DOPE BAG®

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."

CAUTION: Technical data and information contained herein are intended to provide information based on the limited experience of individuals under specific conditions and circumstances. They do not detail the comprehensive training procedures, techniques and safety precautions absolutely necessary to properly carry on similar activity. Read the notice and disclaimer on the contents page. Always consult comprehensive reference manuals and bulletins for details of proper training requirements, procedures, techniques and safety precautions before attempting any similar activity.

SIGARMS P229 SPORT

The new SIGARMS P229 Sport pistol offers longer service life, low perceived recoil, improved ergonomics and lower maintenance than standard model P229 pistols.

P229 SPORT

MANUFACTURER: SIG (Schweizerische Industrie-Gesellschaft), CH-8212 Neuhausen, Switzerland
IMPORTER: SIGARMS, Inc. (Dept. AR), Corporate Park, Exeter, NH 03883
MECHANISM TYPE: recoil-operated, semi-automatic pistol
CALIBER: .357 SIG
OVERALL LENGTH: 8¼"
BARREL LENGTH: 4"
HEIGHT: 6"
WIDTH: 1½"
WEIGHT: 44 ozs.
RIFLING: five-groove, 1:16" RH twist
TRIGGER: single-stage, double-action, 11 lb. pull; single-action, 4¼ lb. pull
SIGHTS: three white dot with LPA adjustable target rear and Patridge front blade
ACCESSORIES: extra magazine, plastic carrying case
PRICE: $1300

SIGARMS' new P229 Sport pistol is aimed at the multi-disciplinary sport or recreational shooter who owns only one or two high quality handguns and fires an above average number of rounds every year—but who is also not necessarily a seasoned competitor. With those requirements in mind, SIGARMS set out to combine its relatively-new, high velocity .357 SIG caliber with a modified P229 to offer longer service life, low perceived recoil, improved ergonomics and minimal maintenance requirements.

To improve service life, the aluminum frame and multi-piece, carbon steel slide of the standard P229 were replaced with stainless steel parts machined from solid forgings. The empty weight is increased 42% from 31 ozs. to 44 ozs., but the new parts do offer superior strength and longer service life.

Perceived recoil is reduced by the added weight combined with a longer, ported barrel. The muzzle of the P229 Sport's barrel is extended and threaded to take a ported, aluminum unit contoured to resemble a slide extension. The unit does not reciprocate, but directs muzzle gases upward to reduce muzzle flip which is a substantial part of perceived recoil.

Maintenance is reduced by using a matte natural finish on the stainless steel frame and slide. The sights and control levers are blued.

Considerable attention has been given to improving ergonomics on the P229 Sport. Unlike the two-piece stock panels on the standard P229, the Sport version features a rubber, one-piece, wrap-around, Hogue unit that blends with the top of the backstrap. The bottom edge of the stock extends past the lower grip frame to match the recurved, aluminum, magazine basepad. Complementing the stock are horizontal serrations on the front strap and trigger guard intended to keep the pistol from riding up or twisting during recoil.

An extended magazine release button is at the rear of the trigger guard, and the frame-mounted decocking lever and slide release lever should be easily reached by most shooters.

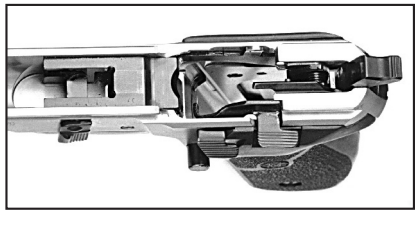
Sights are an LPA rear unit screw-adjustable for both windage and elevation with two white dots combined with a Patridge front blade with a single white dot. The rear is dovetailed into the top of the slide in the conventional manner, but the front is mounted on the ported muzzle unit.

Functioning of the Sport is identical to standard P229s. Operation is by short-recoil with a tip-up barrel locking to the breech face on the slide. Disassembly differs from

ACCURACY RESULTS

.357 SIG Cartridge	Vel. @15' (f.p.s.)	Smallest (ins.)	Largest (ins.)	Average (ins.)
Hornady No. 9130 124-gr. XTP	1417 Avg. 13 Sd	2.12	4.37	3.29
Federal No. 357S1 125-gr. H-S	1424 Avg. 18 Sd	1.42	4.36	3.02
CorBon No. CB0450 125-gr. JHP	1549 Avg. 117 Sd	2.41	4.44	3.52
Average Extreme Spread				3.27

Five consecutive five-shot groups from 25 yds., fired from sandbags. Abbreviations: Sd (Standard deviation), H-S (Hydra-Shok), JHP (jacketed hollow point), XTP(extreme terminal performance)



Basic operation and functioning are unchanged from the P229, though the Sport's frame is of forged stainless steel.

the standard P229 only in that the muzzle unit must be removed before the barrel can be removed from the slide. This is accomplished by first removing the set screw, then threading the take-down pin into the locking wedge. In most cases, the locking wedge can be pulled out with the take-down pin. In those instances where it cannot, simply threading the take-down pin in farther will push the wedge out.

