	2520	53	16	0.51

NOTES: Accuracy is the average of three, three-shot groups fired from a bipod, without allowing the barrel to cool. Velocity is the average of nine rounds measured 10 feet from the muzzle. Ambient temperature: 25 degrees Fahrenheit. Elevation: 4,900 feet. Wind: gusting to 5 mph.

NEW

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- *9mm, 15-round capacity*
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SAME BARRELS, DIFFERENT BULLETS

.38/.357 BARRELS AND 9MM BARRELS HAVE THE SAME BORE DIAMETERS, BUT THEY SHOOT BULLETS WITH DIFFERENT DIAMETERS. HERE'S A THOROUGH STUDY OF THE SITUATION.

BY BRAD MILLER PHD

THINGS ARE NOT ALWAYS AS THEY SEEM. That's the case with barrels. Most of us think the barrel's groove diameter is cut to match a caliber's bullets. And vice versa. And they are. Sorta. You see, the prescribed specifications for manufacturers allow for a little slack. And sometimes there are genuine surprises. That's the case with the 9mm Luger and the .38 Special/.357 Magnum.

If you handload, or if you just pay attention to these things, you know that 9mm bullets are 0.355 inch in diameter. That's the case for jacketed bullets. Plated and lead bullets generally run a wee bit larger at 0.356 inch.

If the barrel's groove diameter is 0.355 inch, jacketed bullets provide a close fit. Plated and lead bullets are slightly oversize,

but that's okay because they are softer and can swage down a little.

But here's the rub. Most 9mm barrels don't have a 0.355-inch groove diameter. Most are larger. How can that be? Remember I said there is a little slack in the specifications? Let's take a look at the specifications. (I'm switching to using four decimal points because I will measure everything with a micrometer accurate to 0.0001 inch.)

Barrels

SAAMI (Sporting Arms and Ammunition Manufacturers' Institute) sets the dimensional standards for firearms and ammunition in the U.S.A. Their barrel specification for the 9mm Luger is a groove diameter of 0.3550 inch. But in the corner of their diagram of specifications, it reads, "unless otherwise noted all dia [diameters] + 0.0040." That means the barrel groove diameter can be between 0.3550 inch and 0.3590 inch and still be within proper specifications. The other part of the barrel, what we call the lands (called the bore by SAAMI), is specified as being 0.3460 inch, also with a + 0.0040-inch tolerance. But my focus will be on the groove diameter.

Let's take a look at some barrel measurements. I slugged 17 9mm barrels. Manufacturers were Apex Tactical, Glock, Kart, Para, Lone Wolf, Rock Island Armory, SF3 Solutions, Smith & Wesson, Storm Lake, and Wilson Combat. Barrels were slugged with oversize (at least 0.3580 inch) cast bullets by driving them through the barrel with a brass rod.

Of all the 9mm barrels slugged, only one was smaller than 0.3560 inch. The smallest groove diameter was 0.3553 inch in a Kart barrel. The other 16 barrels had groove diameters greater than 0.3560 inch. Six barrels had a groove diameter over 0.3570 inch. The largest groove diameter was 0.3578 inch in an Apex Tactical barrel. That's a range of 0.0025 inch from the smallest to the largest, and they were all within SAAMI specifications. That's impressive consistency considering they are from 10 different manufacturers.

Before I go any further, you should know that the SAAMI specifications of 0.3550-inch groove and 0.3460-inch bore apply to other handgun calibers as well. Which ones? Hold on to your hat! 9x23 Winchester, .356 TSW, .380 Auto, .38 Automatic, .38 Super +P, .38 Special (and .38 Special Match), .357 Magnum, and .357 Sig are all the same, and they all have the same 0.0040-inch tolerance (though rifling tolerances are not listed for the 9x23 Winchester).

9MM BARREL GROOVE DIAMETERS

MANUFACTURER	DIA. (IN.)
APEX TACTICAL	0.3578
GLOCK	0.3563
GLOCK	0.3569
KART	0.3553
LONE WOLF	0.3575
LONE WOLF	0.3565
LONE WOLF	0.3561
PARA	0.3564
ROCK ISLAND ARMORY	0.3563
S3F SOLUTIONS	0.3569
SMITH & WESSON	0.3560
SMITH & WESSON	0.3565
SMITH & WESSON	0.3572
SMITH & WESSON	0.3572
STORM LAKE	0.3574
STORM LAKE	0.3567
WILSON COMBAT	0.3574

The obvious eye-openers are the .38 Special and .357 Magnum. We know that their usual bullet diameters are 0.357 inch, so how can they have the same barrel groove diameter as a gun that shoots a 9mm 0.355-inch bullet? Are revolver barrels generally cut to a larger diameter than pistol barrels, even though they have the same specifications? No.

I had access to 14 .38/.357-caliber revolvers. They were made by Colt, Rossi, Ruger, and Smith & Wesson. Their groove diameters ranged from 0.3532 inch to 0.3578 inch. So, no, they are not generally cut larger than pistol barrels, based on this limited sample.

Now, some of you noticed that my small groove diameter was 0.3532 inch and said, "What the heck, that's smaller than the 0.3550-inch specification." Yes, it is. I questioned it too, so I slugged the barrel three times. It's real. The gun is a Colt Magnum Carry .357 Magnum. I'd read that some Colt barrels are a little undersize, and this one sure is. A second Colt Magnum Carry had a groove diameter of 0.3551 inch, and a Colt SF-VI .38 Special revolver had a groove diameter of 0.3548 inch (it was slugged three times also). The Colts had the three smallest bores of the revolvers I measured.

The bottom line from slugging 9mm pistol and .38/.357 revolver barrels is that there was no difference in groove diameter other than the slightly undersize Colts.

One final detail here: 9mm and .38/.357 barrels have different rates of twist. SAAMI's 9mm rate of twist is 1:10 (one full rotation in 10 inches), and the .38/.357 twist is 1:18.75. But this is optional, and different manufacturers vary.

Okay, just one more thing. Both the 9mm and .38/.357 SAAMI specs indicate a barrel with six grooves. Here again, different manufacturers do their own thing. Many of S&W's 9mm/.38/.357 barrels that I have are five groove. My Ruger New Model Blackhawk in .357 Magnum has an eight-groove barrel (and a 1:16 twist).

Bullets

SAAMI has specifications for bullets, too. Unlike the barrel specifications for these different calibers all being the same, that doesn't apply to bullets. They're more variable. Also, the tolerance specification goes in the other direction. Instead of the tolerance being plus (+), the bullet tolerance is minus (-). For example, the 9mm Luger bullet specification is 0.3555 inch -0.0030 inch. This means a bullet that measures between 0.3525 and 0.3555 is within SAAMI specifications. Also, another

SAME BARRELS, DIFFERENT BULLETS

.38/.357 BARREL GROOVE DIAMETERS

MFG.	DIA. (IN.)
COLT MAGNUM CARRY	0.3532
COLT MAGNUM CARRY	0.3551
COLT SF-VI	0.3548
S&W 60-14	0.3577
S&W 642-1	0.3570
S&W 360	0.3566
S&W 66	0.3578
S&W 67-5	0.3571
S&W 686-6	0.3571
S&W 686-6	0.3567
S&W 686-6	0.3550
S&W 27-2	0.3565
ROSSI RP63	0.3571
RUGER BLACKHAWK	0.3577

SAAMI BULLET DIAMETER TOLERANCES (IN.)

9MM	0.3555 -0.0030
.38 SPECIAL	0.3580 Jacketed 0.3590 -0.0030
.38 SPECIAL MATCH	0.3600 -0.0030
.357 MAGNUM	0.3580 Jacketed 0.3590 -0.0030
9X23 WINCHESTER	0.3560 -0.0030
.356 TSW	0.3560 -0.0010
.380 AUTO	0.3565 -0.0030
.38 AUTOMATIC AND .38 SUPER	0.3560 -0.0060
.357 SIG	0.3555 -0.0030

variable is the tolerance range. The bullet diameter tolerance is 0.0030 inch for the 9mm Luger, but it might be different for other cartridges. (See the table.) Bullet tolerance is as little as 0.001 inch and as large as 0.006 inch.

One specification that might stand out is the bullets for the .38 Special and .357 Magnum. Their SAAMI jacketed bullet spec is 0.3580 inch, not the 0.3570 inch that we're used to seeing. And the lead bullet is 0.3590 inch. Wadcutter bullets for the .38 Special Match have a spec of 0.3600 inch. These bullets would clearly be oversize in a gun with a barrel groove diameter of 0.3550 inch!

Now let's measure some actual bullets. For this, I used a Hornady 1-inch micrometer calibrated with a Mitutoyo 0.35000-inch gauge block.

Bullets are seldom perfectly round, and even the best bullets can be out of round by a couple of ten-thousandths. Two tables show the measured diameters of 9mm and .38/.357 bullets. Three bullets of each type were measured. Each bullet was measured in at least five different spots, and the measurement shows the smallest and largest diameter for that bullet. For example, the first bullet of the Hornady 9mm 115-grain FMJ measured 0.3549 to 0.3553 inch. This means the smallest measurement was 0.3549 inch, and the largest was 0.3553 inch, so it's out of round by 0.0004 inch.

