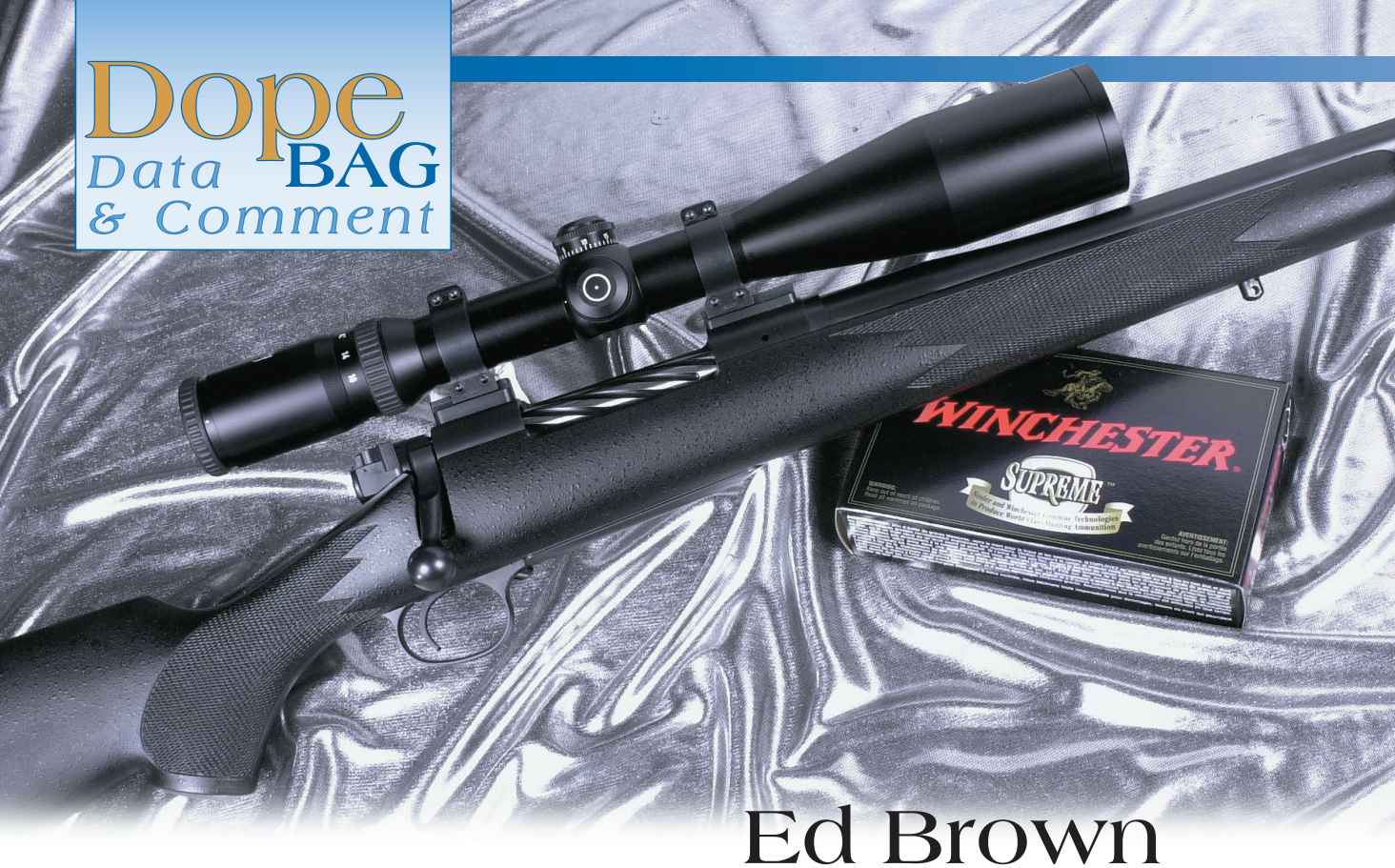
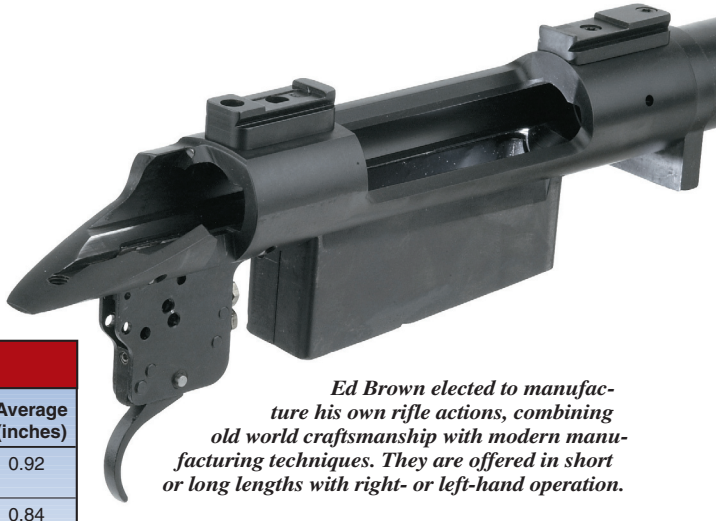
Dope Bag
Data & Comment



Ed Brown Savanna Rifle

Most custom riflesmiths begin with factory bolt-actions that they rework according to their philosophies. For world-class shooter and custom gunsmith Ed Brown, that was unacceptable as he could not control the quality of mass-produced factory actions. For that reason, Brown set out to manufacture his own bolt-action that combines leading-edge manufacturing techniques and proven features with old-world craftsmanship. That means Brown actions and rifles are built one at a time on computer numeric controlled machining centers to customer order with each rifle personally built and tested by Ed or one of his two sons. The result is the Ed Brown Model 702 action that Brown offers as the basic building block for five models. The NRA Technical Staff recently received an Ed Brown Savanna model in .300 Win. Mag. for test and evaluation.

