

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 SIG PRO SP2340



The new Sig Pro SP2340, chambered in .357 SIG and .40 S&W Auto, represents Sigarms' commitment to innovative products at competitive prices. Shooters liked the "elastic" feel of the composite frame.



The Sig Pro has twelve angular grasping grooves on each side of the slide. A decocker and slide release are on the left.

detachable, carbon steel rails in the frame that can be replaced easily should they become worn or broken.

The frame of the Sig Pro SP2340 is molded in Switzerland of black composite with a matte finish and integral grooves on the frontstrap and front of the trigger guard to aid in gripping. Rails are molded into the lower front of the frame for mounting accessories such as a laser or white light. The serial number is laser-engraved on a small piece of steel molded into the lower front of the frame between the laser/light rails. The separately molded grip unit slides onto the magazine well. All internal parts are steel and are held in place by pins.

The one-piece, stainless steel slide is CNC-machined in New Hampshire then coated with a semi-matte black finish to match the frame. Twelve angled finger grooves are cut into each side of the rear surface of the slide to allow gripping while the front sides of the slide are relieved to reduce weight. All edges of the slide are dehorned to reduce snags. In similar manner to previous Sigarms pistols, the muzzle of the barrel mates directly to the slide without a bushing. Both front and rear sights are mounted in dovetails on top of the slide. Front and rear sights of various heights are offered to enable the shooter to bring the impact of the bullets to the aim point. Movement and/or removal of front or rear sights, however, is best accomplished with the optional sight-pushing tool.

SIGARMS' first venture into the realm of molded, composite-frame handguns began in 1988 with the introduction of the Hammerli 280 target pistol. That successful design enabled Sigarms to gain invaluable experience in debugging the manufacture of such products before moving forward with new designs. Building on this experience, the firm has introduced the new Sig Pro SP2340 pistol with a molded, composite frame. Intended for military, police, defensive and sporting uses, the

SP2340 is a modern, semi-automatic, short-recoil operated pistol chambered for .357 SIG or .40 S&W Auto. We received an SP2340 in .357 SIG caliber for testing.

Although thoroughly conventional in outward appearance, the semi-automatic Sig Pro SP2340 pistol offers a number of interesting internal features. One is a removable, one-piece, integral fire-control assembly that enables the pistol to quickly and easily be converted from double-action/single-action to double-action-only trigger operation.

Another feature is a readily detachable grip unit that enables the shooter to change grip types as needed. Yet another interesting feature is the use of



Low maintenance and easy takedown were major design considerations of the new SP2340 pistol. The composite frame, stainless steel slide and internal slide rails require little maintenance beyond occasional cleaning.

SIG PRO SP2340

MANUFACTURER: Sig-Sauer GmbH, Sauerstrasse 2-6, D-24340 Eckernforde, Germany

IMPORTER: Sigarms, Inc. (Dept. AR), Corporate Park, Exeter, NH 03833

MECHANISM TYPE: recoil-operated, double-action/single-action or double-action-only, semi-automatic pistol

CALIBER: .357 SIG (tested), .40 S&W Auto

OVERALL LENGTH: 7"

BARREL LENGTH: 3 3/4"

WEIGHT: 31 1/2 ozs.

WIDTH: 1 1/2"

HEIGHT: 5 1/2"

MAGAZINE CAPACITY: 10 (12 for law enforcement)

RIFLING: six grooves, RH twist

TRIGGER: 5 lbs. single-action pull, 10 lbs. double-action pull

SIGHTS: low profile, combat type; blade front with white dot; notch rear with white bar, drift adjustable for windage

ACCESSORIES: extra magazine; extra grip unit; detachable trigger lock; black plastic carry case

SUGGESTED RETAIL PRICE: \$596 (\$655 with Siglite night sights)

Barrels for the SP2340 are hammer-forged with six conventional lands and grooves having a right-hand twist. The caliber of the barrel and a proof mark are stamped on the right side of the chamber so as to be visible when the slide is in battery. Unlike other Sigarms pistols, the exteriors of SP2340 barrels are blued and not polished. Another new feature for Sigarms is a flat recoil spring attached to a full-length, composite guide rod, which replaces the multi-strand coil units and metal rods of the past. The barrel is cut with a fixed camming surface in the lug, which pivots the barrel vertically for locking in similar fashion to previous SIG pistols. Conversion of the SP2340 from .357 SIG to .40 S&W Auto or vice-versa requires only a new barrel. These are available from Sigarms at extra cost. SP2340 pistols are assembled in Germany.

Safety was a major design focus of the Sig Pro SP2340 pistol. A four-point safety system includes: a patented, automatic firing pin lock; a decocking lever (DA/SA

only); a safety intercept notch on the sear; and a disconnect.

The slide is held open after the last shot has been fired.

There is no magazine safety. It may be

The fire-control unit of the Sig Pro SP2340 is easily removable enabling fast conversion from double-action/single-action to double-action-only mode.

safely carried with a round in the chamber and the hammer down provided the hammer is lowered by the decocking lever.