The SIG P229 Sport was function fired with more than 300 rounds of CorBon, Federal and Hornady ammunition and fired for accuracy with the results shown in the accompanying table. One box of Cor-Bon ammunition gave numerous failures to fire. Investigation showed the cartridge cases of that particular box caused excess headspace as the case shoulders were set too far back. The .357 SIG cartridge headspaces on the shoulder, and the problem disappeared once the offending box of cartridges was retired. Chronograph readings indicated that the .357 SIG cartridges tested provided normal velocity levels. Accuracy was judged very good for a pistol of this type, and all who fired it felt that perceived recoil was low given the high velocity of the cartridge.

The Sport has Hogue stocks, horizontal serrations on the front strap and trigger guard, and an extended magazine basepad.

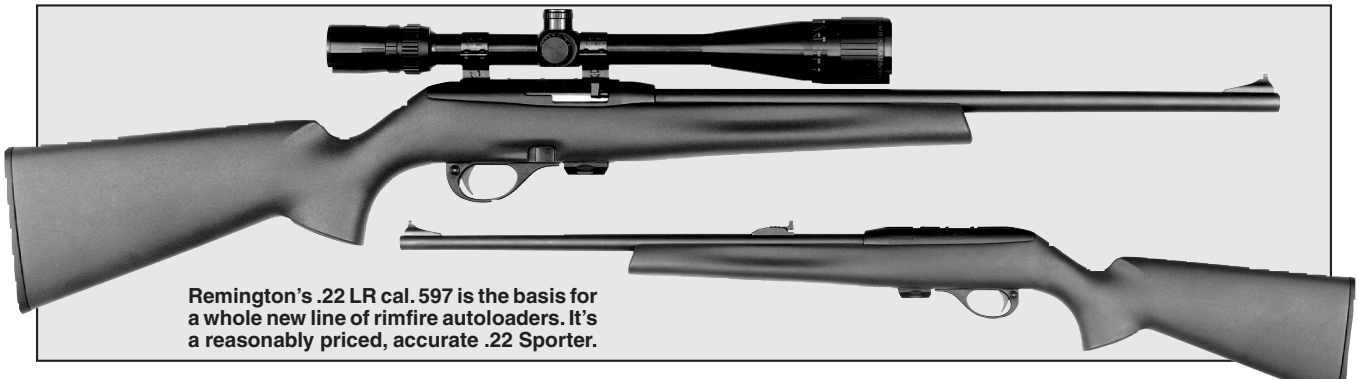
Overall fit and finish of the P229 Sport received for testing was excellent with evident attention to detail, and there were no machine marks left on any internal parts. According to SIGARMS, particular attention is paid to the trigger pull of all Sport pistols. This was evident from the crisp, 4½-lb. single-action trigger pull with no appreciable overtravel. Double-action trigger pull was 11 lbs., but smooth and steady.

During testing, right-handers found it difficult to find a place to rest their thumb. If the thumb was placed above the release button, it got jabbed by the decocking lever when the pistol was fired. If the thumb was placed on the release button, then the magazine was released when the pistol was fired. We found the best location for the thumb to be just beneath the release button. Southpaws found the larger magazine release uncomfortable during firing, but had no problems with accidental releases.

To remove the ported muzzle unit, remove the set screw, then use the take-down pin to pull out the locking wedge. The unit must be taken off before barrel may be removed.

The P229 Sport offers longer service life, low perceived recoil, improved ergonomics, and lower maintenance compared to standard P229s These features come at a cost that places this model beyond the reach of many shooters. Thus, the Sport will appeal most to the sport or recreational shooter who wants only one or two multipurpose, high quality pistols as a lifetime investment.

REMINGTON MODEL 597



Remington's .22 LR cal. 597 is the basis for a whole new line of rimfire autoloaders. It's a reasonably priced, accurate .22 Sporter.

REMINGTON's last significant introduction into the semi-automatic rimfire rifle market was the Model 522 Viper (January 1994, p. 55). With its futuristic appearance and atrocious trigger pull, it did not overwhelm us. It was, however, moderately priced, relatively accurate and incorporated innovative construction methods and materials.

The latest autoloading rimfire rifle development from Remington is not just a revised Viper, but a whole new family of rifles designated as the M597 series. Three rifles make up the trio: a black synthetic-stocked, blued, .22 Long Rifle Model 597; a brown-laminated-stocked, stainless, .22 Long Rifle Model 597LSS and a black, synthetic-stocked, blued, .22 Magnum Model M597 Magnum.

The 597's magazine housing and trigger assembly are one plastic piece separated by a solid web of plastic. It is fastened to the gun's steel reciever by an assembly pin.

We received the basic Model 597 for testing, which is the rifle on which all others in the series are based.