Recall that SAAMI specs for 9mm bullets are 0.3555 inch - 0.0030 inch. Jacketed 9mm bullets did not exceed 0.3555 inch, with the exception of the Zero bullet, which hovered around 0.3560 inch. The smallest jacketed bullets in my sample were the Noslers, where some bullets did not reach 0.3550 inch even with the largest measurement. Speer's bullets, which are plated, varied a little, with the 115-grain examples at or below the specification, while the 147-grain bullet was a little larger at up to 0.3560 inch. Berry's plated bullets were also a little oversize, and they are advertised as being 0.3560 inch.

I didn't include cast 9mm bullets here, but they generally are around 0.3560 or larger. Vendors offer 9mm bullets sized anywhere from 0.355 inch to 0.358 inch, depending on the maker.

(Note: Bullet diameter measurements will vary with different lot numbers. My measurements apply only to the bullets I had on hand, and they should not be expected to be the same for all other bullets with the same catalog number from different manufacturing runs.)

Dr. Miller used soft cast bullets to slug the barrels of 9mm pistols and .38/.357 revolvers for this report.

Now for the revolver bullets. Most .38/.357 bullets were very close to the 0.3570 inch we commonly see for this caliber. Speer bullets were a little larger, with their smallest measurement at 0.3574 inch. The smallest of the samples measured was the Winchester bullets, with their smallest measurement in the 0.3562- to 0.3563-inch range. The largest bullets were the Zeros (again), with a small diameter of 0.3578 inch and the large diameter right at 0.3580 inch.

Again, I'm not going to list lead .38/.357 bullets, but I will point out that vendors offer a range of sizing options, usually up to 0.358 inch. One exception that I'm aware of is Matt's Bullets. Their .38/.357 lead bullets are 0.359 inch. I used them for slugging many barrels. Other vendors say they have options for sizing, and you can check with them for your preferred dimensions.

What All This Means

What does all this mean? First, the barrel groove diameters of 9mm pistols and .38/.357 revolvers are the same. Bullets for these calibers are different, with .38/.357 bullets 0.002 inch larger than 9mm bullets. Given these numbers, it means that in some guns, bullets might be undersize or oversize for the barrel.

Nine millimeter bullet fit depends on what the actual barrel groove diameter measures. Most bullets will be undersize in most barrels, at least that's the case for the barrels I measured. But this also will be the case for other cartridges in these calibers that specified a 0.3550-inch groove diameter that use 9mm bullets, like the .357 Sig. For example, my two .357 Sig barrels measured 0.3575 inch (Lone Wolf) and 0.3554 inch (KKM Precision).

In the case of .38/.357-caliber revolvers, their larger bullet diameters mean they can fit the barrel's diameter closer. And because their barrel spec is the same as 9mms, revolver bullets can be oversize for some revolver barrels.

How important is it to match the bullet size to the barrel's groove diameter? Are undersize bullets less accurate? Based on my tests with jacketed bullets, I don't see much difference when 0.355-inch and 0.357-inch bullets are fired in a 0.3571-inch barrel. The story might be different for lead bullets, but I haven't tested that yet.

If the bullets are too big, will that make my gun explode? Clearly, it does not. If it did, guns would be exploding all the time because some barrels' groove diameters are smaller than the bullets we're shooting through them.

There you have it: 9mm Luger and .38 Special/.357 Magnum barrels are the same, but the bullets aren't. ST

9MM BULLETS

BULLET	CATALOG NO.	DIA. (IN.) BULLET 1	BULLET 2	BULLET 3
Berry's 115-gr. RN	19355	0.3559 – 0.3561	0.3561 – 0.3566	0.3558 – 0.3563
Hornady 115-gr. XTP	35540	0.3546 – 0.3550	0.3547	0.3547 – 0.3549
Hornady 115-gr. FMJ	35557	0.3549 – 0.3553	0.3549 – 0.3554	0.3549 – 0.3553
Nosler 115-gr. JHP	44848	0.3543 – 0.3547	0.3545 – 0.3547	0.3544 – 0.3547
Nosler 147-gr. JHP	43258	0.3545 – 0.3546	0.3546 – 0.3549	0.3546 – 0.3550
Remington 124-gr. JHP	23557	0.3552 – 0.3555	0.3549 – 0.3552	0.3548 – 0.3550
Sierra 115-gr. FMJ	8115	0.3551 – 0.3553	0.3551 – 0.3553	0.3550 – 0.3551
Speer 115-gr. TMJ RN	3995	0.3554	0.3553 – 0.3555	0.3554 – 0.3555
Speer 115-gr. GDHP	3994	0.3552 – 0.3553	0.3553	0.3552 – 0.3553
Speer 147-gr. TMJ FP	4006	0.3559 – 0.3560	0.3558 – 0.3560	0.3558 – 0.3560
Winchester 115-gr. JHP	WB9FB115	0.3549 – 0.3558	0.3550 –0.3555	0.3550 – 0.3554
Zero 125-gr. JHP-C	136	0.3558 – 0.356	0.3560 – 0.3562	0.3559 – 0.3560

.38/.357 BULLETS

BULLET	CATALOG NO.	DIA. (IN.) BULLET 1	BULLET 2	BULLET 3
Berry's 158-gr. RN	57945	0.3571 – 0.3574	0.3572 – 0.3576	0.3573 – 0.3576
Hornady 110-gr. XTP	35700	0.3568 – 0.3572	0.3569 – 0.3271	0.3568 – 0.3572
Hornady 125-gr. XTP	35710	0.3571 – 0.3574	0.3571 – 0.3574	0.3571 – 0.3574
Hornady 158-gr. XTP	35750	0.3570 – 0.3572	0.3569 – 0.3573	0.3569 – 0.3573
Nosler 158-gr. JHP	44841	0.3567 – 0.3572	0.3569 – 0.3570	0.3568 – 0.3572
Remington 125-gr. SJHP	23572	0.3566 – 0.3570	0.3565 – 0.3571	0.3563 – 0.3573
Sierra 110-gr. JHP	8300	0.3566 – 0.3568	.3566 – 0.3567	0.3566 – 0.3567
Sierra 125-gr. JHP	8320	0.3564 – 0.3568	0.3564 – 0.3569	0.3564 – 0.3568
Speer 110-gr. GDHP	4009	0.3575 – 0.3578	0.3575 – 0.3578	0.3575 – 0.3578
Speer 158-gr. JHP	4211	0.3574	0.3574 – 0.3575	0.3574 – 0.3577
Winchester 110-gr. JHP	WB38JHP110	0.3563 – 0.3570	0.3563 – 0.3566	0.3562 – 0.3570
Zero 110-gr. JHP	101	0.3578 – 0.3580	0.3578 – 0.3580	0.3578 – 0.3580

A SOLID VALUE

WITH AN MSRP OF $499, THE RELIABLE STEVENS MODEL 560 FIELD SEMIAUTOMATIC SHOTGUN DESERVES YOUR CONSIDERATION.

BY STEVE GASH

SAVAGE HAS A WELL-EARNED REPUTATION FOR making good, solid guns, and selling them at a price most all of us can afford. Another prime example of this is the new Model 560 12-gauge semiautomatic shotgun that flies under the Stevens banner.

As most students of firearms history know, many gun companies have had a slew of corporate rearrangements and consolidations in their history, and the Stevens company is no exception, with its own interesting history of name and ownership changes. The firm dates from 1864, when the J. Stevens Arms Company was founded in Chicopee Falls, Massachusetts. The name was changed to J. Stevens Arms and Tool Co. in 1886 and to New England Westinghouse in 1916. Interestingly, that entity made Mosin-Nagant Rifles. In 1920 it was sold to Savage Arms Corp., and guns were marked "J. Stevens Arms Co." But this name was changed in 1940 to just Stevens. In 1999 Savage began manufacturing and importing arms trademarked Stevens again.

STEVENS MODEL 560

MANUFACTURER	Savage Arms savagearms.com
TYPE	Gas-operated autoloader
GAUGE	12, 3.0-in. chamber
MAGAZINE CAPACITY	5 rounds
BARREL	26 in.
OVERALL LENGTH	46.75 in.
WEIGHT, EMPTY	6.81 lbs.
STOCK	Turkish walnut
LENGTH OF PULL	14.75 in.
FINISH	Matte blue metal, satin wood
SIGHTS	Red fiber-optic front
TRIGGER	4.75-lb. pull (as tested)
SAFETY	Crossbolt
MSRP	$499

Such is the new Model 560 Field 12 gauge. The Model 560 is made by the well-respected firm of KOFS in Isparta, Turkey. KOFS makes a wide array of sporting and military arms that are distributed throughout Europe.

A Sound Setup

Many shotgun gurus have said that the semiauto is the closest thing to perfection in a shotgun, and the Model 560 conforms closely to the dimensions laid out by W.W. Greener in 1910. The ideal barrel length should be 40 times the diameter of the bore, according to Greener. For the standard 12-gauge bore of 0.729 inch, that works out to 29.16 inches. The Model 560 is available with 26- and 28-inch barrels, and my test gun's 26-inch barrel seems just right.