The Brown Savanna rifle is a classically styled, 7½-lb. sporter intended for big game hunting at long ranges. Available in either left- or right-hand operation and long- or short-action lengths, barrels are either 24" or 26" stainless or carbon steel depending on caliber and options selected. The rifle is not intended as a showcase of artwork or as a display case queen. For those reasons, the Savanna rifle features a no-nonsense checkered, fiberglass-reinforced, pillar-



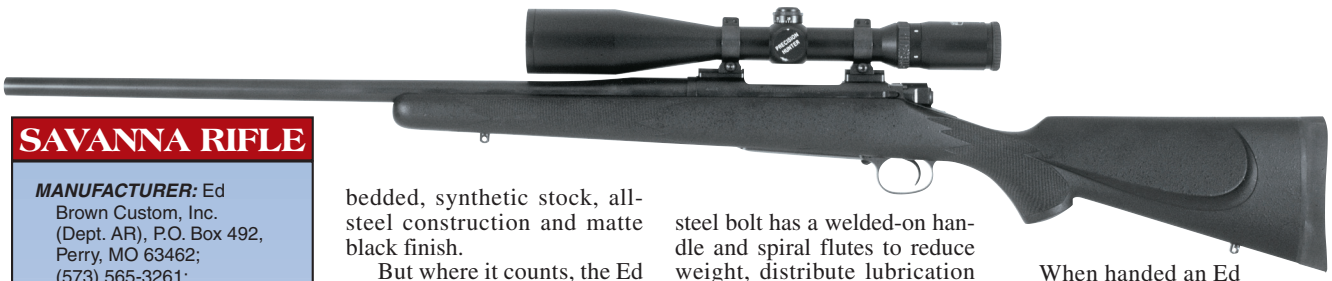
Ed Brown elected to manufacture his own rifle actions, combining old world craftsmanship with modern manufacturing techniques. They are offered in short or long lengths with right- or left-hand operation.

SHOOTING RESULTS

.300 Win. Mag. Cartridge	Vel. @ 15' (f.p.s.)	Energy (ft.-lbs.)	Recoil (ft.-lbs.)	Smallest (inches)	Largest (inches)	Average (inches)
Federal P300WT4 150-gr. TBBC	3125 Avg. 27 Sd	3,150	24.5	0.85	1.06	0.92
Hornady 8202 165-gr. BTSPIL	2923 Avg. 20 Sd	3,131	25.9	0.61	1.08	0.84
Winchester X30WM2 180-gr. PP	2861 Avg. 22 Sd	3,272	28.1	0.47	0.96	0.70
Average Extreme Spread:						0.82

Measured average velocity for 10 rounds from a 26" barrel. Range temperature: 75° F. Humidity: 21% Accuracy for five consecutive, five-shot groups at 100 yds. from a sandbag. Abbreviations: BTSPIL (boattail spire-point Interlock), PP (Power Point), Sd (standard deviation), TBBC (Trophy Bonded Bear Claw).

The *American Rifleman* has used the phrase "Dope Bag" at least since 1921, when Col. Townsend Whelen first titled his column with it. Even then, it had been in use for years, referring to a sack used by target shooters to hold ammunition and accessories on the firing line. "Sight dope" also was a traditional marksman's term for sight adjustment information, while judging wind speed and direction was called "doping the wind."

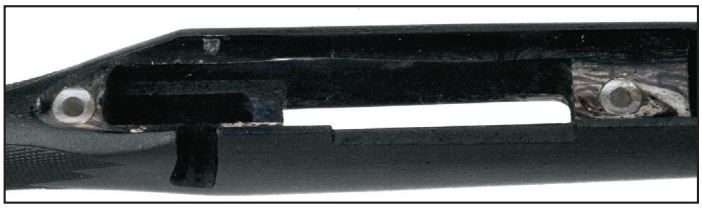


SAVANNA RIFLE

MANUFACTURER: Ed Brown Custom, Inc. (Dept. AR), P.O. Box 492, Perry, MO 63462; (573) 565-3261; www.edbrown.com
CALIBER: .257 Ackley Imp., .25-'06 Rem., .270 Win., .280 Rem., .280 Ackley Imp., 7 mm Rem. Mag., 7 mm STW, .30-'06 Sprg., .300 Win. Mag. (tested),. 300 WSM, .300 Rem. Ultra Mag., .300 Wby. Mag. and .338 Win. Mag. Additional calibers, including short-actions, available.
ACTION TYPE: proprietary design turn-bolt, center-fire repeater with two front, opposed locking lugs on bolt, long- or short-length, left- or right-hand, three-position safety, internal ejector, external extractor
RECEIVER: heat-treated, CNC-machined carbon steel
FINISH: matte black
OVERALL LENGTH: 46½"
BARREL: match-grade, hand-lapped, carbon steel, 24" or 26" (tested)
RIFLING: conventional, eight-groove 1:10" RH twist
MAGAZINE: internal, double-column with hinged floorplate
WEIGHT: 7 lbs., 8 ozs.
SIGHTS: none, steel two-piece scope bases installed
TRIGGER: adjustable, two-stage, 2 lbs. pull.
STOCK: sporter-style fiberglass synthetic with cheekpiece, 18 l.p.i. checkering on pistol grip and fore-end, 1" black and rubber recoil pad; precision bedded with aluminum pillars: length of pull, 13⅜"; drop at heel, 2¼"; drop at comb, 2¼"
SUGGESTED RETAIL PRICE: $2,800

bedded, synthetic stock, all-steel construction and matte black finish.