Ergonomics also played a major factor in design of the Sig Pro SP2340 pistol. Addressing the age-old complaints regarding grip size or type, Sigarms incorporated interchangeable grip units using the same 11 degree grip angle as previous Sigarms pistols. SP2340 owners can choose between a conventional grip of stippled, black composite and a soft rubber grip unit—both of

Unlike other pistols with molded, composite frames, the Sig Pro SP2340 has steel guide rail units pinned into position. They can be readily replaced if worn.

which come standard with the pistol. The magazine release button is ambidextrous and the frame-mounted decocking lever is easy to reach even by small-handed shooters. The trigger guard bow is recurved for better purchase and the sights are low-profile with high visibility white dots and a bar.

Low maintenance was another key consideration in the design of the Sig Pro SP2340. The composite frame and stainless steel slide require little or no maintenance beyond an occasional cleaning as the slide rails are internal to keep out dirt. Should the frame rails or fire-control unit become worn or broken, they are easily replaceable.

In general size and appearance, the Sig Pro SP2340 reminds one of the P229 pistol. Dimensions and operation are nearly identical. One important difference, however, is that the SP2340 is nearly one ounce lighter, but with a more central balance biased toward the top that imparts a solid feeling to the gun. This is due to the lower weight of the composite frame that shifts the center of gravity upward. Another important difference is that the suggested retail of the SP2340 is nearly \$200 less than that of the P229.

The composite frame and interchangeable grip units remain virtually invisible to the user. Nonetheless, the higher center of

gravity and balance closer to the grip center will be readily evident to SIG owners.

We fired several hundred rounds of various brands to test functional reliability followed by accuracy tests in our usual manner. The .357 SIG cartridge has earned an enviable reputation for accuracy and functional reliability which the SP2340 upholds.

We found functioning flawless, accuracy good and perceived recoil manageable. Shooters gave high marks to the sights and conventional stocks. Most noted that while the soft rubber grip unit provided a more secure grip, it seemed to do little to reduce perceived recoil. High marks also were given to the accessible location of the decocking lever, slide release lever and ambidextrous safety button. Workmanship was up to SIG's usual high standard.

We found the trigger had a considerable amount of take-up in the single action mode followed by minimum stacking and a crisp letoff with almost no overtravel. Double action trigger pulls were characterized by considerable take-up and travel with mild stacking and a crisp letoff. While shooters liked the low stacking and crisp letoffs, the excessive amount of take-up was not



The Sig Pro pistol is reminiscent of the P229 in outline and general operation, but the polymer-framed gun weighs one oz. less.

popular. The position of the trigger guard where it joins the front strap of the frame also received minor criticism. Many shooters felt the trigger guard curve was uncomfortable at this point and suggested a flatter, higher recurve to provide more finger clearance and lower the bore axis.

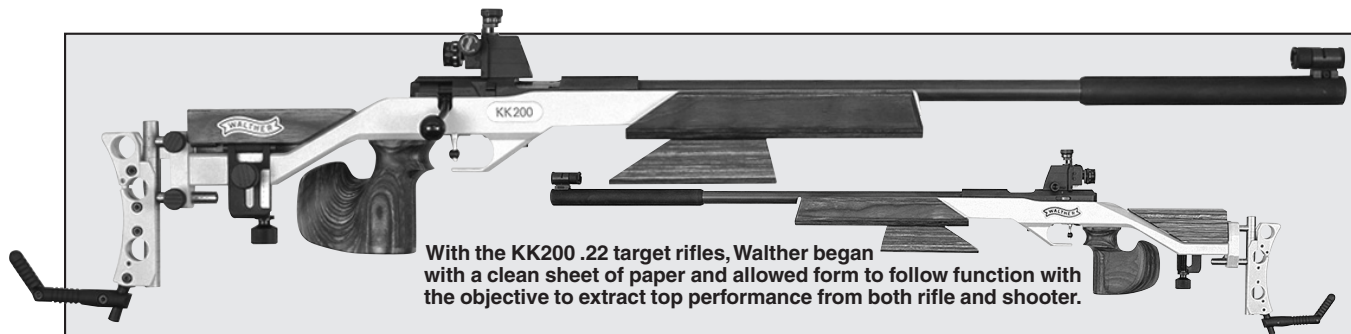
Shooters used to SIGs with metal frames commented on the difference in perceived recoil characteristics of the composite-frame SP2340 citing a more "elastic" feeling.

With the Sig Pro SP2340 pistol, Sigarms has entered a new era. It has signaled its commitment to provide innovative, high-quality products at competitive prices using its considerable expertise in a number of technical disciplines to keep down costs. In the SP2340, Sigarms is off to a good start. **NRB**

ACCURACY RESULTS

.357 SIG Cartridge	Vel. @15' (f.p.s.)	Smallest (ins.)	Largest (ins.)	Average (ins.)
Speer 23918 125-gr JHP	1321 Avg. 15 Sd	1.55	2.99	2.86
Triton TR357SHVB 115-gr JHP	1288 Avg. 35 Sd	2.28	3.01	2.56
Federal P357S1 125-gr JHP	1302 Avg. 18 Sd	2.09	2.92	2.49
Average Extreme Spread				2.63
Five consecutive five-shot groups from 25 yds. fired from sandbags. Abbreviations: Sd (standard deviation), JHP (jacketed hollow point)				

WALTHER KK200PM TARGET



With the KK200 .22 target rifles, Walther began with a clean sheet of paper and allowed form to follow function with the objective to extract top performance from both rifle and shooter.