The one-piece, black, synthetic stock is well thought out. Though mostly hollow, it feels solid; has a modest beaver-tail forend compared to the exaggerated one on the Viper; no checkering; straight buttstock and a generous pistol grip. A nice blending effect is created by the stock's wrist coming up to the top of the receiver. A 1/4"-thick black, plastic buttplate is press-fit into the stock, as is the black, plastic grip cap. Both are

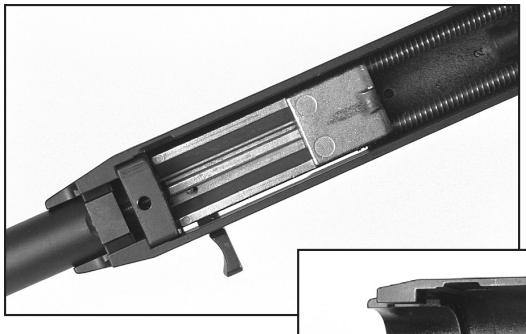
REMINGTON 597

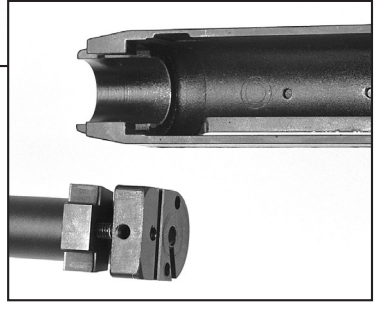
MANUFACTURER: Remington Arms Co., Inc. (Dept. AR), 870 Remington Dr., P.O. Box 700, Madison, NC 27025-0700
MECHANISM TYPE: blowback-operated, semi-automatic rimfire rifle
CALIBER: .22 Long Rifle
OVERALL LENGTH: 38"
BARREL LENGTH: 21"
WEIGHT: 5 lbs., 8 ozs.
MAGAZINE CAPACITY: 10
RIFLING: five-groove; RH 1:16" twist
TRIGGER: single-stage, 6-lb. pull
SIGHTS: ramped front blade with white bead, open rear screw-adjustable for windage and elevation
STOCK: black synthetic: Length of pull, 14"; drop at heel, 2⅜"; drop at comb, 1¼"
PRICE: $159

embellished with Remington logos—an old-style one on the butt and the new script "R" on the grip cap.

A tubular receiver of lightweight alloy with matte black finish is used. A dovetail rail for tip off scope mounts is in the top of the receiver that is also drilled and tapped for a one-piece scope mount sold separately. The one-piece mount takes full-size Weaver-type rings for use with 1" or 30 mm scopes.

Inside the receiver are dual action rails on which the bolt rides. A single extractor is on the right of the bolt and the firing pin strikes at 12 o'clock. A thin steel hook that extends from the trigger housing to the left front of the bolt serves as the ejector.





Inside the black, tubular, alloy receiver are dual action rails on which the bolt rides. Attachment of the barrel to the action is by way of a steel barrel clamp.

Both the magazine housing and trigger assembly are one plastic piece separated by a solid web of plastic. While the assembly appears quite simple, there's a lot more going on in there than meets the eye. Trigger, two-piece trigger bar, sear, skeletonized hammer and hammer spring are the main parts of the trigger assembly. The rear piece of the trigger bar has an upward extension that functions as the disconnector when depressed by the bolt in its rearmost position.

The magazine release is in the front half of the trigger assembly, and is pulled straight back to release the magazine by way of an extension of the release button in the right of the stock. Though the release is positioned with right-handed shooters in mind, left-handed staff members found it convenient to operate.

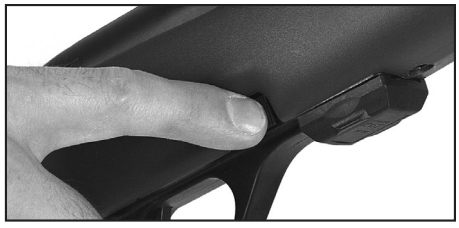
A small, spring-loaded bar on top of the magazine well acts as a bolt hold open device. When an empty magazine is inserted or the magazine runs empty when firing, an extension on the left of the red, plastic magazine follower lifts the bolt hold open into the way of the bolt. Cartridges in the magazine position the follower extension too low to engage the hold open.

Barrel attachment is by way of a clamp. A block at the chamber end of the barrel slides into a cutout on the receiver. The barrel clamp sits in a recess at the front of the rifle's receiver and is connected to the barrel block by an Allen head screw. Tightening the screw draws the barrel forward to clamp it securely between the receiver front and barrel clamp proper.

Sights consist of a ramped front blade with white bead, and square notch rear, screw-adjustable for windage and elevation.

To disassemble the Remington Model 597 for cleaning, begin by ensuring the rifle is unloaded, and all ammunition is removed from the area. Put the safety on, retract the operating handle to engage the hold open feature and remove the magazine. Turn out the front and rear takedown screws at either end of the trigger guard so that the barreled action can be lifted from the stock. Tap out the assembly pin from either side and pull the trigger housing down from the rear and off.

Remove the two set screws from the rear of the receiver and pull the bolt guide rails out. Use care as the action springs are under compression. Pull the operating handle from the bolt, and lift the bolt from the receiver. Do not pull the trigger while the gun is disassembled or the sear position could be upset requiring attention from a gunsmith.



The 10-round-capacity magazine has a wide basepad that is easy to grasp. The magazine release is at the trigger guard's front.