But where it counts, the Ed Brown Savanna rifle allows absolutely no compromises. To assure the accuracy needed for long-range hunting, only hand-lapped, match-quality barrels with deeply counter-sunk muzzle crowns and benchrest-quality chambers are used—No. 3 contour in standard calibers and No. 4 contour in magnum calibers. Socket-head action screws hold the precision-bedded action securely in the synthetic stock against aluminum pillars. Blued steel quick-detachable (QD) sling swivel studs are standard equipment as is a 1"-thick rubber recoil pad. Talley steel scope mount bases are installed and secured by heavy duty 8-40 screws.



The Savanna rifle uses a fiberglass-reinforced synthetic stock with aluminum pillar bedding, socket-head action screws, quick-detachable sling swivel studs and a rubber recoil pad.

Brown's Model 702 action is a classic Mauser-type turn-bolt repeater with a short 90 degree bolt throw and dual, opposed front locking lugs offering plenty of contact area. The bolt locks directly to the action, which is a stressed part. An M16-type, non-rotating extractor is used along with an internal ejector. The 0.700" diameter, hand-fitted, carbon steel bolt has a welded-on handle and spiral flutes to reduce weight, distribute lubrication and enhance cleaning. An easy to operate, push button bolt stop is located on the left rear side of the receiver, and there is a three-position safety lever on the right rear of the bolt shroud.

The 1.360" diameter receiver itself is machined from heat-treated, carbon steel with a solid rear bridge, round bottom and 0.300" thick, collar-type, front recoil lug. Sidewalls of the front receiver ring are approximately 0.185" thick. There is a 0.115"-diameter gas-relief hole drilled into the right side of the front receiver ring to allow high-pressure gases to escape in the unlikely event of a ruptured cartridge case head. All Savanna rifles have an internal magazine as standard. Savanna rifles in the new .300 WSM caliber will have a detachable box magazine option.

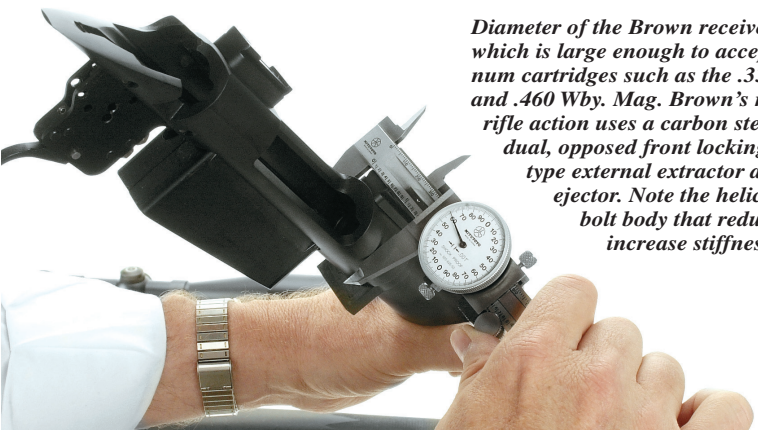
The adjustable trigger is held to the lower rear of the action with two pins. On models with an internal magazine, the floorplate is hinged at the front and released by pressing a small button in front of the machined steel trigger guard.

When handed an Ed Brown Savanna rifle for the first time, one particularly notices its excellent balance and refined handling. What that means is the Savanna can be carried comfortably for long periods without fatigue and comes to the shoulder effortlessly. Experienced hunters will fully appreciate both those features, and novice hunters will soon come to the same conclusion. Operation proved straightforward and smooth. In particular, the bolt operates and glides smoothly without binding, the bolt release button operates easily and the magazine floorplate releases on demand.

Styling of the Ed Brown Savanna rifle can be described as purposeful and practical, and we came to appreciate the styling in its own right. However, the purposeful, practical approach may not appeal to everyone—especially a buyer seeking bragging rights on a showcase queen. For the experienced hunter, however, the styling appears just right.

On a rifle such as this, the buyer expects superior workmanship, fit, finish and accuracy. After all, that is what the Savanna rifle is all about. In our opinion, workmanship, fit and finish are fully commensurate with the asking price.

We fired nearly 200 rounds of ammunition of various brands through the Savanna rifle without malfunction.



Diameter of the Brown receiver is 1.360" (l.), which is large enough to accept large magnum cartridges such as the .338 Lapua Mag. and .460 Wby. Mag. Brown's new proprietary rifle action uses a carbon steel bolt (r.) with dual, opposed front locking lugs, an M16-type external extractor and an internal ejector. Note the helical flutes on the bolt body that reduce weight and increase stiffness.

Accuracy proved excellent and perceived recoil was moderate thanks in part to the rifle's excellent balance. In particular, we like the somewhat shorter than normal 13⅝" length of pull on the Savanna. Why? Because typically, rifles such as this are used in the colder months of the year when hunters wear heavy clothing, which can make rifles with 14"-plus pull lengths unwieldy. A minor detail perhaps, but indicative of the thorough attention to detail given to this rifle's design by Ed Brown.