Greener also thought that the weight of the gun should be matched to the weight of the shot charge. This, he stated, should be 96 times the weight of the shot. Thus, for 1⅛ ounces of shot, the optimum gun weight would be 6.75 pounds. My Model 560 weighs in at 6 pounds, 13 ounces (6.81 pounds).

The Model 560 was announced in early 2023 and became available a few months later, and the Field model is intended for hunters who need a solid shooter. It is gas operated. It is versatile, complete with three flush-fitting choke tubes and a choke tube wrench in a neat black plastic case. The tubes have the usual constrictions of Improved Cylinder, Modified, and Full. The constrictions are identified by notches on the muzzle ends of the tubes: one notch for Full, three for Modified, and four for Improved Cylinder.

The constrictions of the three tubes are right on the money. The inside diameter of the Improved Cylinder tube is 0.718 inch, the Modified tube is 0.698 inch, and the Full choke is 0.680 inch. The gun also comes with the required trigger lock and an owner's manual.

A SOLID VALUE

The gas-operated 12-gauge Stevens Model 560 semiautomatic shotgun is made in Turkey for Savage Arms. It utilizes an aluminum-alloy receiver and appropriately sized bolt handle and action release button.

The Model 560's gas system is versatile and efficient, firing 2¾-inch and 3.0-inch shells without requiring any adjustment.

The barrel is hard-chrome-plated for wear resistance, and that also makes for easy cleaning. The 3.0-inch chamber makes the gun suitable for the super waterfowl and turkey loads available these days.

In addition to the Field version reviewed here, the Model 560 is offered in a 12-gauge Compact model. Most of the Compact's features mirror the Field version, but the Compact has a 28-inch barrel and a 13.5-inch length of pull. (Hmm, this sounds about right for use with the heavy clothes usually required for waterfowl hunting.) The overall length of this variant is 47.75 inches, and the weight is listed at 5.4 pounds.

Here's an unusual quirk. My Model 560 did not come with a plug to limit the magazine capacity to two rounds. (Company representatives tell me that Savage will supply plugs for these guns.) But this is of little consequence, as a plug is easy to make and install. A half-inch wooden dowel, 6.5 inches long and slightly beveled at each end will do the trick.

The cap retaining the magazine spring is surprisingly easy to remove, and the spring is easy to control. So with the cap off, drop the dowel inside the spring, stuff the spring back into the magazine tube, replace the magazine cap, and you're done.

Company literature states that the gun's magazine capacity is five rounds. Could be, but I could get only four 2¾-inch shells or three 3.0-inch rounds into the magazine of my test gun. No matter, once the plug is installed, you're good to go with two rounds of either shell.

The Model 560 is a handsome arm. The receiver is made of 7075-T6 aluminum alloy, and it and the steel barrel are finished in a nice matte blue. The stock and forearm are of Turkish walnut, and the "handles" on my test gun showed some nice figure here and there. The wood has a satin oil finish, and generous stippled areas are provided on the gripping surfaces.

I recently learned that "Turkish walnut" is a different species than our American walnut. It is classified as *Juglans regia*, as opposed to the American black walnut, *J. nirgra*. *J. regia* is known variously as the Carpathian or Madeira walnut and is found from the Balkans to the Himalayas and southwestern China. It was introduced into California in the 1800s, and it is usually referred to as "English walnut" by woodworkers. There is also a *J. hindsii* that is endemic to northern California that is called "Northern California walnut" and "claro walnut."

The shotgun comes with three screw-in chokes marked Improved Cylinder, Modified, and Full, and their constrictions are right on the money.

The gun's forearm and buttstock are made of Turkish walnut. With the buttstock's 1-inch-thick recoil pad, the length of pull is 14.75 inches.

The Model 560's stock has a restrained but elegant grain and is quite attractive. The stock has a nice, 1-inch-thick recoil pad. Overall, the stock is very well done, except for one thing. This gun must be made for shooters with long arms, as the length of pull is 14.75 inches. This, of course, is also no big deal. Any competent gunsmith can remove the pad, shorten the stock, reattach and fit the pad to whatever length of pull the shooter desires. The drop at the comb (1.5 inches) and heel (2.5 inches) seems just right to me, and the wood-to-metal fit is excellent. The balance point is at the front of the receiver, just about perfect.

A Solid Shooter

I closed my eyes, and carefully mounted the gun. When I opened my eyes, I was delighted to find that I was looking right down the rib. As part of my "field test," I took the gun to the Ozark Shooters Complex north of Branson, Missouri, and shot some skeet, my favorite clay target game. All was well, as long as I remembered to push the gun out, bring it up, and then pull it back to my shoulder. If not, the pad hung up on my shooting vest, and, well, as you clays shooters know, the result was not pretty. But as long as I pointed it right, the barrel seemed to put the shot charge right under the fiber-optic front sight. When I mounted the gun properly, it crushed clays convincingly.

18+

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A SOLID VALUE

The solid-shooting $499 Model 560 proved to be good and effective. When Steve did his part, the gun broke clays consistently, and it had one of the best triggers the author has encountered on a shotgun.

The weight of the Model 560 Field makes it a delight to carry in the field and swing on birds, clay or feathered. The trigger pull is remarkable for a shotgun. My sample averaged a delightful 4 pounds, 12 ounces, and it was crisp and "mush" free. Heck, I've tested lots of rifles with worse triggers than this.

The Model 560 has a manual safety located behind the trigger, and it clicks on and off easily. The button, however, is a bit small. It didn't take long for me to get used to it, but it's worth noting.

The action release button is located at the lower right side of the receiver, and when emptying the gun, press the action release button to release a shell from the magazine to the carrier, then pull the bolt back to eject the shell in the chamber. Release the bolt handle, and the bolt will pick up the shell on the carrier. Repeat for the remaining shells in the magazine until the gun is empty.

I had not a single malfunction with any of the factory and handloaded shotshells I fired. My light skeet load held 1 ounce of No. 8s over 17.5 grains of Hodgdon's new High Gun powder in Noble Sport cases with a WAA-12 wad. The chronographed velocity of this load was a modest 1,023 fps. As you would guess, the recoil also was modest. I think it's noteworthy that these "wimp" loads cycled the Model 560's action lickety-split, without a single failure to feed from the magazine, fire, or eject. This action needs no adjustment for different loads, and that's a handy feature for a field gun.

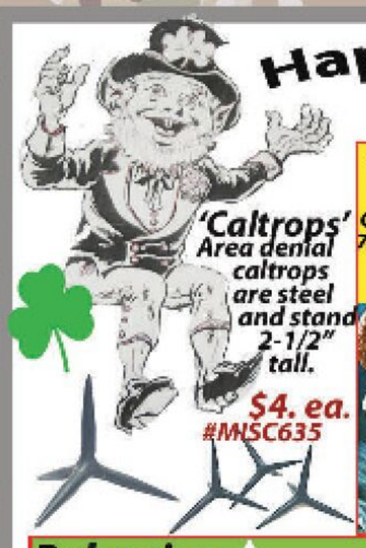
I also chronographed a couple of 3.0-inch loads in the Model 560. First up were some new waterfowl loads from Remington called the Nitro-Steel Duplex. The shot charge is a blend of 1¼ ounces of No. 2 and No. 6 steel shot in a buffer. The listed velocity is 1,450 fps. The wad weight was 52.3 grains, and the powder charge was 45.3 grains of a spherical propellant. All this adds up to a potent load. Over my Oehler Model 35P chronograph, it registered a sizzling 1,393 fps. In the 6.81-pound Model 560, this translates to 49.9 ft-lbs of free recoil. Surprisingly, the recoil didn't feel too bad.

The other 3.0-inch load was Winchester's Long Beard XR load with 1¾ ounces of No. 6 lead shot. It is listed at 1,200 fps and chronographed 1,123 fps. With any of these super-high-tech loads, the quackers and gobblers should take notice.

A delightful field load is Remington's Heavy Dove Load with 1⅛ ounces of No. 7½ shot and a listed velocity of 1,255 fps. It registered 1,232 fps (pretty darn close to the listed velocity), and it had a modest kick. It would make a dandy field load for chukars and pheasants.

Overall, the new Stevens Model 560 looks like a solid value to me. It is attractive and 100 percent reliable, and it gobbles up all sorts of loads with no adjustment needed. ST

Happy St. Patty's Day!