A quality match rifle both challenges and supports the shooter. The reliability and consistency of such a rifle build shooter confidence while its superior accuracy challenges the shooter to improve his or her skills. Recognizing this, Walther began with a clean sheet of paper in designing its new generation KK200 series target rifles. Three different models are offered: the KK200 Standard with a right- or left-hand wood stock, the KK200 Sport with a

right- or left-hand aluminum stock for female shooters and the KK200PM (Precision Match) with a right-hand aluminum stock. We tested an example of the latter version.

Recognizing that most potential customers prefer a complete package, Walther wisely included two of its most popular accessory items in the KK200PM set—a precision .05 to 3 mm variable-iris Walther micrometer rear sight with five colored filters and a detachable muzzle tube that extends the sight radius nearly 8". Additional standard accessories include:

features full-length grooves with numbered marks on the rear bridge for mounting iron or optical sights. The barrel is clamped in the split front action ring with three horizontal socket-head bolts. In turn, the action is bedded to the metal stock and held with three vertical, unequal-length, socket-head bolts. The brightly polished bolt has a 60 degree throw, extractors at two o'clock and 10 o'clock, and a single lug that locks at the rear. The bolt handle is bent and capped with a smooth, black-plastic knob. A sliding manual safety is located on the right side of the receiver, and a pivoting bolt release button is on the left. Due consideration has been given to keeping lock time fast by limiting firing pin weight and travel.

The free-floating, carbon-steel barrel is rifled with eight conventional lands and grooves in a right-hand twist. Actual barrel length is 24 1/4"; however, the anodized-aluminum front sight extension tube gives the appearance of a much longer barrel. The tube can be moved back or forth on the barrel and is secured by two small lock screws that engage depressions in the barrel surface. The tube has dovetail grooves cut into the upper surface on which the front sight can be mounted. Grooves cut into the bottom surface of the tube serve to mount balance weights.

The backbone of the KK200PM is an anodized-aluminum stock with a matte-silver finish and a laminated-wood fore-end, pistol grip and cheek piece. Ergonomics played a key role in designing the KK200PM, and the stock can be adjusted to suit a shooter of nearly any physical size in



Accessories for the KK200PM include: three Allen wrenches, a screwdriver, a combination tool, six front sight apertures, a standing block, a hook for the buttplate and a locking, luggage-style, carry case.

three Allen wrenches, a screwdriver, a combination tool, six front sight apertures, a standing block for the fore-end, a detachable hook for the buttstock and a lockable, hard carry case. All this is backed by a one-year warranty against defects in materials and workmanship. Champion's Choice will be the U.S. service center for Walther target rifles with factory-trained repair specialists and a full inventory of optional accessories and parts. Optional, extra-cost accessories include different front and rear sights, palm-rest mounts, balance weights and iron-sight height extensions.

At the heart of the new KK200PM rifle is the Walther turn-bolt, single-shot, rim-fire action. Made of blued carbon steel, it



The new KK200's turn-bolt, single-shot action features a flat bottom, carbon steel receiver. The barrel is clamped in place by three socket-head bolts on the right side.

WALTHER KK200PM

MANUFACTURER: Carl Walther GmbH
Sportwaffen, Postfach 2740, D-59717
Arnsberg, Germany

IMPORTER: Champion's Choice, Inc.
(Dept. AR), 201 International Blvd.,
LaVergne, TN 37086

MECHANISM TYPE: bolt-action, single-shot, rimfire rifle

CALIBER: .22 Long Rifle

OVERALL LENGTH: 43" (without muzzle extension tube or buttplate hook)

BARREL LENGTH: 24 1/4" (actual), 32" (with maximum tube extension)

WEIGHT: 12 1/2 lbs.

RIFLING: eight groove, RH twist

TRIGGER: match type, two-stage, adjustable for length, slack, sear engagement, pull weight and position; pull weight adjustable from 2.46 to 4.57 ozs.

SIGHTS: front: iris aperture globe with interchangeable inserts on grooved muzzle extension tube, rear: Walther adjustable micrometer (0.5-3mm) iris disc with five colored glass filters on click-adjustable precision mount

STOCK: aluminum with adjustable, laminated wood fore-end, cheekpiece and pistol grip; length of pull, 12 1/4" to 14 1/4", drop at comb, 1/4 to 1 1/4"; drop at heel 5 1/4" of adjustment possible

ACCESSORIES: three Allen wrenches, screwdriver, combination tool, standing block, buttplate hook, front and rear sights, six front sight aperture inserts, front sight extension tube, lockable hard carry case

SUGGESTED RETAIL PRICE: KK200 Standard (wood stock) \$1,800, KK200 Sport (ladies model) \$2,550, KK200PM (tested) \$2,750



Walther believes customers prefer a complete package. The KK200PM comes with a variable-iris disc rear sight with five colored filters and a muzzle extension tube.

any shooting position. For example, the fore-end offers nearly 4" of forward or backward movement along the stock and features a full-length metal rail inletted into the bottom for mounting a palm rest, hand stop or standing block. The stippled pistol grip can be moved forward or backward and can be tilted; it comes in three different sizes. The aluminum buttplate has 5¼" of vertical movement, 2" of adjustable pull and 15 degrees of left or right pivot. The buttplate also has both a movable bottom hook and a tilting top piece. The cheek-piece enables the shooter to vary the drop at the comb from 1/4" to 1⅜" and can be tilted approximately 90 degrees to suit shooter preference. Both the butt plate and the cheekpiece feature marked and numbered adjustment scales with large, finger-knob adjustment screws.