ACCURACY RESULTS

.22 Long Rifle Cartridge	Vel. @15' (f.p.s.)	Smallest (ins.)	Largest (ins.)	Average (ins.)
Federal Hi-Power HP 1A8546	1192 Avg. 15 Sd	0.84	1.40	1.14
Remington Viper TSP T14U1B	1373 Avg. 32 Sd	1.36	1.77	1.40
Winchester Super-X HP 1CK02N	1266 Avg. 19 Sd	1.01	1.77	1.45
Average Extreme Spread				1.33

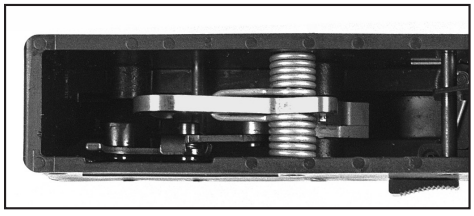
Five consecutive 10-shot groups from 50 yds., fired from sandbags Abbreviations: HP (hollow-point), Sd (standard deviation), TSP (truncated solid-point)

To disassemble the magazine, squeeze its sides, and, keeping the spring-loaded floorplate under control, pull it down and off. No further disassembly is necessary or recommended for routine cleaning and maintenance.

The barrel is easily removable, and thus hints at future accessory barrels. To remove the barrel, begin by removing the bolt and action rails, then turn out the barrel clamp screw, remove the barrel clamp and lift the barrel from the action. Reassembly is in the reverse order.

The Remington Model 597 was equipped with a Bausch & Lomb Elite 4000 6-24X scope and fired for accuracy with the results shown in the accompanying table. Function firing was with Aussie Ammo, CCI Green Tag, PMC Match Rifle, Remington Target, RWS Rifle Match and Sellier & Bellot ammunition. There were several failures to fire limited to the Remington Target ammunition. The Remington Model 597 was also susceptible to rim-over-rim jams unless close attention was given the magazine while loading.

Trigger pull on our sample 597 was on the heavy side, but adequate, and accuracy respectable. Loading the magazine is a little awkward as it must be done with con-



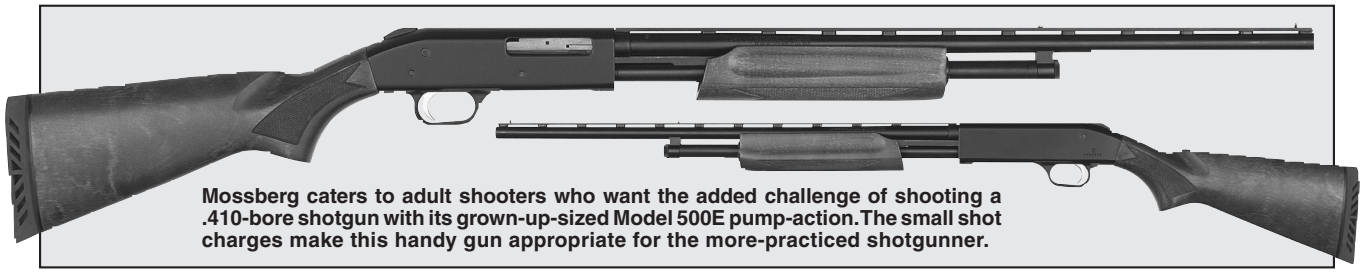
The trigger, two-piece trigger bar, sear, skeletonized hammer and hammer spring are the main parts of the trigger assembly.

sideration for the .22 LR cartridge rims.

The Remington Model 597 is a great improvement over Remington's Viper rimfire autoloader. We asked representatives from Remington if they intended to phase out the Viper. The answer was "no," as the Viper is intended more for the casual plinker while the 597 is geared toward the serious plinker and small game hunter.

The Remington Model 597, then, is the foundation on which Remington's newest line of .22 autoloading rifles is based. It is very reasonably priced, quite accurate and looks and feels like a "real" gun. And since it costs only a few dollars more than the Viper, the Remington Model 597 may very well end up replacing that gun. Further, this gun has the potential to give other maker's .22 rimfire autoloading rifles a good run for the money, too. NRA

MOSSBERG MODEL 500E



Mossberg caters to adult shooters who want the added challenge of shooting a .410-bore shotgun with its grown-up-sized Model 500E pump-action. The small shot charges make this handy gun appropriate for the more-practiced shotgunner.

THOUGH .410-bore shotguns are often mistakenly considered "kids' guns," there are a number of adults who understand that the .410 imposes challenging limits that counter the benefit of low recoil. The most salient limit is the small shot charge that makes this chambering appropriate for the more-practiced shotgunner. Mossberg caters to these challenge seekers with its Model 500E .410-bore pump shotgun. While neither the Mossberg Model 500 nor the .410 version of it is new, it is a gun we consider worthy of a second look in these pages.

This gun fires 2½"and 3" shells, and has a 24" full choke barrel with a ventilated rib having a brass mid-bead and white plastic front bead. It is essentially the same in design as the Mossberg Model 500 shotgun introduced in 1961. However, its receiver is considerably smaller in width and height than that of the 12-ga. Model 500, which makes for a light and compact gun.