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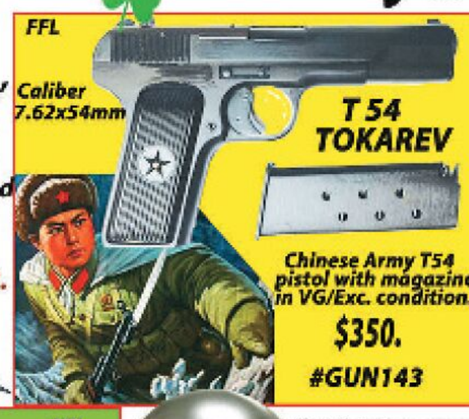

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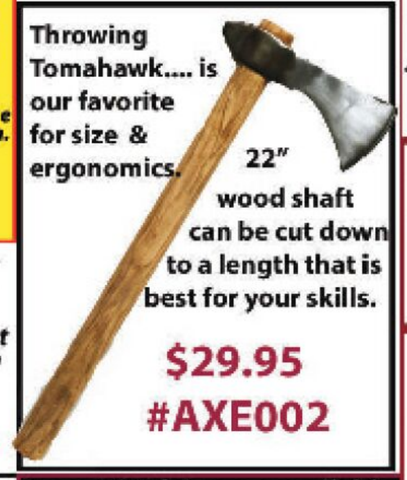

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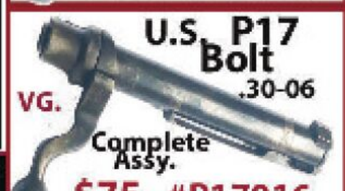

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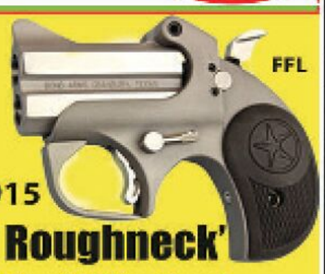

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MICRO-COMPACT

RIGHT 9MM FOR YOU?

MICRO-COMPACT PISTOLS RANK AMONG THE BEST-SELLING 9MM HANDGUNS DESIGNED FOR PERSONAL-DEFENSE CARRY, BUT ARE THEY RIGHT FOR YOU? READ ON TO FIND OUT.

BY LAYNE SIMPSON

SEMIAUTOMATIC 9MM PISTOLS USUALLY fit into four different categories. Standard-size guns, such as the Walther PDP and Glock 17, are best suited for open carry and competitive shooting. Most have barrels measuring in the neighborhood of 5.0 inches. Compact pistols, such as the Walther PDP Compact and Glock 19, have slightly shorter grips and barrels, making them noticeably smaller and a bit lighter weight without greatly reducing magazine capacity. Barrel length for those is usually 4.0 inches or close to it. All things considered, many citizens find a compact hard to beat for concealed carry.

A subcompact, such as the Glock G26, is the same thickness as the larger G17, but a shorter barrel and a short, two-finger grip make it lighter and quite a bit smaller. Barrel lengths of the various brands and models of subcompact pistols usually range from 3.0 to 3.5 inches. While the magazine capacities of compact and subcompact guns are reduced, they often accept the magazines of their larger siblings. This is why the firepower of the stubby little Glock 26, which comes with a 10-round magazine, can be greatly increased by having a Glock 17-round or 33-round magazine on hand.

Latest on the scene is the micro-compact, with the Springfield Armory Hellcat seemingly leading the race in popularity. Quite a bit thinner and lighter and with slightly shorter barrels than some subcompact pistols, micro-compacts are ideal for deep concealment, while those with double-stack magazines offer an abundance of firepower. As a bonus, the grips of those I have shot are long enough for a three-finger hold. Some are small and light enough for comfortable pocket carry.

According to the owners or managers of eight gunshops within a 25-mile radius of my home, micro-compact pistols from various manufacturers rank among the best-selling 9mm handguns designed for personal-defense carry. Two shops currently rate them as the most popular among their customers. One shop owner said micro-compacts move out so fast that keeping them in stock is difficult.

The Trend

Kahr Arms is usually credited with starting the micro-compact trend in 1998 by introducing the K9 of locked-breech design. Weighing 18 ounces, it was large enough to be carried in a holster and small enough for pocket carry. Shortly after its introduction, the little pistol was approved by the NYPD for off-duty and backup carry. Civilians bought them by the thousands, and with the exception of minor improvements, the K9 is the same today as it was almost three decades ago. It was, and still is, a great little pistol, but on the very day it was introduced its seven-round magazine capacity made it outdated in light of the high-capacity trend in 9mm pistols.

I believe the G43 introduced by Glock in 2014 was the first micro-compact 9mm pistol to have a polymer frame. To those of us who carried Glock pistols, the G43 was good news. The early-production sample I shot was accurate, had a decent trigger, felt good in my hand, and like all Glocks was totally reliable. But the sleek little pistol wilted on the vine due to a magazine that held no more rounds than the Kahr K9. From a practical point of view, the G43 was, and still is, capable of handling most serious personal-defense confrontations, but among most who buy guns today, single-stack magazines have been shoved aside by a demand for those capable of holding more shots between reloads. It is far better to have more rounds than needed than to not have enough. I will add that magazine capacity for the newer Glock G43X is 10 rounds, and while it is only an ounce or so heavier than the G43, it is larger and a bit thicker.

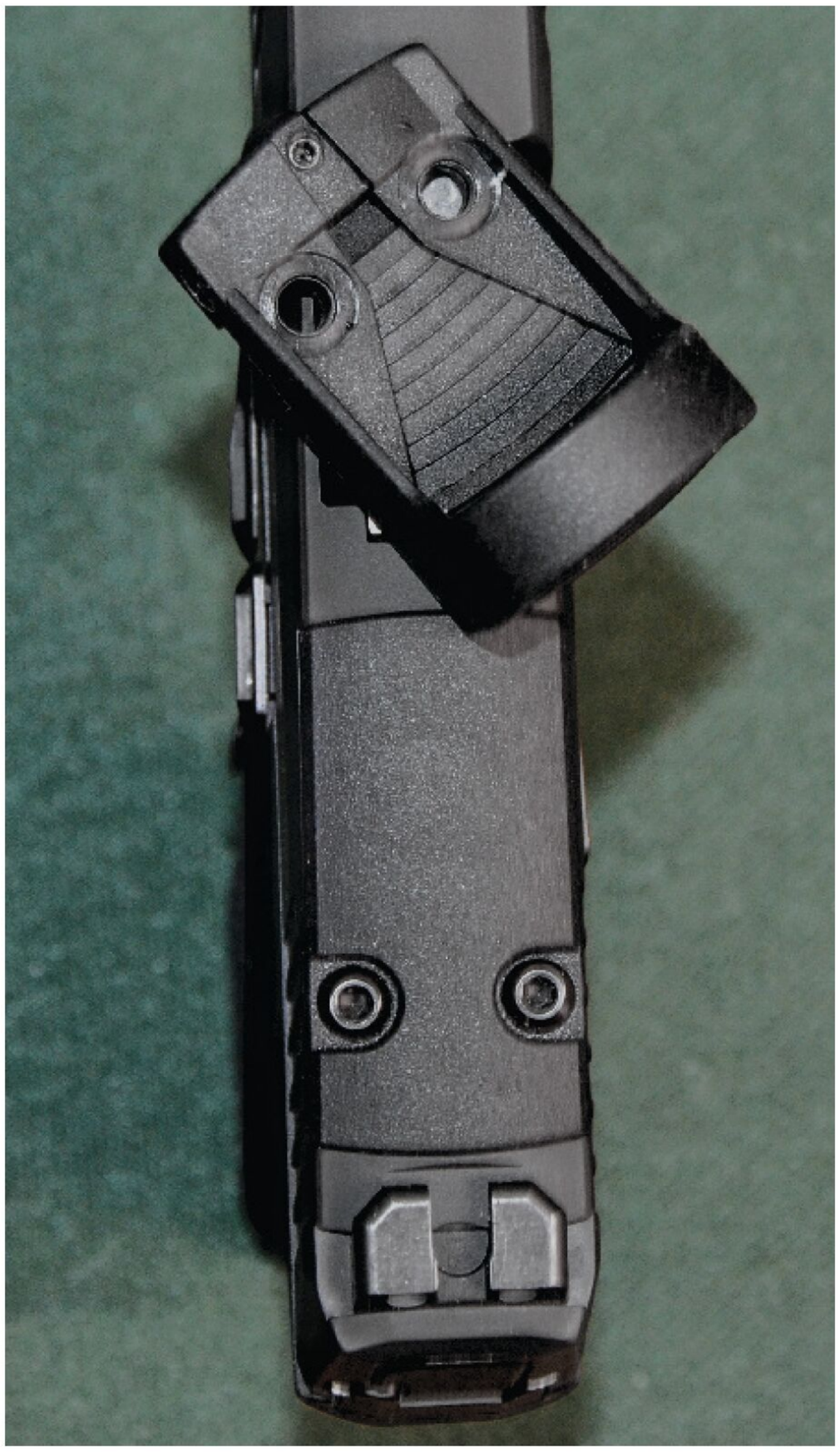
SIG SAUER showed Glock what could be done with a polymer-frame micro-compact pistol in 2017 by introducing the P365. A wonderful little handgun, it went on to become extremely successful and is what later guns of its type are often compared to today. When introduced, the P365 came with two 10-round magazines, and that was it. It still arrives with those same magazines, but SIG SAUER now offers extended versions that hold 12 and 15 rounds. The latter magazine increases pistol height from 4.3 inches to 5.5 inches and is most often carried as backup. For those who wish to carry even more rounds for backup, the 17-round magazine of the larger P365 XMacro works just fine in the standard P365.