Unlike some competitors, Ed Brown does not guarantee accuracy. The reason is, of course, that the Savanna rifle is capable of substantially greater accuracy (1/2 m.o.a.) than most hunting ammunition can deliver. However, the Savanna rifle will deliver all the accuracy your ammunition is capable of, which is more than acceptable for most types of hunting.

Ed Brown's Savanna rifle will be appreciated by experienced hunters willing to pay for a reliable, high-quality, precision tool for hunting at long ranges in all weather conditions.

Marlin Model 336SS

The Marlin Model 336 rifle has a solid reputation for reliability and durability. Now that it is available in stainless steel, it will be able to maintain those attributes despite neglect or a harsh environment.

For more than 100 years, Marlin's lever-action rifles have been enjoyed by generations of shooters. Early in the Marlin lever gun's history, shooters wanted a rifle that would help them survive. Such rifles had to be utterly reliable, at least adequately powerful and thoroughly durable. As our use of rifles has evolved away from sustenance and more toward sport, we've seen no less of a commitment from manufacturers regarding reliability, power and durability, though we have drifted in aesthetics from utilitarian to sometimes whimsical.

Marlin has just raised the bar in its commitment to durability with the introduction of its Model 336 in stainless steel. While hardly a "new" rifle—the design arguably dates to 1893—the use of stainless steel marks a new direction for Marlin in the center-fire rifle market. Stainless steel is not rust-

For accuracy testing, we equipped the Marlin with a Leupold Vari-X 3-9X Compact scope in Weaver-style rings. The combination proved complementary yielding good accuracy with most loads.

SHOOTING RESULTS

.30-30 Win. Cartridge	Vel. @ 15' (f.p.s.)	Energy (ft.-lbs.)	Recoil (ft.-lbs.)	Smallest (inches)	Largest (inches)	Average (inches)
Federal 3030B 170-gr. SPH-S	2204 Avg. 11 Sd	1,834	10.5	1.45	2.52	2.07
Remington R30301 150-gr. C-LSP	2309 Avg. 29 Sd	1,776	9.4	1.63	3.35	2.65
PMC C3030SFA 150-gr. SF	2204 Avg. 24 Sd	1,618	8.8	2.75	4.51	3.57
Average Extreme Spread:						2.76

Measured average velocity for 10 rounds from a 20" barrel. Range temperature: 77° F. Humidity: 86% Accuracy for five consecutive, five-shot groups at 100 yds. from a sandbag. Abbreviations: C-LSP (Core-Lokt soft-point), SPH-S (soft-point Hi-Shok), Sd (standard deviation), SF (Starfire).

proof, nor is it corrosion-proof, but it does lend some degree of security to those of us who don't always clean our guns after each use or who hunt in extreme climatic conditions.

Some of the hallmarks of the Model 336 design that bear repeating are its full-length, tubular magazine, real walnut stock with cut checkering and round bolt that theoretically makes the receiver stronger than the square bolt of earlier Marlin rifle designs. There are also the familiar barrel bands and pistol grip with black cap, as well as the relatively modern cross-bolt hammer-drop safety that when engaged stops the hammer from striking the firing pin.

The iron sights are the only blued steel external parts we could find on the test rifle. That's good because stainless sights would be annoyingly reflective, especially in bright sunshine.

Marlin's first gun with a solid top was the Model 1889, and from it evolved—through a series of successive models including the Models 1893 and 36—the Model 336. A by-product of the solid top receiver is side ejection—a great benefit to the many who buck tradition and mount a scope on the Model 336SS.

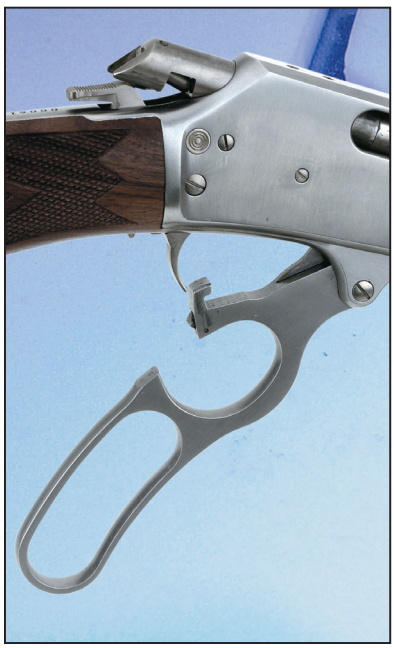
For testing, we chose to buck and equipped the Marlin with a Leupold 3-9X Compact scope in Weaver-style rings. That combination was rather complementary, and increased the overall weight to only around 8 lbs. Accuracy testing results are summarized in the accompanying table. Function firing was with several different type partial boxes of .30-30 Win. ammunition the Technical Staff had remaining in its ammunition locker. There were no malfunctions of any kind with the test gun, and accuracy was on par with the Marlin Model 336ER rifle in .356 Win. caliber we tested in 1984 (October 1984, p. 58). As a rifle intended for medium-size game such as deer or bear at woods ranges, the 2¾" group average is acceptable.