In both models, the plastic, thumb-operated slide safety is centrally located on the upper rear of the receiver where it may be operated quickly and easily with the right or left hand. A red dot on the receiver is exposed when the safety is disengaged.

Another favorable feature is that the barrel assembly can be quickly and easily removed without use of tools after turning out the knurled takedown screw from the front of the magazine. This feature facilitates cleaning and transport.

The locking system is simple and strong. A locking block in the breech-bolt engages a shoulder in the upper part of the barrel extension. The trigger is disconnecting so that it must be released and pulled again for each shot—a desirable feature since it prevents inadvertent firing if pressure is kept on the trigger while working the slide.

Except for the lightweight alloy receiver and trigger guard, metal parts are steel with most exposed surfaces blued. The trigger guard is non-reflecting, matte grey-black, and the sides and top of the receiver are shiny black. The top of the receiver is grooved to blend with the grooved ventilated rib. The breech bolt is left in the white.

Proportioned for adult use, the walnut-stained hardwood buttstock and fore-end are gloss finished. Cut checkering at the pistol grip and fore-end is 18 lines per inch. The fore-end is long and wide with a finger groove to afford a good grip. The stock's butt is fitted with a somewhat novel, considering the .410's recoil, 1" ventilated rubber recoil pad.

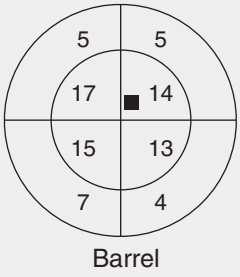
The gun evaluated by

Several popular makes of 2½" and 3" shotshells were used in test firing. The Model 500E shot a little low and to the left, but patterned well, and gave an acceptable account of itself on hand-thrown clay birds.

The plastic, thumb-operated safety is on the upper rear of the receiver where it can be operated fast and easily with the right or left hand. A red dot on the receiver is exposed when the gun's safety is engaged.

MODEL 500E

AVERAGE OF 10 PATTERNS AT 25 YDS.



■ = Point of Hold
Federal Classic Hi-Power
3"-1⅛-4
Pellet count—93

Total Hits	80 (86%)
21.2" Inner Circle	58 (63%)
30" Outer Ring	21 (23%)

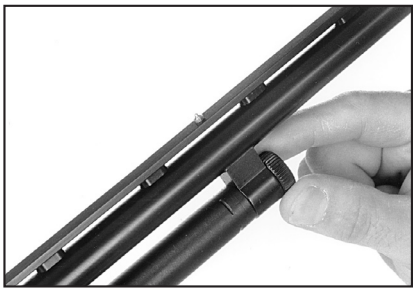
MOSSBERG 500E

MANUFACTURER: O.F. Mossberg & Sons, Inc. (Dept. AR), P.O. Box 497, 7 Grasso Ave., North Haven, CT 06473
MECHANISM TYPE: pump-action shotgun
GAUGE: .410 bore
OVERALL LENGTH: 43⅝"
BARREL LENGTH: 24"
WEIGHT: 6 lbs., 2 ozs.
MAGAZINE CAPACITY: six
TRIGGER: single-stage, 5 ¼ lb. pull
STOCK: American hardwood: length of pull, 14"; drop at heel, 2¼"; drop at comb, 1½"
PRICE: $307

NRA shows good workmanship and finish overall though the gun suffers from its wooden surfaces standing appreciably higher than its metal surfaces at the wrist—a trend with almost all major manufacturers. It operates smoothly and handles well.

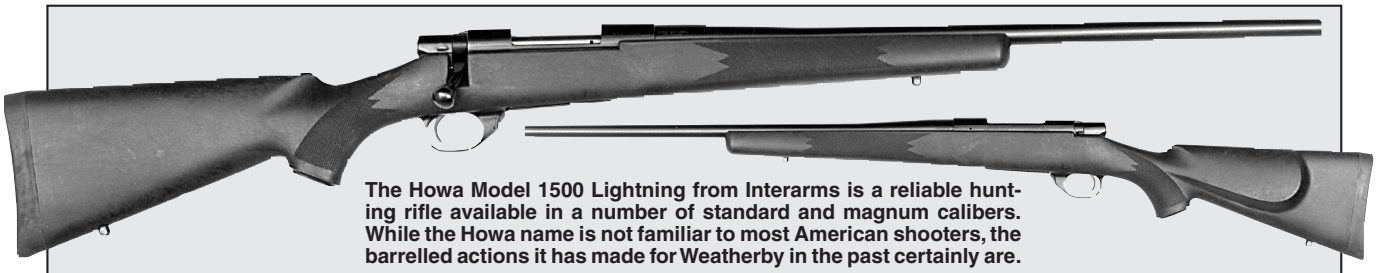
Several popular makes of 2½" and 3" factory shells were used in the firing tests. The gun shot low and to the left but patterned well, and gave an acceptable account of itself on hand-thrown clay birds. There were, however, occasional failures to eject restricted to 3" Remington field loads. Single-loaded Federal 2½" shells occasionally got hung up between the 500E's lifter and the breech bolt. Functioning was otherwise satisfactory.