The Walther two-stage target trigger is adjustable for length, slack and sear engagement. Pull weight is also adjustable from 2.46 to 4.57 ozs., and the trigger itself can be moved forward, backward or tilted as the shooter desires. Many shooters will question the starkly vertical, threaded trigger; however a swiveling plastic finger button that can be moved up or down on the threads serves admirably to replace the curved trigger bow beloved by traditionalists. The trigger guard is integral with the frame, but partially cut away at the rear to facilitate access and clearance for the pistol grip.

While some traditionalists may not favor

the racy, modern looks of the Walther KK200PM, younger shooters will easily accept it in the spirit of form following function. In fact, sound technical reasons dominate nearly every feature of the rifle, optimizing it for the sole purpose of extracting maximum performance from both machine and user. For example, the aluminum backbone is strong yet light, requires no maintenance and never needs re-bedding. The buttstock, fore-end and pistol grip can be adjusted to fit nearly any size shooter and can be optimized for any shooting position. The precision rear sight contains a variable iris, five colored filters and click adjustment knobs in addition to being mounted on a rail, which enables the shooter to position the sight exactly where needed. The grooved front sight extension tube enables the user to increase the sight radius dramatically to improve accuracy.



The radical looking stock may be adjusted to fit a shooter of nearly any physical size or shape in virtually any shooting position.

A careful examination of the KK200PM reveals a very high standard of workmanship throughout. There was a refreshing absence of tool marks even in the places most people never look. The medium-polish blue finish on the barrel is non-reflective, serviceable and evenly applied.

In setting up the rifle for firing, we found all adjustments easy to set and, most importantly, easy to reset using the numbered marks. With so many possible adjustments, a comfortable shooting position was easy to achieve, which reduced fatigue. Operation of the bolt, safety and bolt release fell readily to hand. Most shooters will like the precision Walther rear sight.

The click adjustments were firm and crisp with almost no backlash, which eliminated the need for backtracking. We do have one small complaint in this area. The vertical adjustment knob on the rear sight is labeled "T" and "H," which is confusing for non-German speakers. Such labeling increases the likelihood of a mistake on the firing line; English labels would be helpful. This prob-



The KK200PM's backbone is an anodized, aluminum stock that offers strength and light weight plus never needs rebedding.

lem does not exist with the windage due to the happy coincidence that "L" (links in German) means "left" and "R" (rechts in German means "right").

A precision target rifle deserves a diet of match-grade ammunition to demonstrate its full potential. Accordingly, we tested the Walther KK200PM rifle with match-grade .22 Long Rifle ammunition from Eley (Tenex), RWS (R50), Lapua (Dominator), Federal (Gold Medal), and Fiocchi (Match). Walther guarantees minimum extreme spread, center-to-center, five-shot groups at 50 meters averaging 0.630" or less. In practice, we found that level of performance easy to obtain. In fact, we found average group sizes of approximately half that were readily obtainable. The results are summarized in the accompanying table to which we can only add that the numbers were obtained without once cleaning the barrel!

The KK200PM fired every ammunition brand well. We even fired two composite, five-shot groups at 50 yds. using one round from each brand. The results: two, small groups averaging 0.470" extreme spread. In practical terms, this means the rifle is easily and reliably capable of firing a possible score in any type of national or international rimfire position competition.

In designing and building the KK200 rifles, Walther has demonstrated a strong commitment to competitive shooting. At the same time, it has moved the technical benchmark forward while offering real value for the price. This enables younger shooters and shooters on a tight budget to step up to top performance equipment sooner in order to concentrate on skills development and not equipment limitations. Other rifles with similar features and performance cost significantly more.



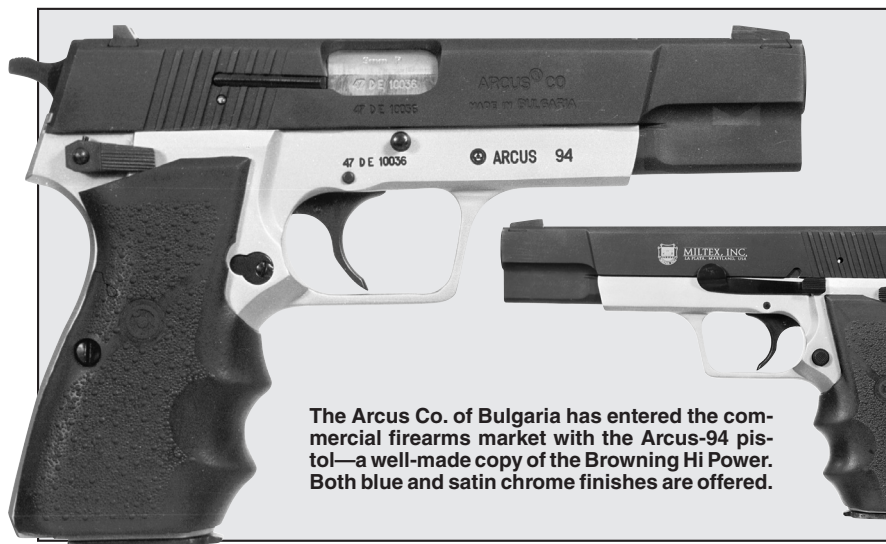
ACCURACY RESULTS

.22 Long Rifle Cartridge	Vel. @ 15' (f.p.s.)	Smallest (ins.)	Largest (ins.)	Average (ins.)
Eley Tenex 40-gr. Lead	1030 Avg. 12 Sd	0.20	0.39	0.32
RWS R50 40-gr. Lead	1038 Avg. 11 Sd	0.14	0.47	0.32
Lapua Dominator 40-gr. Lead	1044 Avg. 15 Sd	0.28	0.44	0.40
Average Extreme Spread				0.35
Five consecutive 10-shot groups from 50 yds. fired from sandbags. Abbreviations: Sd (standard deviation)				



The KK200PM proved easily capable of firing possible scores for all types of national and international .22 position competition.