My wife carried a Glock 26 for quite a few years, but upon shooting a P365, she immediately switched because it is lighter, more compact, and more accurate in her hands. A lefty, she also appreciates its reversible magazine catch. She mostly carries the little pistol in a Del handbag from Galco, which has a separate, easily accessed zippered pocket containing a holster. When hiking or during other activities where a purse is not practical, a DeSantis Mini Scabbard belt holster keeps the P365 quite secure while weighing only 2.2 ounces. Phyllis practices drawing and firing from both.

Some micro-compact pistols are small enough to be comfortably carried in a pocket holster like the DeSantis Nemesis holster shown here.

I also have switched to a micro-compact for most of my carry. The Glock 19 used to be my favorite, but I was won over by the then-new Springfield Hellcat while putting it through its paces for a 2020 report in *Shooting Times*, so I bought the little gun. The Shield RMSc red-dot sight it wore during those tests is still going strong and is only on its second battery. The holsters I mostly use are a CrossBreed MiniTuck for IWB carry and a Wright Leather Works Predator for OWB carry. The Hellcat comes with 11-round and 13-round magazines, with 15- and 17-rounders available from Springfield.

Most of today's micro-compact pistols are available with an optic-ready slide. Some offer the option of having one already attached. Wearing its Shield RMSc red-dot sight, my Springfield Hellcat is only slightly taller than my Glock 19 with its factory sights. Light weight combined with a short sight radius along with a bit more recoil can make a micro-compact more challenging to shoot accurately, but if trigger quality equals that of the SIG SAUER P365 and Springfield Hellcat, shooter accuracy at typical defense distances can be equal to that of a



Most micro-compact pistols of current production are machined for easy installation of a red-dot sight. Layne says such a sight helps make shooting a micro-compact faster and more accurate.

larger and heavier gun. This assumes the owner of a micro-compact is willing to head to the range and become accustomed to shooting it.

Shootability

To compare the "shootabilibty" of our Springfield Hellcat and SIG SAUER P365 with the larger Glock 19, I first rapid-fired 10-shot groups at the 5.5-inch bulls of Dirty Bird targets placed 15 yards away. All shots from the three guns were in the bull, but average group size was smaller with the Hellcat due to its red-dot sight. A good supply of Wilson Combat ammo loaded with a 147-grain FMJ at 900 fps was on hand, so I used it.

I then ran each gun through several IDPA classifier stages at multiple target distances, ranging from eight to 20 yards. Round counts per stage ranged from 10 to 21. The center "A" zone of an IDPA target is eight inches in diameter, so all shots

Trigger quality varies considerably among 9mm handguns of all sizes, so before deciding on a micro-compact, try as many models as possible.

were kept there. Shooting protocol included two-hand hold; strong hand only; weak hand only; head shots; and shooting around, under, and over various barricade designs from the standing and kneeling positions. A few steel plates and Pepper poppers got knocked over. All draws were from concealment. When my overall scores were compared, the Glock edged out the SIG by a small margin, not because I was more accurate with it but because my times were a bit slower with the smaller pistol. The Hellcat won the match simply because its red-dot sight made me both quicker and more accurate than with the other two guns. The slide of the P365 is machined for quick and easy installation of a red-dot sight, and if it had worn one during the IDPA shootout, my scores with it would surely have been as good with it as with the Hellcat.

When occasionally offering shooting instructions to relatives and close friends, one thing I always emphasize is the lighter a recoil-operated pistol is, the firmer the grip must be in order for the gun to function reliably. Holding it with a limp wrist is out. When grasping a lightweight gun with a two-hand hold, a firm rearward pull by the front hand resisted by an equal forward push by the strong hand prevents gun malfunctions. It also steadies the sights and reduces the effect of slight flinching. Each practice session should also include gripping the gun firmly and shooting both strong hand only and weak hand only.

Trigger quality varies considerably among 9mm handguns of all sizes, so before deciding on a micro-compact, visit as many gunshops as possible and do a comparison of various brands. The owner of the gunshop where we purchased Phyllis's P365 placed five different guns on the counter and allowed her to dry fire them until she decided which felt best to her. And while its trigger was the main reason Phyllis chose the SIG over the

others, balance, fit, and feel also are important, and she was quite happy there as well.

Depending on the 9mm Luger ammunition used, velocity differences between 3.0- and 4.0-inch barrels can vary as much as 75 to 100 fps, so choosing ammunition that delivers the desired bullet expansion and penetration for personal defense from a short barrel is important. As an example, Hornady 115-grain Critical Defense is a better choice than Hornady 135-grain Critical Duty because bullet expansion is much better from a 3.0-inch barrel. Given a choice between Federal ammo loaded with the 135-grain Hydra-Shok Deep and the 124-grain HST, I would go with the latter.

I should mention that the Ammo Quest guy used a pistol with a 3.0-inch barrel to fire dozens of 9mm Luger factory loads into 10-percent calibrated ordnance gelatin clad in four layers of 16-ounce denim material. The FBI test protocol for such requires 12 to 18 inches of penetration along with acceptable bullet expansion. Top performers in those tests were Hornady Critical Defense with the 115-grain FTX, Federal Premium with the 124-grain HSTHP, and Speer Gold Dot with the 124-grain GDHP. He did not test Wilson Combat +P ammo with the 124-grain GDHP bullet that I have on hand, but velocities are the same for it and the Speer ammo, so performance should be the same. At any rate, in the Ammo Quest tests, penetration for the three loads ranged from 13 to 17 inches, and expansion and weight retention of the three bullets was picture-book perfect. A friend who performed the same test with Federal Punch ammo loaded with a 124-grain JHP found that it pretty much duplicated Federal 124-grain HST performance from the 3.0-inch barrel of his SCCY DVG-1RD. Respective muzzle velocities of the Hornady, Wilson Combat, and the two Federal loads in our SIG P365 pistol are 1,067 fps, 1,103 fps, 1,079 fps, and 1,086 fps.

I will close by mentioning that some companies are offering new versions of their original micro-compact pistols, but they typically are larger and heavier. We have shot the Springfield Hellcat Pro and the SIG SAUER P365 XMacro, and while they are very nice guns, we prefer the original versions for concealed carry.

Is a 9mm micro-compact pistol for you? The answer to that question can likely be found at gunshops that have adjacent indoor ranges. Two of those in my area have rental handguns of various sizes and calibers so customers can give several a try prior to purchasing. ST

When fired in a micro-compact barrel, not all 9mm Luger factory loads will meet the FBI clothing/ballistic gel protocol for bullet expansion and penetration, but these three loads will.

9MM MICRO-COMPACT COMPARISON

MODEL	WEIGHT (OZ.)	WIDTH (IN.)	HEIGHT (IN.)	OVERALL LENGTH (IN.)	BARREL LENGTH (IN.)	MAGAZINE CAPACITY
Beretta APX A1	19.2	1.10	4.17	5.63	3.0	8
Canik Mete MC9	19.6	1.15	4.52	6.10	3.2	12
Glock G43	17.8	1.10	4.25	6.25	3.4	6
Kahr K9	19.0	0.91	4.00	5.50	3.0	7
Kimber R7 Mako	19.5	1.00	4.30	6.20	3.4	13
Mossberg MC2sc	19.5	1.10	4.30	6.25	3.4	10
Ruger Max-9	18.4	0.95	4.52	6.00	3.2	12
SCCY DVG-1	15.5	1.00	5.06	6.01	3.1	10
SIG SAUER P365	18.5	1.00	4.30	5.80	3.0	11
S&W CSX	19.5	1.12	4.60	6.10	3.1	12
Springfield Hellcat	18.3	1.00	4.00	6.00	3.0	13
Stoeger STR 9-MC	18.5	0.94	4.25	6.10	3.3	13
Taurus GX4	18.5	1.08	4.40	6.05	3.1	13
Walther PPS M2	19.4	1.00	4.40	6.30	3.2	8

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NEW GRO

SMITH & WESSON HAS BROKEN NEW GROUND WITH ITS NEW-FOR-2024 LEVER-ACTION RIFLE.

PHOTOS BY **MICHAEL ANSCHUETZ**

UND

BY JAKE EDMONDSON

IN 1852 HORACE SMITH AND D.B. WESSON BEGAN THEIR FIRST partnership in Norwich, Connecticut, and formed a company to build firearms parts and firearms. Two years later, in 1854, they received a patent for a lever-action repeater that fed ammunition from a tubular magazine. That same year an article on their lever-action handgun appeared in a magazine called *Scientific American*, and in that article the gun was nicknamed "Volcanic," although that was not an official name. Fast forward 170 years, and Smith & Wesson has a new-for-2024 lever-action rifle. It's called the Model 1854, and its initial chambering is .44 Magnum.

I'm not going to go into the complex histories of the "Volcanic" lever action and the various companies that produced it. Suffice it to say, the gun design grew into the handguns and long guns produced by the first Smith & Wesson company, which was dissolved and became Volcanic Repeating Arms in 1855, which was renamed the New Haven Arms Co. in 1857, which was purchased by Oliver F. Winchester and eventually became Winchester Repeating Arms. (Horace Smith and D.B. Wesson formed a new Smith & Wesson company in 1856.)