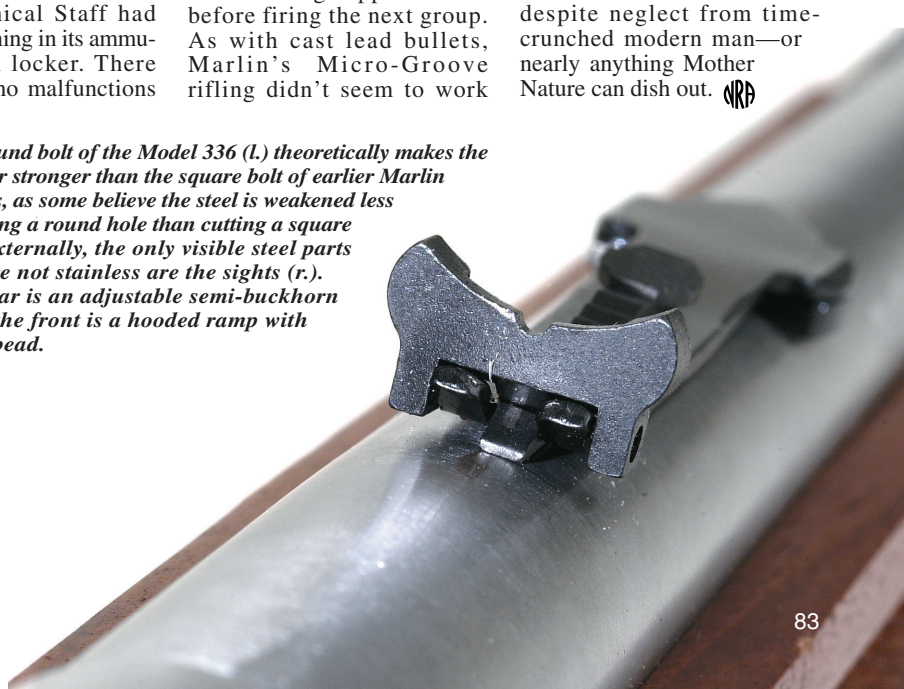
Both Federal- and Remington-brand ammunition shot well, but the accuracy exception was PMC-brand .30-30 Starfire, which, frankly, stunk. That's a shame because the Starfire uses an all-copper bullet much like the Barnes X-Bullet, which has a proven terminal ballistics track record. At first, we assumed there was some incompatibility between the bullet and the bore, causing the soft copper to not be stabilized by the shallow "Micro-Groove" rifling. We managed to recover more than a half-dozen bullets from the backstop and examined the rifling marks under a dissection microscope but found nothing that would suggest inadequate purchase by the lands. There was also no keyholeing, so the result is that the load simply didn't shoot well in that gun. The only way we could get it to group was to fire five shots then clean the bore with a strong copper solvent before firing the next group. As with cast lead bullets, Marlin's Micro-Groove rifling didn't seem to work that well for us with all-copper bullets.

Marlin's newest rifle, then, combines the nostalgic tradition of a lever-action gun with the "modern" material stainless steel. That combination forms a rifle that over the test of time has proven itself in reliability, durability and accuracy, and can now maintain those attributes despite neglect from time-crunched modern man—or nearly anything Mother Nature can dish out.

MARLIN 336SS

MANUFACTURER: Marlin Firearms Co. (Dept. AR), 100 Kenna Drive, P.O. Box 248, North Haven, CT 06473-0905; (203) 239-5621; www.marlin-firearms.com
CALIBER: .30-30 Win.
ACTION TYPE: lever-action, center-fire rifle
OVERALL LENGTH: 38½"
BARREL: 20"
RIFLING: Micro-Groove 1:10" RH-twist
WEIGHT: 7 lbs.
MAGAZINE: six-round tubular magazine
SIGHTS: semi-buckhorn rear adjustable for windage and elevation, ramp front with Wide-Scan hood and brass bead on steel blade
TRIGGER: single-stage, 4½ lbs. pull
STOCK: American walnut: length of pull, 13½"; drop at heel, 2¼"; drop at comb, 1½"
ACCESSORIES: hammer spur, safety lock
SUGGESTED RETAIL PRICE: $608





The round bolt of the Model 336 (l.) theoretically makes the receiver stronger than the square bolt of earlier Marlin designs, as some believe the steel is weakened less by boring a round hole than cutting a square one. Externally, the only visible steel parts that are not stainless are the sights (r.). The rear is an adjustable semi-buckhorn while the front is a hooded ramp with brass bead.

Dope Bag Data & Comment

Interstate Arms Model 97 Shotgun

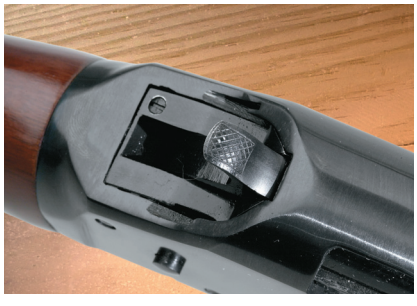
Americans have a long history of appreciation for the repeating shotgun, and the Winchester Model 1897 is one of the earliest and most popular examples. From its introduction in 1897, the Model 1897 Winchester was an immediate success and was manufactured until 1957 with approximately 1,024,700 made. But the gun is not merely relegated to the forgotten corners of history. The growth of Cowboy Action shooting has made guns from that era very popular recently with many shooters looking for either originals or, more often, quality reproductions for use in the competitions.