ARCUS-94 PISTOL



The Arcus Co. of Bulgaria has entered the commercial firearms market with the Arcus-94 pistol—a well-made copy of the Browning Hi Power. Both blue and satin chrome finishes are offered.

WHEN the Cold War ended, the new democratic government of Bulgaria challenged the state arms factories to partially privatize, develop commercial products and become profitable or face permanent closure. A new company named Arcus was the result. Although commercial marketing skills were scarce, Arcus had two things going for it—quality manufacture and low-cost labor. Based on these two factors, a small beginning in the commercial market has been made using the Makarov pistol chambered for .380 ACP and the Arcus-94 pistol in 9 mm Luger. We received an example of the latter for testing.

Imported by Miltex, Inc., of La Plata, Maryland, the Arcus-94 pistol is a well-

made copy of the seminal Browning Hi Power pistol. One model in two different finishes is on offer—blue or satin chrome with a blue slide and levers. Both models come with two, 10-round, double-column magazines, a separate trigger lock, a cleaning rod and a padded, lockable, plastic case. In conformance with federal regulations, only 10-round magazines are available, although higher capacity, pre-ban magazines suitable for the Browning Hi Power should also fit the Arcus-94.

Traditionalists will be pleased to learn that the Arcus-94 features forged-steel construction throughout, even in the hammer, trigger and safety levers. There is no barrel bushing and the pivoting link is attached to the recoil spring guide rod. Locking is standard Browning with two semi-circular lugs atop the barrel that cam upward to engage locking recesses in the top of the slide. Operation is by short-recoil with a single-strand, steel recoil spring and single-action fire control. Chambered for the 9 mm Luger cartridge, the Arcus-94 should *not* be fired with +P, +P+ or 9 mm NATO ammunition.

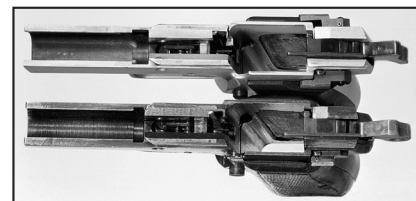


The Arcus-94 has ambidextrous safety levers. The slide stop and magazine release button are not reversible for lefties.

Safety systems include a disconnecter, a spring-retracted firing pin, a half-cock notch on the sear, a magazine disconnect safety and a manual safety. In addition, the slide remains open after the last shot has been fired. There is no automatic firing pin safety, decocking lever or grip safety. When the magazine release button is pressed and the magazine partially drops down, the gun can still be fired as the magazine safety does not disengage until the magazine has been completely withdrawn.

All control levers are blued and the trigger has a smooth front face. The magazine release button is in the classic position on the left side of the frame just behind the trigger and is not ambidextrous. There are two, frame-mounted safety levers—one on each side. When the magazine release button is pressed, empty or loaded magazines drop down about half an inch, but do not fall free. There are seven angled grasping grooves cut into the rear surface of the slide.

Both front and rear sights are high-visibility, low-profile combat types mounted in dovetail cuts in the top of the slide. The rear



A comparison of the Arcus-94 pistol (top) with a Browning Hi Power shows the careful attention to detail maintained in the Arcus, which is a very close copy. Magazines are said to be interchangeable.

sight is drift-adjustable for windage. The square blade front sight has a single white dot while the rear sight has a notched blade with white dots on either side. A 3/16" diameter, solid rib runs nearly the full length of the flat top of the slide. Although shallow, the rib is cut with seven longitudinal grooves to reduce glare. We found the combination of sights, rib and matte finish worked well.

Firing tests included shooting bullet weights ranging from 105-gr. to 147-gr. in full-metal-jacket (FMJ) and jacketed-hollow-point (JHP) configuration. Functioning proved very reliable with most popular brands. Nonetheless, we did find one or two of the lighter bullet, lead-free loads that did not reliably extract. This was not considered a disadvantage as such loads are very new and often produce similar results in other pistols. While accuracy was only average, it was consistent and quite acceptable for a defensive pistol. Out-of-the-box trigger pull

ARCUS-94

MANUFACTURER: Arcus Co.,
P.O. Box 6, Liaskovetz 5140, Bulgaria

IMPORTER: Miltex, Inc. (Dept. AR),
2225 Pinefield Station, Waldorf,
MD 20601

MECHANISM TYPE: recoil-operated,
single-action, semi-automatic pistol

CALIBER: 9x19 mm Parabellum

OVERALL LENGTH: 7 7/8"

BARREL LENGTH: 4 7/8"

WEIGHT: 37.5 ozs.