The fact that S&W waited until the second decade of the 21st century to build this new lever-action rifle is newsworthy. Maybe it's not totally unexpected given that last year saw the introduction of new lever actions from POF-USA and Rossi and the reintroduction of the classic Marlin 336. That said, here's a good look at S&W's new rifle.

Like many popular lever actions, the new S&W Model 1854 loads through a loading gate in the right-hand side of the receiver. The tubular magazine holds nine rounds of .44 Magnum ammo.

MODEL 1854	
MANUFACTURER	Smith & Wesson smith-wesson.com
TYPE	Lever-action repeater
CALIBER	.44 Remington Magnum
MAGAZINE CAPACITY	9 rounds
BARREL	19.25 in.
OVERALL LENGTH	36 in.
WEIGHT, EMPTY	6.8 lbs.
STOCK	Synthetic
LENGTH OF PULL	13.63 in.
FINISH	Satin stainless steel barreled action, black stock
TRIGGER	4.36-lb. pull (as tested)
SIGHTS	XS ghost-ring rear, gold bead front
SAFETY	Crossbolt, trigger block, halfcock notch
MSRP	$1,279

Features

The new Model 1854 has a 19.25-inch-long, round barrel, and the muzzle is threaded 11/16-24. It comes with a thread protector. The barrel is 410 stainless steel, and it has eight-groove rifling with a twist rate of one turn in 20 inches, which is appropriate for the .44 Magnum chambering.

The magazine tube runs all the way to the thread protector, where it is attached to the bottom of the barrel by a clip. The tube is spring-loaded much like a typical rimfire rifle's tubular magazine except larger in diameter. It can be removed for unloading, cleaning, and maintenance by rotating the knurled cap counterclockwise and pulling it out of the forearm. Once it is reinserted, the cap is rotated clockwise to lock the magazine tube in place. The magazine holds nine rounds of .44 Magnum ammunition.

Like a typical lever action, the Model 1854 loads through a loading gate located on the right-hand side of the receiver, and the lever must be closed for loading. Speaking of the receiver, it also is stainless steel (forged 416 stainless steel to be exact), and it looks curiously like a Marlin Model 1894's receiver. Our contact at Smith & Wesson says the Model 1854's action is partly Marlin and partly Smith & Wesson, meaning some parts are compatible with the Marlin Model 1894, and some parts are not. He was a bit coy with that description and did not offer any details. Company literature says, "Included on the rifle is a Picatinny rail that accepts mounts compatible with the Marlin 1894 hole pattern" and "the furniture on the Model 1854 is easily interchangeable and compatible with Marlin 1894 pattern fore-ends and stocks." That's all I could glean on the matter.

The Model 1854's receiver is 1.0 inch thick (near the ejection port and loading gate, not where it flares out for the buttstock and forearm), 2.0 inches tall (not including the Picatinny rail and in front of but not including the projection where the lever attaches), and 4.75 inches long (not counting the tang), according to my measurements. That compares favorably to my vintage Marlin Model 1894 (1x1.38x4.88 inches), my Henry Big

The Model 1854 .44 Magnum lever-action rifle features a 19.25-inch, round, stainless-steel barrel. The muzzle is threaded 11/16-24 and comes with a thread protector.

Boy (1x2x5.5 inches), and my Mossberg Model 464 (1x2.2x5.5 inches). The circumference of the Model 1854's receiver is 6.25 inches (in front of the lever and including the Picatinny rail), which allows it to be carried comfortably in one hand. The serial number is marked on the top of the tang.

As mentioned earlier, the new rifle wears a Picatinny optic rail on top, and the rail has 11 cross-slots and a full-length groove down the middle, plus it has a fully adjustable XS Sights ghost-ring rear sight that is incorporated into the rail and held in place with a screw. The sight covers the first two cross-slots. S&W says that if the shooter removes the rear sight when installing an optic, the rear sight's screw should be replaced with a Torx screw (included with the gun) because that screw is one of three that hold the rail in place. (Obviously, the rear sight does not have to be removed in order to install a scope if the scope rings are tall enough to clear the top of the rear sight.) The rifle's front sight is a post with a gold bead on a base that is attached to the barrel with two screws.

The Model 1854's lever is a large loop type, and it is finished in black. So are the trigger, hammer, loading gate, bolt, front sight base and post, rear sight, and optic rail. The lever, bolt, and ejector can be disassembled as follows.

First, with the rifle unloaded, open the lever and use a T20 Torx driver to remove the lever pivot screw. Hold the hammerspur down firmly to relieve tension against the bolt assembly and pull the bolt rearward out of the receiver. Use tweezers or small needle-nose pliers to reach into the receiver through the ejection port and lift out the ejector. That's as far as disassembly should go. Reassemble in reverse order.

The Model 1854 has a black synthetic buttstock and forearm. The buttstock has a 1-inch-thick recoil pad and textured surfaces in the wrist/grip area. The forearm also has textured gripping surfaces, and it has three M-LOK-compatible slots (one on each side and one underneath). The company warns that the magazine tube should be removed before installing an M-LOK accessory because the screws could extend too far and possibly hinder or damage the magazine tube. The screws may need to be shortened for proper function. Also, the rifle has a sling-swivel stud in the buttstock and a recessed sling attachment point in the forearm cap.

The trigger has a grooved, flat face, and the fingerpiece is 0.29 inch wide. The hammerspur is grooved and measures 0.35 inch wide, and it's shaped to accept a hammerspur extension for use when a scope is installed. S&W kindly provides a hammer extension with the rifle. Our sample's trigger pull averaged 4 pounds, 5.8 ounces over a series of 10 measurements with an RCBS trigger pull scale. The measurements ranged from 4 pounds, 4 ounces to 4 pounds, 10 ounces. There was some take-up, but letoff was crisp, with no detectable overtravel. By the way, S&W suggests dry-firing the Model 1854 only with the safety engaged, thereby preventing the hammer from striking the firing pin, so that's how I did it when measuring the trigger pull.

The rifle has a crossbolt safety located high up on the rear of the receiver that prevents the hammer from contacting the firing pin. Push the crossbolt to the left to "Fire," and in that position, a red ring around the crossbolt is visible. The hammer has halfcock and fullcock positions, and the rifle has a trigger block that is deactivated when the lever is closed fully.

The Model 1854 weighs 6.8 pounds and is 36 inches long overall. The length of pull is 13.63 inches.

Before I get into how the Model 1854 handles and shoots, I will mention that a special version with high-grade walnut and polished black PVD finish is being offered, but its production

The top of the receiver is drilled and tapped and comes with a Picatinny optic rail installed. The rail incorporates a fully adjustable XS Sights ghost-ring rear sight.

One of the interesting features of the new rifle is the lever's large loop. While the receiver and barrel are finished in natural stainless steel, the lever, loading gate, trigger, hammer, bolt, optic rail, front sight post and base, and rear sight are black.

Smith & Wesson's new Model 1854 handles and shoots well. Overall average accuracy for three, three-shot groups at 50 yards with five different factory loads was 2.08 inches.

is limited to 1,854 rifles. Its MSRP is $3,499, and the standard-production stainless-steel/synthetic stock version's MSRP is $1,279.

On the Range

I first handled the new S&W Model 1854 at this year's SHOT Show held in Las Vegas from January 23 through 26, and I couldn't wait to get one at home to put it through a thorough shooting review. Luckily, by the time I got home from the show, a Model 1854 had arrived. I didn't waste any time getting it to the range, and as you can see from the accompanying chart, it shot quite well.

I fired five .44 Magnum factory loads with bullet weights ranging from 200 grains to 305 grains. The details are listed in the chart. I broke with *Shooting Times* protocol this time and instead of firing five-shot groups, I fired three-shot groups in accordance with the rifle's nine-shot magazine tube capacity. The range was 50 yards, and I shot the gun from a Caldwell Lead Sled.

My best accuracy came with some old Winchester 250-grain Partition Gold ammo. Each three-shot group had two shots touching, and the overall average for the three groups was a very pleasant 1.75 inches. The loading averaged 1,528 fps with an extreme spread of 38 and a standard deviation of 14.

The second-best average accuracy came with Hornady's .44 Magnum Handgun Hunter 200-grain MonoFlex ammunition. It averaged 2.00 inches, with a velocity of 1,441 fps and an extreme spread of 28 and a standard deviation of 13.

By the way, all velocities are the averages of five rounds measured 12 feet from the gun's muzzle with a Competition Electronics ProChrono Digital chronograph.

I just have to mention the HSM Bear Load 305-grain Flat Nose Gas Check (FNGC) cast-bullet load because its standard deviation was just 6 fps. Single-digit ballistics are something to crow about, so I'm doing that! The load's extreme spread was 17, its average velocity was 1,494 fps, and its energy was 1,511 ft-lbs, which is by far the highest generated by any of the five factory loads I test-fired. Its accuracy wasn't too shabby, either. It almost tied the Hornady Handgun Hunter ammo for second place but was slightly larger at 2.03 inches. On a different day, it easily might have done even better.