The Model 1897 is simply a slide-action repeating shotgun. Its two primary moving action elements are the breech block and the large, heavy, machined carrier. The first motion of the action slide arm moves the carrier downward. The breech block is locked against an abutment in the heavy carrier and once the carrier moves downward, the breech block is free to move to the rear on tracks machined into the receiver in a straight line. The carrier continues to move downward where it picks up a fresh shell from the five-shot tubular magazine. On the closing stroke, the carrier motion is reversed and it lifts upward, lining up the fresh shell with the chamber into which it is pushed by the bolt.

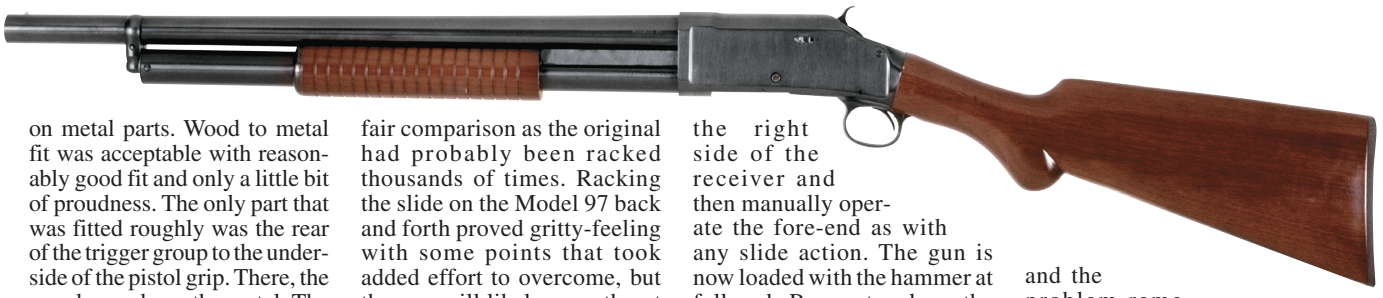
Tastes change, perceptions alter—and now the Model 1897 is once again a marketable product thanks to the popularity of Cowboy Action shooting. Although this shotgun would likely be prohibitively expensive for a U.S. company to manufacture today, Interstate Arms has stepped into the void left by high labor costs in America with its Chinese-made Model 97, a reasonably priced imported alternative for modern shooters.

Made by Norinco of China, the Model 97 turned out to be a surprisingly faithful copy of the original, with some who saw it at first asking how that "Winchester" was in such good condition. It is important to note though that despite very similar appearances, parts are not necessarily interchangeable between an original and this latest Model 97. Looking a great deal like a "riot" or "brush" model, the Model 97 features a 20" barrel with a fixed cylinder bore choke and brass front bead. The Model 97 is chambered strictly for 12-ga., 2¾" shells.

Unlike the original that was offered in both takedown and solid-frame models, the Model 97 is strictly a non-takedown design. It features a hardwood stock, with a walnut version in the works, and a nicely polished blue finish



Unlike contemporary designs, the Model 97 has parts sticking out all over when the action is open (above r.). Although the hammer was well-fitted and shaped, its checkering was too smooth for our tastes (middle r.). Note the dual extractors on the bolt (r.), which encourage positive extraction.



on metal parts. Wood to metal fit was acceptable with reasonably good fit and only a little bit of proudness. The only part that was fitted roughly was the rear of the trigger group to the underside of the pistol grip. There, the wood was above the metal. The finish on the metal parts is even, with the only evidence of rough machining being on and around the trigger group and the bolt and carrier in the receiver. Also, the action is not as smooth as an original Winchester that we had on hand, but that may not be a fair comparison as the original had probably been racked thousands of times. Racking the slide on the Model 97 back and forth proved gritty-feeling with some points that took added effort to overcome, but the gun will likely smooth out as it is used.

Functioning of the Model 97 is the same as an original Winchester. It has an exposed, external hammer with half-cock and full-cock settings. The owner's manual warns that, although the gun is designed to not fire while in the half-cock position, it should not be carried that way unless one is about to fire and has the muzzle pointed in a safe direction. The gun should be carried with the hammer down on an empty chamber.

The Norinco features a slide-action release button on the right side of the receiver, allowing the user to empty the chamber if the situation warrants. Also, the Model 97 features a shell release mechanism. It allows the user to press two buttons placed on each side of the receiver to release the shells from the magazine. Although we could get these to work, they were inconsistent and difficult to employ.

Loading is accomplished by having the fore-end fully forward with the gun turned over so you can see the magazine follower. Push shells directly into the magazine tube until they are captured by the shell latch. To chamber a round, press the bolt release on the right side of the receiver and then manually operate the fore-end as with any slide action. The gun is now loaded with the hammer at full cock. Be sure to release the trigger after each shot as, like the original, the Model 97 does not have a disconnector and will fire when the action is closed if the trigger is kept depressed.

During our shooting tests, we discovered that the Model 97, like the original Winchester, can be a bit "balky." We pattern tested the gun with Federal No. 6 lead Field Loads with the result shown in the accompanying table, and function fired it with a variety of other brands of shells. We discovered that it is necessary to smartly work the action back and forth during firing to ensure that proper extraction and feeding is performed. Early on, we experienced several failures to extract and feed with several types of shells, but discovered that proper functioning can be achieved through the combination of brisk "shucking" and the use of high-quality ammunition. Also, whether using handloads or factory ammunition, consistent shell length is an important concern with this gun. We discovered that the outside of the magazine tube of this gun should be oiled where the action slide contacts it to smooth up the movement of the action.