By removing the recoil pad to shorten the length of pull, the Mossberg Model 500E .410 shotgun is suitable for small shooters. For fast-moving targets and game, the .410 is perhaps best left to expert shots, and even then, the full choke and pump action make it unsuitable for most of us in fast games like skeet. This gun is perhaps best suited for hunting game like squirrel, and shooters who, by physical limitations, need a .410, or by desire, want the added challenge. NRA



One favorable feature is that the entire Model 500E barrel assembly can be quickly and easily removed without use of tools, after turning out the knurled takedown screw from the front of the gun's magazine.

HOWA LIGHTNING



The Howa Model 1500 Lightning from Interarms is a reliable hunting rifle available in a number of standard and magnum calibers. While the Howa name is not familiar to most American shooters, the barrelled actions it has made for Weatherby in the past certainly are.

THOUGH the Howa name is not well-known to American shooters, its products certainly are. Perhaps the best-known products to come from the Howa factory were the barreled actions for the Weatherby Mark V and Vanguard series rifles. However, the last Howa rifle we reviewed (Dec. 1979, p. 58), was a Model 1500, imported by Smith & Wesson. Now Interarms, of Alexandria, Virginia, has taken up the Howa line, with a new rifle called the Model 1500 Lightning.

The Lightnings's most distinctive features center around its bolt. While most bolts have the extractor and ejector on opposite sides of the bolt head, the Lightning's are next to each other at the eight and 10 o'clock positions on the closed bolt. The left bolt lug rides in a conventional raceway cut into the receiver, but a slot cut in the right locking lug rides on the right siderail of the receiver to help guide its movement. The bolt head and chamber end of the barrel are counterbored. Another unusual feature is the two-stage cocking. Cocking is primarily accomplished during the 60° opening of the bolt, but is finished as the bolt is closed. When cocked, the cocking piece protrudes slightly from the rear of the bolt shroud providing both visual and tactile evidence that the gun is cocked.

The integral magazine has a hinged steel floorplate that is opened by depressing a latch on the front of the 1500's trigger guard.

The trigger-blocking two-position safety is on the right side of the receiver just behind the bolt handle. The forward position is "fire," the rearward position is "safe." The Lightning has no markings of any kind on the rifle to indicate the status of the safety.

A bolt stop rises from the left side of the trigger assembly and into the raceway of the left bolt lug. Depressing the serrated button on the left side of the receiver lowers the stop so the bolt may be withdrawn from the rear of the receiver.

The integral magazine has a hinged steel floorplate that is opened by depressing a latch on the front of the trigger guard. The magazine box is not formed to retain the follower or guide feeding as those functions

ACCURACY RESULTS

.243 Win. Cartridge	Vel. @15' (f.p.s.)	Smallest (ins.)	Largest (ins.)	Average (ins.)
PMC 243VA 85-gr. HPBT	3116 Avg. 17 Sd	2.00	2.54	2.21
Speer Nitrex 24500 100-gr. GS	2605 Avg. 32 Sd	1.53	2.54	2.13
Winchester S243W100 100-gr. BTSP	2682 Avg. 13 Sd	2.36	3.36	2.74
Average Extreme Spread				2.36

Five consecutive five-shot groups from 100 yds., fired from sandbags Abbreviations: Sd (standard deviation), BTSP (boattail soft-point), HPBT (hollow-point boattail), GS (Grand Slam).

HOWA LIGHTNING

MANUFACTURER: Howa Machinery, Ltd., Sukaguchi, Shinkawa-cho, Nishikasugai-gun, Aichi-Ken, 452 Japan
IMPORTER: Interarms (Dept. AR), 10 Prince St., Alexandria, VA 22313
MECHANISM TYPE: bolt-action rifle
CALIBER: .223 Rem., .22-250 Rem., .243 Win.(tested), .270 Win., .308 Win., .30-'06 Spr., 7 mm Rem. Mag., .300 Win. Mag., .338 Win. Mag.
OVERALL LENGTH: 42"
BARREL LENGTH: 22"
WEIGHT: 7 lbs., 11 ozs.
MAGAZINE CAPACITY: five (four in Magnums)
RIFLING: six-groove, 1:10" RH twist
TRIGGER: single stage, 4-lb. pull
SIGHTS: none
STOCK: Black synthetic: length of pull, 13½"; drop at heel, 1¼"; drop at comb, 1"
ACCESSORIES: sling swivel studs
PRICE: $425 ($445 Magnums)

are performed by the receiver. The trigger guard and floorplate housing are made as a one-piece, nonferrous casting with a black epoxy paint finish.

Two slotted action screws secure the barreled action to the black synthetic stock—one behind the trigger guard and at the front of the floorplate. The otherwise hollow forend is solid at the tip where considerable upward pressure is maintained on the barrel. There is no bedding material as the stock is molded to precisely fit the action where bedding material is normally used.