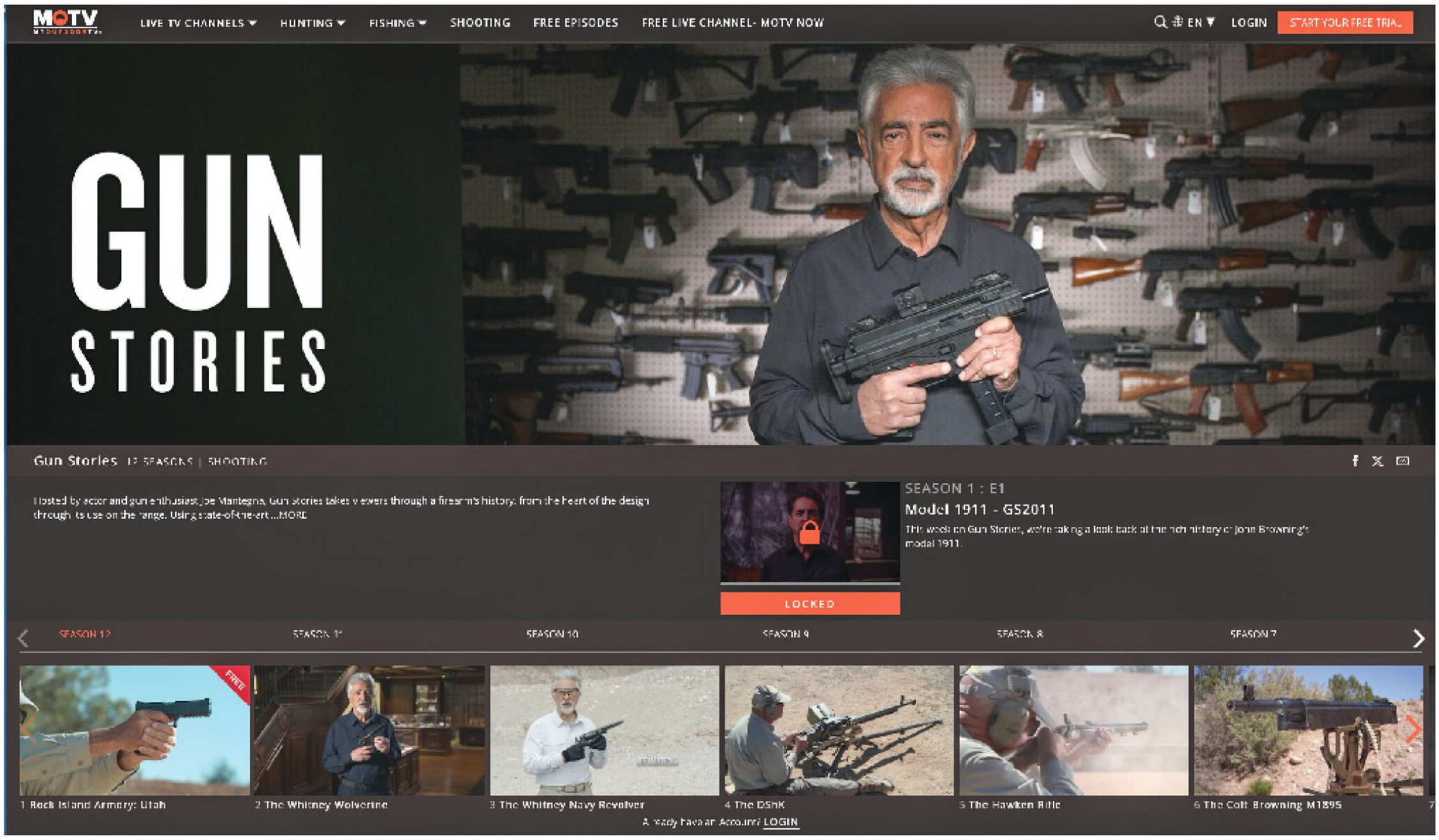
Overall average accuracy for all five loads was 2.08 inches. Be aware that I did not install an optic for my shooting session, opting to see how the Model 1854 would do with the iron sights. I wear prescription eyeglasses to correct my 63-year-old eyes, but even so, my vision isn't perfect, so I strongly suspect that shooters with better eyesight will achieve better accuracy than I did. It goes without saying, but I'll say it anyway, a scope undoubtedly would improve my accuracy.

Smith & Wesson's new Model 1854 .44 Magnum lever-action rifle handled well, operated smoothly, functioned perfectly, and achieved very good accuracy. It will serve well for home defense, hunting, and plinking. And if you have one or more .44 Magnum revolvers, this new lever gun will make a perfect companion ST

S&W MODEL 1854 ACCURACY & VELOCITY

AMMUNITION	VEL. (FPS)	E.S. (FPS)	S.D. (FPS)	ENERGY (FT-LBS)	50-YD. ACC. (IN.)
.44 Remington Magnum, 19.25-in. Barrel					
Hornady Handgun Hunter 200-gr. MonoFlex	1441	28	13	922	2.00
Hornady LEVERevolution 225-gr. FTX	1377	25	10	947	2.10
SIG SAUER 240-gr. JHP	1614	41	15	1338	2.50
Winchester 250-gr. Partition Gold	1528	38	14	1296	1.75
HSM Bear Load 305-gr. FNGC	1494	17	6	1511	2.03

NOTES: Accuracy is the average of three, three-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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ONE OF OUR MOST POPULAR SHOOTING-RELATED SHOWS IS *Gun Stories*, which is hosted by accomplished actor and gun enthusiast Joe Mantegna. Now entering its 12th season, *Gun Stories* takes viewers through a firearm's history, from the heart of the design through its use on the range. For example, a recent episode investigated the lesser-known but significant .36-caliber Whitney Navy percussion revolver that saw duty during the American Civil War.

Approximately 35,500 Whitney Navy revolvers were manufactured by Eli Whitney Jr., including about 1,500 of the First Model and approximately 34,000 of the Second Model. Both models went through some improvements, resulting in four "types" of the First Model and five "types" of the Second Model. Whitney obtained a contract with the U.S. Army in 1862 and provided about 7,602 revolvers through 1863. The Army also obtained Whitney Navy revolvers through private vendors, resulting in over 10,000 Whitney Navy revolvers being used by the Army. The U.S. Navy purchased 6,226 Whitney Navy revolvers from 1863 to 1865. Approximately 50 percent of the 34,000 Second Models were purchased by the Army and Navy.

Joe Mantegna is a veteran Hollywood star and shooting enthusiast. Joe has more than 100 feature film and television credits, including *The Godfather Part III*, *Criminal Minds*, and *The Simpsons*. His work spans more than 40 years, and he received a star on the Hollywood Walk of Fame in 2011.

All 12 seasons of *Gun Stories* are currently presented on MOTV, and I encourage you to check them out. For a limited time, use the promo code SHOOTING30 and get a 30-day free trial of MyOutdoorTV. Offer valid for a limited time. Cannot be combined with other offers. ST

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The Price of Elegance

The finest English cleaning kit can cost you some serious money, but your cash may be better spent on putting together your own inexpensive, homemade cleaning kit. **BY TERRY WIELAND**

Nothing cleans a shotgun better than a couple of two- or three-piece traditional English cleaning rods, and a usable everyday rod can be easily made from a length of dowel.

COMES NEWS THIS WEEK FROM LONDON THAT John Rigby & Co. is now offering a cleaning kit for "best" guns that will keep them gleaming for generations to come. It consists of a custom-built solid wood chest, built to the finest traditional London standards and outfitted with various oil bottles, rods, jags, and so on, all with the distinctive Rigby crest. Price: £6,000—approximately, at today's exchange rate, $7,600.

I haven't actually seen one, and I don't expect to, but I'm reminded of my first encounter with a gun-cleaning kit at the age of nine. My family had just bought an old hunting camp to use as a vacation cottage, on a lake in the middle of nowhere, and up in the eaves I found the remains of a Hoppe's kit from the 1950s.

It was in a small, tattered cardboard box and included a half-empty tube of grease and a Hoppe's No. 9 bottle with a few drops remaining. It exuded the heavenly scent that had me hooked for all time. The faded price sticker was $1.95.

Since then, I've encountered many gun-cleaning kits (and acquired more than a few), and I've learned a few things. Look at any such "all-inclusive" kit for sale, used, at a gun show, and here's what you'll see: The bits you would use for your .30-30 or 12 gauge are either missing or hopelessly worn; the ones you'll never use are all there, pristine and shining.

Why? Because the "good for everything" kit contains a lot of stuff you'll never use, but never enough

of the stuff you do. In the end, we all end up putting together our own kits, a bit at a time, eventually learning what works and then laying in a supply in industrial quantities.

There are now so many oils, lubricants, solvents, preservatives, and assorted unguents available, all making outlandish claims, that one can end up with a shelf that would put a hypochondriac's medicine chest to shame, yet we only really use two or three on a regular basis—and a couple more periodically.

The old English gunmakers used a mixture of mineral oil and Vaseline, stirred together in a small tobacco tin. This was kept on the bench, and when they were reassembling a gun, they'd dip their fingers in from time to time so that each piece had a microscopic coating that would both lubricate and protect. Need it thinner? Add some oil. Thicker? Stir in more Vaseline. It's inert and does not damage walnut. Pick it up at any drugstore for pennies.