During our test, and the violent working of the action, the action slide sleeve screw cap separated from the slide action causing the fore-end to separate from the slide action. It appears that the fore-end's length may have precluded the cap from fully seating and that the threads were too shallow. Interstate Arms informed us that was a problem in the early run of guns and assured us that the factory has been informed and the problem remedied. It sent us a second gun from the current production batch and it performed without a hitch with several brands of shells. As compared to the earlier production model, this gun was much smoother and easier to use and did not require as much force in working the action.

Considering the nature of the gun and its price, the Model 97 should be quite popular with the Cowboy Action shooting crowd. Taking into consideration the "quirky" design nature of the original, the Model 97 proved to be a good low-cost alternative to an original Winchester. Also, with the details of the design appearing to be worked out, the new production models should be a solid deal for the Cowboy Action shooter looking for a gun to use that will not break the bank.

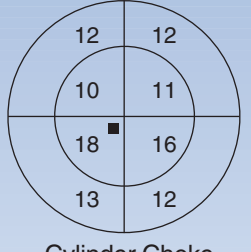
The Model 97 features shell release buttons (above l., arrows) that are pressed together to release shells from the magazine. Also, a slide-action release button (above r,. arrow) is located on the right of the receiver. It allows the user to retract the slide and empty the chamber.

MODEL 97

MANUFACTURER: Norinco, Factory No. 976 Shan-Dong First Machinery Factory, Beijing, China
IMPORTER: Interstate Arms Corp. (Dept. AR), 6G Dunham Road, Billerica, MA 01821; (800) 243-3006
GAUGE: 12, 2¾"
ACTION TYPE: slide action, repeating shotgun
FINISH: blued steel
OVERALL LENGTH: 39"
BARREL LENGTH: 20"
CHOKE: fixed, cylinder
WEIGHT: 7 lbs., 1 oz.
MAGAZINE CAPACITY: five
SIGHTS: brass bead front
TRIGGER: single-stage, 7¾-lbs. pull
STOCK: hardwood with walnut stain (walnut planned): length of pull, 13¾"; drop at heel, 2⅝"; drop at comb, 1¾"
ACCESSORIES: instruction manual
SUGGESTED RETAIL PRICE: $349

MODEL 97

AVERAGE OF 10 PATTERNS AT 40 YDS.



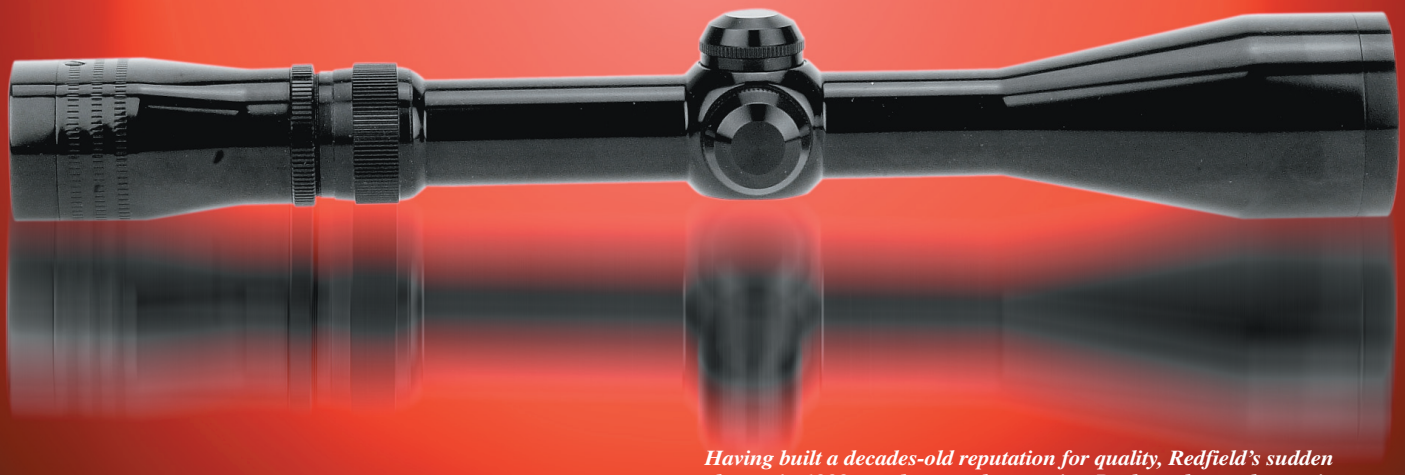
Cylinder Choke

■ = Point of Hold
Interstate Arms Model 97
12-ga., 2¾"—1⅛ oz.
No. 6 copper-plated lead
Average Pellet count: 287
Measured Velocity @ 3'—1221 f.p.s.
Remaining Energy Per Pellet @ 40 yds.: 1 ft.-lb.

Total Hits	104 (36%)
21.2" Inner Circle	55 (19%)
30" Outer Ring	49 (17%)

Dope Data BAG & Comment

Redfield 3-9x 42 mm Illuminator Scope



Having built a decades-old reputation for quality, Redfield's sudden closure in 1999 caught many by surprise. Back on the market again, the new Redfield looks as though it will continue that tradition.

For decades, Redfield enjoyed a reputation for "accuracy and consistency of adjustments" with respect to its various lines of hunting and target scopes. While that reputation continued, the company didn't, and its sudden closure in late 1999 caught many off guard. ABO USA, Inc. in Miami, Fla., continued to honor the Redfield warranty , but the optics icon all but disappeared from the market. With such a recognizable and respected name, it wasn't long before Redfield was resurrected—this time as part of sporting goods conglomerate Blount, Inc.