The stock has a straight comb with cheek piece and comes equipped with sling swivel studs and a 3/4" thick, solid, black rubber recoil pad. The checkering is molded to stand out from the surface, rather than being pressed in.

Both the receiver and barrel are polished and well-blued, but the barrel has a slight matte look to it while the receiver is noticeably more glossy with a slight plum hue.

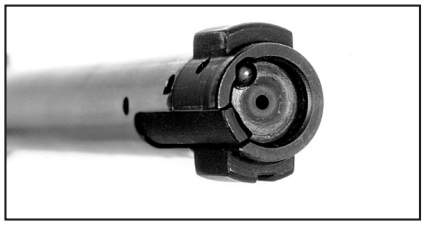
Ruptured cases and pierced primers are not as great a concern as they have been in the past, but the Howa Lightning is equipped to handle either. To handle a pierced primer, three gas escape holes are in the body of the bolt. When the bolt is in the closed position, the holes face down into the magazine to direct gas in that direction. In the event of a ruptured case, gas is vented through a small hole in the left side of the receiver ring.

Overall, our five-shot groups suggest that the accuracy is mediocre at best. However, many of the groups put three shots under 1½", and this sample rifle shot much better than Howas we have previously tested.

There is no gas shield on the bolt sleeve.

The Howa Model 1500 Lightning was equipped with a Redfield Five Star scope in 1" Weaver rings on Weaver No. 35 and 36 bases and fired for accuracy at 100 yds. with the results shown in the accompanying table. Function firing was with Federal, PMC and Hornady ammunition. There were no malfunctions of any kind and the unusual extractor/ejector configuration threw cases out and back with authority.

Overall, our five-shot groups suggest that the accuracy of the Howa Lightning is mediocre at best, especially for long-range use on varmints. However, many of the



Unlike most bolt-actions, the Howa has its extractor and ejector next to each other at the eight o'clock and 10 o'clock positions.

groups put three shots under 1½", and one group with Winchester ammunition put three shots into 0.30". Further, accuracy with the current Howa rifle we tested bettered that of the Howa from Smith & Wesson we previously tested by almost 1/2". We were unable to determine a correlation between bullet weight and rifling rate of twist with regard to accuracy, as the Howa handled all bullet weights with similar accuracy.

While the design of the Lightning retains most of the features of the Model 1500 S&W imported in the '70s, the addition of the synthetic stock and the notable improvement in accuracy make this gun worth a close look.

Cocking is primarily accomplished during the opening of the bolt, and is completed as the bolt is closed. When cocked, the cocking piece protrudes rearward slightly.

REDFIELD 8-32X TARGET SCOPE

AFTER years of cataloguing no scope sights specifically intended for target shooting, Redfield has reentered the competitive fray with its new 8-32X Target model. Incorporating all the features a shooter needs for benchrest, conventional target or silhouette shooting, the scope is available with a variety of reticles including a plex design or fine crosshairs with a choice of 1/4- or 1/2-minute dots. Nominal dot size is stated at 32X. At lower power settings reticle subtention increases proportionally, as the reticle does not change size along with the target image. The 1/4-minute dot at 32X thus becomes a one-minute dot at 8X.

Our sample Redfield Target model has a

The Redfield 8-32X Target scope's lengthy sections of main tube fore and aft of the adjustment saddle afford considerable leeway in positioning the scope on most rifles with reasonably spaced mount rings.

1/4-minute dot reticle and a glossy black anodized finish (matte versions are also available). Overall length is 16.4", further elongated by the addition of a 4"-long optional screw-in lens shade. Weight is 16.1 ozs. Outside diameter of the objective bell is 2.08", with a useful lens diameter of 40 mm. Outside diameter of the ocular is 1.53". The main tube between objective and ocular is the standard 1" diameter, with 8" separating the front and rear flared portions. The one-piece tube is made of aircraft-grade aluminum alloy.

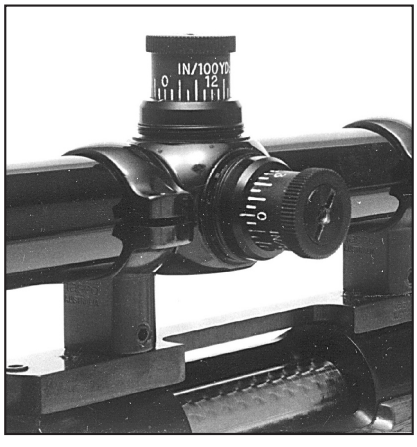
The focusing collar of the Redfield 8-32X Target scope's objective is calibrated in yards (white numerals) and meters (green numbers), with silhouette-target distances indicated as well as common round-number yardages. Minimum marked focusing distance is 40 meters, but our sample actually focused down closer to about 30 meters. Marked distances correlated well with best visual focus obtained when sighting on a variety of smallbore and highpower silhouette targets. The focusing collar moved smoothly but required moderate effort to turn. It would be extremely unlikely to shift accidently from the desired setting.