The other British mainstay was tow, strands of hemp in a wool-like skein. You pull off a tuft, slide it into the slot in your jag, then twirl in the hand to wrap it around. This leaves the tough fibers at a right angle to the bore, excellent for getting underneath fouling rather than sliding over it.

For everyday bench use, you can buy a length of dowel, cut a slot in the end, and have a rod ready at hand, no assembly needed—dirt cheap, and it lasts forever. Get several, put a different end on each one, and you can have tow, brush, patch, and mop ready at hand without having to search for tips or try to match thread sizes.

A while back, off to Lowe's for a length of dowel, I decided to cut down on future trips by buying two of everything—long, short, thick, thin—so I would have whatever I needed close at hand, when I needed it. If I do say so, it was one of my smarter moves. Over the course of a couple years, those dowels have become cleaning rods and ramrods for everything from a 1772 John Twigg duelling pistol, to an 1853 Enfield, to shotguns of every gauge.

Granted, they are not as elegant as a three-piece ebony rod with the Rigby addorsed Rs engraved on it, but then they did not cost me $7,600 either.

Do you know how nice a shotgun, or rifle, or Colt percussion revolver you can buy with $7,600? I rest my case. ST

cap. The slide was inserted into an opening in the gun's breech action and was advanced by a camlock, moving the slide by hand. Each Browning harmonica gun took approximately two weeks to manufacture by hand.

During his time in Illinois, as one story goes, Browning came to know a young lawyer by the name of Abraham Lincoln. Supposedly, Lincoln was an overnight guest on at least two occasions.

Browning also came into contact with another historic man while living in Illinois. Browning came to know many of Joseph Smith's Latter-day Saints (LDS) exiles who had been forced out of Missouri, and he paid a visit to their new settlement in the swampy lands of Nauvoo, Illinois. He met with Smith there, and not much later he converted to the church. Browning moved to Nauvoo and joined the community in 1842, buying a home and adding a connecting gunshop. In 1844 Smith was assassinated, and Browning and other LDS Mormons fled Nauvoo. The Jonathan Browning home and gunshop in Nauvoo was restored during the 1960s, and the museum is open to the public. Having been raised in Illinois, I well remember visiting it many years ago as a student during a school trip.

Browning fled Illinois with Brigham Young in late 1846 to escape religious persecution. He settled in the community of Mosquito Creek near Council Bluffs, Iowa, and repaired guns for the local settlers who were migrating to Utah while waiting for Young to invite him to join the main body of settlers in Utah.

He received that invitation in 1852, left Mosquito Creek, and made his way across the Rocky Mountains as the captain of 10 wagons. He arrived in the Salt Lake Valley on October 2, 1852, with six wagons and $600. Browning then moved to Ogden, Utah, where he established a successful gunshop. Browning was a polygamist, had three wives, and fathered 22 children. He operated his gunshop with his sons and invested in real estate, was a member of the Utah Territorial Assembly (1853–1854), and served as Justice of the Peace and Probate Judge for Weber County, Utah Territory. He died on June 21, 1879, in Ogden, Utah. His lasting legacy includes some very interesting percussion firearms and his son John M. Browning, who would become arguably the greatest American gun designer of all time. ST

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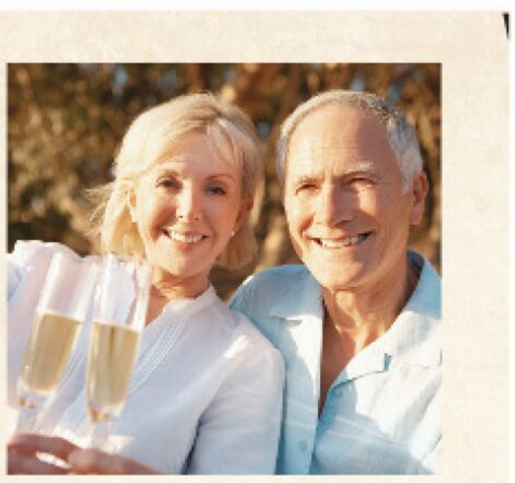

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The Father of the Greatest Gun Designer

Before there was John M. Browning, there was Jonathan Browning, who was a creative gunsmith in his own right. **BY JOEL J. HUTCHCROFT**

Jonathan Browning (1805–1879) was an accomplished gunsmith in Tennessee, Illinois, Iowa, and Utah. He specialized in percussion harmonica guns that used multiple-shot sliding breeches. John Moses Browning was one of his sons.

JOHN MOSES BROWNING WAS WITHOUT DOUBT one of the greatest gun designers in the world, especially regarding semiautomatic and fully automatic firearms. He came by his gunsmithing skills honestly, as his father, Jonathan Browning (1805–1879) also was a gunsmith. This column is about the great John M. Browning's father.

Jonathan Browning was born on October 22, 1805, in Sumner County, Tennessee. He began his career as a blacksmith, but by 1824 after an apprenticeship with Samuel Porter in Nashville, he had become a gunsmith. Around 1827 Browning moved his family to White's Creek, near Nashville, and resided there until the spring of 1833 when he moved his extended family to Fairfield, Illinois. In about 1834, Jonathan and his brother James Green Browning bought farms 30 miles northeast of Quincy, Illinois.

Browning had begun producing and repairing conventional firearms of the time independently by 1831 and shortly thereafter created a "sliding-breech" repeating percussion rifle, also called a harmonica gun.

Percussion harmonica guns (both rifles and handguns) had been around since the mid-1700s and typically used a steel "slide" that contained a number of chambers. Browning's harmonica guns usually had at least five chambers, with some examples holding an incredible 15 chambers. Each chamber contained a separate powder charge, projectile, and percussion

CONTINUED ON PAGE 62

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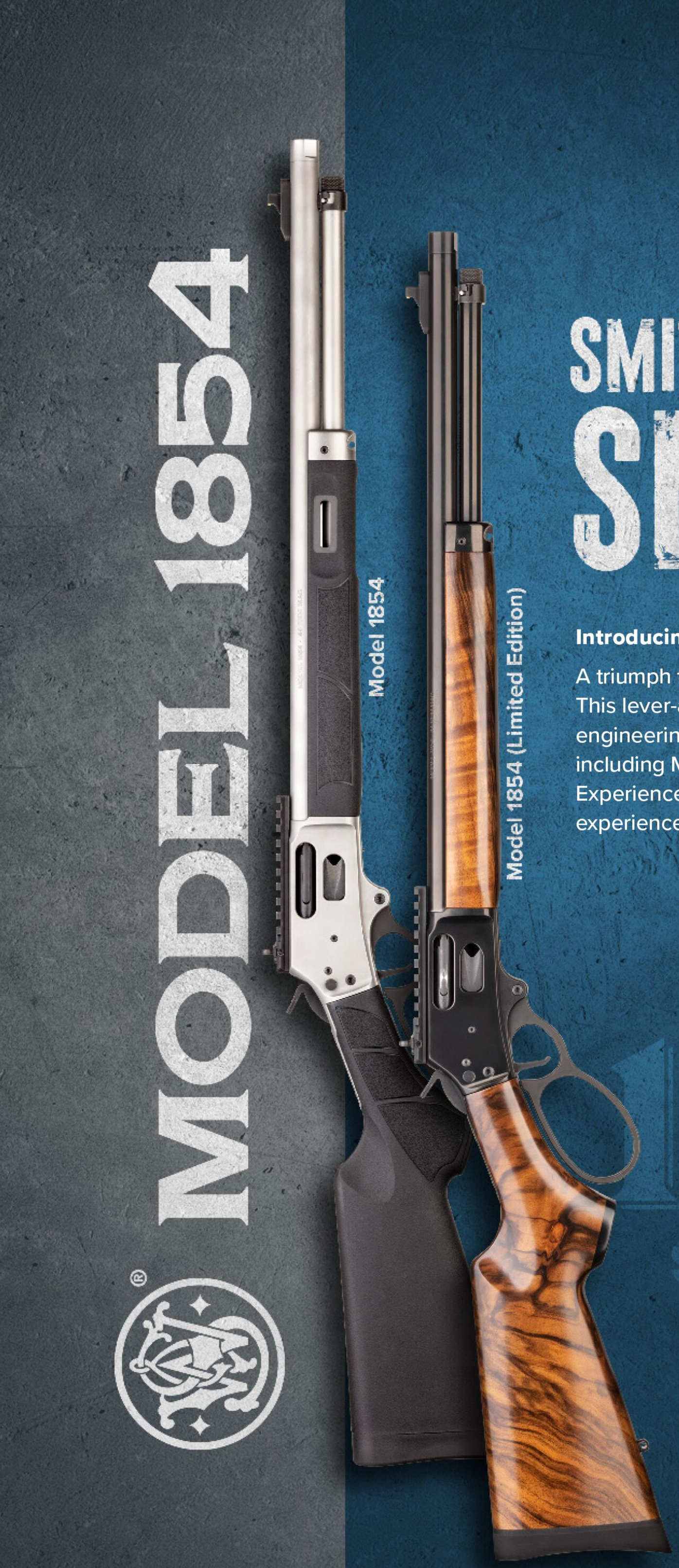

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