WIDTH: 1 3/8"

HEIGHT: 5"

MAGAZINE CAPACITY: 10

RIFLING: six-groove, RH twist

TRIGGER: single-action 4 1/4-lbs.

STOCKS: one piece, stippled, black rubber with finger grooves

SIGHTS: three white dot, blade front, notch rear drift adjustable for windage

ACCESSORIES: Extra magazine, cleaning rod, removable trigger lock, lockable plastic carry case

SUGGESTED RETAIL PRICE: \$350

ACCURACY RESULTS

9 mm Luger Cartridge	Vel. @ 15' (f.p.s.)	Smallest (ins.)	Largest (ins.)	Average (ins.)
Winchester X9MMSU 115-gr. FMJ	1049 Avg. 35 Sd	2.01	3.88	2.74
Black Hills BH125JHP 124-gr. JHP	1084 Avg. 20 Sd	1.96	3.58	2.94
Federal No. P9HS2 147-gr. JHP	900 Avg. 15 Sd	2.49	3.22	2.79
Average Extreme Spread				2.82
Five consecutive five-shot groups from 25 yds., fired from sandbags. Abbreviations: Sd (standard deviation), FMJ (full metal jacket), JHP (jacketed hollow point)				

proved moderate with a small amount of take up and minimal stacking.

Handling and balance of the Arcus-94 pistol were judged excellent. No surprise here as the root Browning Hi Power pistol has always been known for its excellent balance and handling. The stippled, black rubber stocks with finger grooves also received many favorable comments from our test staff. Most felt they were a significant improvement over the Browning wood panel types. The Arcus stocks are comfortable and enable the shooter to easily maintain control during shooting. Shooters with small hands especially liked these stocks.

Workmanship, fit and finish were above average for a pistol in this price range. Gone is the old tendency to apply a quality finish only to those parts which absolutely require

forged-steel construction, including the steel recoil spring guide rod, offered satisfaction to traditionalists. The penalty, however, is a heavy pistol at 37½ ozs.

We did find a few minor problems. First, the instruction sheet is vague and poorly illustrated and its cutaway view useless. Checking with Miltex, we learned that this is being fixed. We found the upper rear edge of the grip panels slightly too high, which made it hard to get purchase on the safety levers for some, but not all, shooters. A slightly lower upper edge would quickly and easily solve this problem. While

it and leave the rest. In its place is a medium-polish finish and a refreshing absence of tool marks even in places only visible when the gun has been disassembled. This shows a true commitment to quality and pride of workmanship.

Two other features also were the subject of favorable comments—the ambidextrous safety levers and the forged-steel construction. The safety levers were easy to reach and operate while the

we are at it, how about a shorter link pin—the present one protrudes farther than necessary out the opposite side of the frame. Empty magazines that drop free when the release button is pressed would be another minor improvement we would like to see.

There are two anomalies with this pistol. The first is a high-capacity, double-column magazine holding only 10 rounds. As a consequence, many potential buyers will opt to purchase pre-ban, high-capacity Browning magazines. For Arcus, this indicates development of a .40 S&W caliber model as soon as possible. The second anomaly is the high weight. This pistol is not intended for discreet carry, however, and the weight does have the benefit of significantly reducing felt recoil while theoretically improving service life.

Given the suggested retail price of \$350, the above-average fit and finish, and the lifetime warranty on materials and workmanship, the Arcus-94 pistol is a very good value. It will be interesting to see what Arcus does next. **NRB**

Arcus and Browning Hi Power magazines are claimed to be interchangeable. Arcus magazines have a 10-round capacity to meet federal law, but shooters may opt to purchase pre-ban, 15-round magazines (I.).



DPMS PANTHER DCM



The DPMS Panther DCM is a post-ban rifle made with competition features that make it ready for the line right out of the box. We fitted it with an 4X Colt scope for accuracy testing.

F ever a rifle had to earn its place on the competitive firing line, it was the Colt M16/AR-15 family. First, the rules of many competitions had to be changed to allow them. Then, military marksmanship units had to make the commitment to develop competitive M16/AR-15 rifles. This commitment, and the technology that came from it, elevated the AR-15 from a sanctioned joke, to the winner's circle.

Defense Procurement Manufacturing Services, Inc. (DPMS) offers an extensive line of competitively-priced, "mil-spec," AR-15-style rifles. The sample we received for testing was the Panther DCM, a post-ban competition rifle with

The barrel is stepped down at the hand-guard's front. The sight housing butts up against the step and is fixed by a set screw.

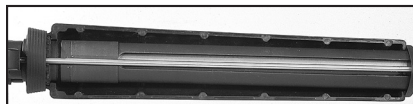




The rear sight has 1/4-minute windage clicks and 1/2-minute elevation clicks. The sight is "L"-shaped, and can be pivoted to provide either a .030" or a .040" aperture.

features that make it ready for the line, right out of the box.

The heavy, stainless steel barrel is 20" long with six-groove, 1:8" RH twist rifling to stabilize the heavier bullets typically used at ranges to 600 yds. Shooters can also opt for a black finished barrel, or 1:9" rifling. Another DPMS option at additional charge is cryogenic barrel treatment. This is a process in which the temperature of the barrel is lowered to -300 degrees F to force the residual austenite to martensite which many believe increases accuracy and barrel life.



The DPMS Panther DCM has a free-floated barrel using a sturdy steel tube threaded onto the barrel nut. The tubular National Match handguard is mounted over this tube.