At the eyepiece end of the scope, an eyeglass-friendly rubbery rim trims the ocular. A narrow ridged lock ring secures the eyepiece setting after the user focuses for optimum reticle sharpness. A broader ridged zoom-control collar is marked with white numerals indicating magnifications from 8 to 32X. The collar turns smoothly but requires a firm touch.

The adjustment saddle is located slightly aft of the midpoint of the main tube. Relatively long segments of unobstructed tube ahead of and behind the saddle facilitate positioning the scope appropriately in almost any reasonably spaced pair of mount rings. Screw-on covers that seat against soft sealing rings protect the elevation and windage adjustment drums. The target-style drums are click-stopped at 1/4- minute intervals, with white-line markers at 1/2- and one-minute intervals. One user found it offputting to deal with a calibration system that often left the desired setting indexed between two hashmarks. The elevation drum is numbered to count up from "0" through a complete rotation. The windage drum is numbered to count up from "0" either side for 1/2 a turn. This makes it easy to return to "0" after a minor windage correction but may be confusing after a major twiddle of the drum. Scope specifications call for a potentially constricting 30 minutes of internal adjustment. Our sample provided 28 minutes of vertical movement and approximately 32 of windage.

Other scope specifications are eye relief of 3", exit pupil ranging from 1.25 to 5 mm depending on the magnification selected, and 100-yd. field of view from 3.4 to 13.3', again depending on magnification. Lenses are multi-layer coated to control flare and enhance light transmission, and the instrument is sealed to prevent leaking and fogging. We water- tested the scope by hot-tubbing it for 10 minutes in water at 110ºF. No nitrogen bubbles escaped and later examination revealed no sign of internal fogging or moisture infiltration. Our sample scope was perfectly sealed.

For field-testing we mounted the Redfield 8-32X Target scope on a Remington Model 700 Varmint rifle chambered for the .223 Rem. cartridge. During initial sight-in we liked the positive click detentes of the adjustment knobs, which provided reassuring tactile and audible feedback. The scope features "Quick-Zero" adjustment knobs for convenient



Elevation and windage knobs on the Redfield are click-stopped at 1/4-minute intervals although drum scales are marked only at 1/2-minute intervals, so some settings fall between the hashmarks. Adjustment precision and predictability of the scope proved excellent in field tests.

zeroing of elevation and windage scales. Simply pull the knob outward against spring tension until it is clear of the detent mechanism and can rotate freely. While maintaining outward resistance to the spring, turn the knob to align its "0" with the index dot on the turret saddle, then relax your grip and allow the spring to pull the adjustment knob back into engagement with the detent mechanism. That's all it takes and it's easier done than said.

We checked adjustment integrity at 100 yds., firing from sandbags on a stable shooting bench. We began with a three-shot group fired at the center of the target with the scope's magnification at 32X. We fired another group after adding 12 clicks of elevation and left windage, using the same aiming reference. Additional groups were shot following 24-click adjustments down, right, then up, resulting in a pattern consisting of a central group amid four outer groups designating the corners of an imaginary square. A final adjustment of 12 clicks left and down restored the initial sight setting before shooting the last group of three rounds. The first and last groups were perfectly superimposed, indicating precise return to zero. The corner groups were 6" apart and showed perfect vertical and horizontal alignment. Precision and predictability of the elevation and windage adjustments could not have been better. With a fresh target in place, we fired a centered three-shot group at the scope's 32X setting, then reduced magnification to 8X and fired another three rounds. They joined the same group formed at 32X, demonstrating that the scope did not shift the center of impact after a major power change.

Optically, the Redfield 8-32X Target scope yielded mixed results. It produced a clean, crisp, contrast image across the field from 8X to about 20X. At higher magnifications contrast and sharpness fell off perceptibly, but not to a degree that would impede successful use. We detected no distortion and the viewing image was neutral in tone, with no noticeable color cast. The reticle was well executed and struck a nice balance between refinement and visibility.

Cosmetically, our scope had a flawless high-gloss black finish that emerged from field-testing without a trace of wear. It is likely to stand up well even to the rigors of frequent competition. Shooters with a yen for something more fashion-forward than basic black can, for a modest surcharge, special-order a scope anodized with any one of 10 fairly flamboyant colors. For detailed information about this option, contact Redfield directly or ask your dealer to do so.

The scope was supplied with a fleece-lined fabric carrying case that will probably please the shooter who frequently removes the scope from a rifle that does double duty in iron-sight matches. It will probably mystify the shooter who mounts the scope once and never removes it except under the direst circumstances. Also included was a pair of plastic flip-open front and rear lens covers. We removed them after finding that the front assembly was a tad too large to fit properly on the accessory lens shade. We consider lens shades indispensable when available. The scope is also covered by a lifetime limited warranty.

On balance the new Redfield 8-32X Target scope is a noteworthy addition to the thinly populated ranks of American-made optical sights designed with the serious competitive shooter in mind. And it's the only one we know of that offers the option of making a fashion statement while shooting a match.

Available from: Redfield, Inc. (Dept. AR), 5800 E. Jewell Ave., Denver, CO 80224. Approximate retail price: $550.00 (varies with reticle and finish options).