Now, with the backing of a parent company whose holdings include such names as RCBS and Federal Cartridge, Redfield is back on dealers' shelves. Initial offerings include the Widefield line of scopes that have a field of view claimed to be 30 percent greater than conventional scopes. There is also the Illuminator line that Redfield calls its "best," the traditional Golden Five Star series of scopes and the economical Tracker line. In all, there are currently 25 different scopes offered in gloss, matte, blue or silver finishes.

The view seen through the scope looks like a television since the ocular bell is shaped like one. Field of view is 31'x24' at 100 yds. when the scope is set at 3X—12'x10' when set at 9X.

Turrets are finger-adjustable with 1/4" clicks and waterproof covers. Adjustment range is 62 m.o.a. vertical and 59 m.o.a. horizontal.

To help kick off the return of Redfield, Blount hosted a seminar held over a cold December weekend at Federal Cartridge Co. in Anoka, Minn., to refamiliarize the outdoor press with the old name and to introduce the new product line. That seminar allowed us to put the new Redfield products through an array of torture tests that would make inferior optical products fail.

First in the series of tests involved packing a scope in a box of snow and leaving it outside overnight where the temperature was hopelessly stuck several degrees below zero. The next morning, that scope was chiseled out of the snow and brought inside to warm up. There was no fogging as a result of that test. Another scope had been left buried in sand overnight, presumably to test if the sand would penetrate the tube or controls. There was some slight grittiness to the power adjustment ring, but the turret drums and lenses remained unaffected.

Next, a heated scope was placed into a tank of cold water, the theory being that the contraction caused by the rapid cooling of the scope would suck moisture into it if the seals

One scope was heated and placed in cold water (above). Contraction was not able to draw moisture into it. Another was frozen and thawed in warm water (r.)—it fogged. We repeated the test at NRA with another scope—it didn't fog.

failed. They didn't. Yet another scope was left overnight sealed in a chamber that simulates long-term environmental exposure by using heat and humidity. That scope remained clear, too. Blount Research Director Bruce Warren bounced several scopes from shoulder height off a hard rubber pad with no ill-effects, while another scope that had been frozen in a block of ice was placed in a warm water bath to thaw. That scope had its seals fail as evidenced by the moisture collected against the inside of the objective lens. Last of the extreme tests subjected a scope to 1,000 Gs axial and 500 Gs transverse force for 1,000 cycles. That test was intended to see if the scope could stand up to severe and repeated recoil, which it did.

Less physically extreme tests were performed to check optical quality and adjustment repeatability. Optical quality was tested with a collimator fixture that used a series of incrementally reduced lines that could be viewed through all parts of the scope lens. Any distortion attributable to the lens would have been evident. At that test fixture were several high-end, name brand scopes from Redfield's competitors. In optical comparison, the Redfield appeared to be of equal quality to scopes costing considerably more money.

There was no detectable image distortion over the range of magnification, nor was there any noticeable change in image color or tone. The last test during the seminar had us "shoot the square," which is a test for adjustment repeatability. The object is to fire a group from 100 yds. into the center of a target, and while maintaining that aiming point, make scope adjustments to move consecutive groups around the target paper to form the corners of a square. Again, the Redfield passed the test.

We left the seminar with a new Redfield Illuminator 3-9X42 mm scope with duplex reticle for our own test and evaluation. It's a sealed, water-, fog- and shock-proof one-piece aluminum unit made in Japan to Redfield's specifications. The optics are fully coated to control flare and reduce light reflection loss, and the ocular bell is oval like a television screen. Eye relief ranges from 3¼" to 3⅛" depending on power setting. The objective bell is round and the exit pupil ranges from 13 mm to 4.6 mm depending on power setting. Like the ocular bell, the view as seen through the Redfield Illuminator is shaped like a television screen and images are bright and crisp. Field of view is 31'x24' at 100 yds. when on 3X and 12'x10' at 100 yds. on 9X. The power adjustment ring has a protruding lug for easy grasping, and the adjustment turrets are finger-adjustable with 1/4" clicks and waterproof covers. Adjustment range is 62 m.o.a. vertical and 59 m.o.a. horizontal. Weight is 14.9 ozs., length is 12⅝" and the adjustment saddle is centrally located.

Being thoroughly satisfied with the testing done on the Redfield products at the seminar, we opted not to put this scope through the same rigors with the exception of the one test the seminar scope failed. While preparing to freeze the scope in a block of ice, bubbles began to leak from the objective indicating a leak. We gave Redfield the benefit of the doubt that the scope had suffered damage at the hands of airline baggage handlers and requested a replacement. The replacement scope didn't leak, and was frozen in a block of ice as planned. When thawed in warm water, no leaks were apparent so that scope passed the test.

Given the severity of the physical tests the new Redfield scopes passed, it would appear that Blount has made the necessary commitment to offer a quality and rugged product. Optically, the Redfields compare favorably to their peers by offering bright, clear images. To the new Redfield product line, then, we say, "welcome back." *Contact: Redfield Division of Blount (Dept. AR), 201 Plantation Oak Drive, Thomasville, GA 31792; phone: (800) 285-0689; www.redfieldoptics.com.*

Optical quality was tested with a collimator fixture. The Redfields compared favorably with several other high-end, name-brand scopes in clarity and resolution.