DPMS PANTHER

MANUFACTURER: Defense Procurement Manufacturing Services, Inc. (Dept. AR), 13983 Industry Ave., Becker, MN 55308

MECHANISM TYPE: semi-automatic rifle

CALIBER: .223 Rem. (5.56x45 mm)

OVERALL LENGTH: 38 3/4"

BARREL LENGTH: 20"

WEIGHT: 9 lbs.

MAGAZINE CAPACITY: seven

RIFLING: six-groove, 1:8" RH twist

TRIGGER: single-stage adjustable, 5-lbs. pull

SIGHTS: adjustable square post front, click-adjustable National Match aperture rear

STOCK: Black Zytel composition A2 buttstock, DCM free float handguard: length of pull, 13 1/4"; drop at heel, 1/2"; drop at comb, 1/2"

ACCESSORIES: spare seven-round magazine, cleaning kit, nylon web sling, owner's manual, barrel break-in procedures

SUGGESTED RETAIL PRICE: \$1,099 (upgrades and options at extra cost)

Free floated barrels are common on serious match rifles. DPMS achieves this in the Panther by using a sturdy steel tube threaded onto the barrel nut, around which the tubular plastic DCM National Match handguard is mounted. The handguard cap is an integral part of the tube and also serves as the mount for the front sling swivel.

The barrel taper is abruptly stepped down at the front of the handguard where the front sight housing is fixed with a set screw instead of taper pins, and has an adjustable square front post sight that works well with the National Match rear sight. Windage adjustments on the rear sight are 1/4 minute clicks while elevation adjustments are 1/2 minute. The rear sight blade is "L"-shaped, and can be pivoted to provide either a .030" aperture for 300 to 800 meter shots, or .040" aperture for zero to 200 meter shots. Other aperture options include .052"/.070" or .046"/.070" sizes.

The A2 upper receiver is forged aluminum, and features a forward assist and carry handle that is drilled for an AR-15-style scope mount. Finish options include gray or black teflon. All controls are in the usual AR-15 positions, and the fully-adjustable, smooth, JP trigger comes set at 4 1/2 lbs. pull. Our sample's trigger exhibited some slight stacking, and came with a tested pull weight of 5 lbs. The A2 buttstock is black Zytel composition.

Our test sample had the titanium nitride coated bolt carrier and assembly upgrade. This hard finish gives the parts a gold-plated appearance and has high lubricity. Even so, our sample's bolt carrier dragged on the bolt catch with an empty magazine in place, and would not fully open unless the catch was depressed, or the magazine removed. There were no problems when cartridges were in the magazine.



Controls are in typical AR-15 position, and the fully adjustable, smooth JP trigger unit comes from the factory at a claimed 4 1/2 lbs.

ACCURACY RESULTS

.223 Rem. Cartridge	Vel. @ 15' (f.p.s.)	Smallest (ins.)	Largest (ins.)	Average (ins.)
U.S. 5.56 mm Ball, M855	3025 Avg. 29 Sd	0.95	1.66	1.28
Black Hills 68-gr. Heavy Match HP	2855 Avg. 36 Sd	0.51	0.85	0.70
Hornady 83273 55-gr. moly VX	2995 Avg. 24 Sd	0.59	1.42	0.98
Average Extreme Spread				0.99

Five consecutive five-shot groups from 100 yds., fired from sandbags. Abbreviations: FMJ (full metal jacket), HP (hollow-point), Sd (standard deviation), VX (Varmint Express)




Our sample had the titanium nitride coated bolt carrier and assembly upgrade. This gives the parts a gold-plated appearance.

Two, seven-round magazines come with the DPMS Panther DCM, and AR-15-type magazines, including high-capacity units, should work.

The DPMS Panther DCM was fitted with a Colt 4x21 Range Finding Reticle scope with built-in bullet drop compensator and fired for accuracy at 100 yds. The results are shown in the accompanying table. Function firing was with a variety of .223 Rem. loads. The only malfunction was when one cartridge was loaded into a magazine, and the magazine inserted with the bolt closed. Pulling the charging handle and releasing it sometimes resulted in the cartridge not being fully seated and the bolt seized up partially closed.

Overall fit and finish of the DPMS Panther DCM was excellent. Even with the heavy barrel the gun balances well and is easy to hold steady. Like all AR-15-style rifles with a scope mounted on the carry handle, a cheek piece to raise the shooter's face inline with the scope is needed.

Accuracy of our sample was excellent, especially with the heavier bullets for which it was designed. Were it not for a stacking trigger, the gun would indeed be ready for competition as it comes out of the box. The trigger is fully adjustable, though, and any competent gunsmith could easily, and inexpensively, remedy this minor annoyance.

The DPMS DCM Panther, then, is further evidence that the AR-15/M16 style of rifles are serious competitors in rifle competition. Out-of-the-box and with careful ammunition selection, this rifle shoots sub-M.O.A. groups and should do well in the hands of an experienced shooter. 

FABARM MAX LION



Though FABARM is little-known in the United States, it has been making guns since 1900 in Brescia, Italy. The sample we recently received for testing is the firm's Max Lion, which represents the company's top end, over-under shotgun.

ALTHOUGH FABARM was established back in 1900 by the Galesi family in Brescia, Italy, it is little-known in the United States. Heckler & Koch became the importer of FABARM shotguns in 1998. FABARM makes all manner of shotguns including over-unders, semi-automatics, pumps and side-by-sides, but our focus will be FABARM's over-unders, which represent the apex of this company's manufac-



The FABARM Max Lion is a well-made and attractive over-under shotgun with tasteful adornments and practical design features.

turing. We recently received its top-of-the-line Max Lion, for test and evaluation.

Our sample was stocked with a full figure piece of superior-grade, oil-finished walnut. Like all FABARM shotguns, the Max Lion has a right-hand palm swell. Both the pistol grip and schnabel fore-end are decorated with double-bordered, hand-cut checkering of 22 lines per inch. Checkering was functional, with essentially no overruns, but there were a few areas with flat points while others were quite sharp. The oil finish gave the wood a warm glow and was not shiny or reflective. Wood to metal fit, as well as the fitting of the leather-covered, ventilated, rubber recoil pad was generally good.

The stock is cast-on, meaning it has a slight displacement to the left to place the shooting eye directly behind the centerline of the bore, and has a white-metal lion escutcheon in the bottom of the pistol grip. A white metal, rope-pattern escutcheon surrounds the fore-end catch that is centrally located in the bottom of the fore-end.

The receiver is made from a nickel-chromium-molybdenum steel forging and is machined using CNC tooling. On the Max Lion, the receiver remains in the white and has raised side panels, not side plates, decorated with scroll engraving. A small fleur-de-lis engraving is on the bottom of the receiver where it is further embellished with an engraved lion. The blued-steel trigger guard is tapered and scroll-engraved. It surrounds a single,



FABARM MAX LION

MANUFACTURER: Fabbbrica Bresciana Armi, Via G. Zola 33, 25060, Brescia, Italy

IMPORTER: Heckler & Koch, Inc. (Dept. AR), 21480 Pacific Blvd., Sterling, VA 20166

MECHANISM TYPE: box-lock, over-under shotgun

GAUGE: 12 (tested) or 20, 3"

OVERALL LENGTH: 43½"

BARREL LENGTH: 26" (tested), 28", 30" (12-ga. only)

WEIGHT: 7 lbs., 9 ozs.

TRIGGER: single-stage, selective, inertial; 4½ lbs. pull under barrel, 3½ lbs. pull over barrel

STOCK: Walnut: length of pull, 14½"; drop at heel, 2½"; drop at comb, 1½"

ACCESSORIES: full, improved modified, modified, improved cylinder, cylinder choke tubes; tube wrench; trigger adjustment Allen wrench; fitted, locking luggage case

SUGGESTED RETAIL PRICE: \$1,807

smooth, gold-plated, inertial trigger that has about 1/4" adjustment for length of pull. The adjustment is made using a small Allen wrench (supplied), by loosening a set screw in the top of the trigger blade, and sliding the trigger forward or back.

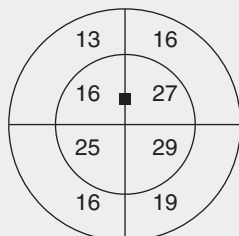
The top latch lever is blued steel and is skeletonized in a scroll pattern. A sliding manual safety is just behind the top latch and incorporates the barrel selector switch. Internally, a redundant, "double notch" safety mechanism is designed to prevent accidental firing should the safety fail. Further, the hammers are rebounding so firing pins do not protrude into the chamber after firing. Automatic ejectors are selective, with no provisions for converting them to extractors.

Scalloped areas relieved from the top of

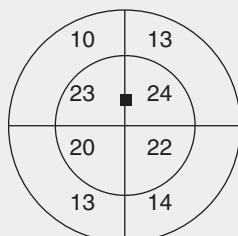
The FABARM employs a monobloc, and lock up is by way of a lug the width of the receiver that engages a single, split lump at the bottom of the gun's bloc.

FABARM MAX LION

AVERAGE OF 10 PATTERNS AT 40 YDS.



Full Tube



Modified Tube

■ =Point of Hold
Federal Premium P128—1½ oz.—No. 6 shot
Pellet count—253

Total Hits	170 (67%)	Total Hits	139 (55%)
21.2" Inner Circle	106 (42%)	21.2" Inner Circle	89 (35%)
30" Outer Ring	64 (25%)	30" Outer Ring	50 (20%)

the standing breech blend the receiver with the monobloc to which the 26" blued-steel barrels are attached. Locking is by means of a lug the width of the receiver that engages a single split lump at the bottom of the bloc.

Chrome-lined barrels are made using CNC deep drilling and honing. This process is claimed by FABARM to avoid metal stresses induced by cold hammer forging. The top rib is fitted with a short, red, fiberoptic front bead, is cross-hatched to reduce glare and is ventilated as are the side ribs. Barrels are soldered slowly at temperatures of 700 degrees Celsius, and, after peaking, are allowed to cool gradually for a reportedly stronger bond. Barrels accept

FABARM choke tubes, and lead shot-only full, improved modified, modified, improved cylinder and cylinder tubes are supplied. Full and modified steel shot tubes can be purchased separately.

Function firing was with a variety of 2¾" and 3" shells, and during a slow afternoon of dove hunting. The light, 26" barrels proved quick and responsive, and there were no malfunctions of any kind. Patterning results are given on the previous page.

All who tried the Max Lion remarked how easily it came to the shoulder and how well it pointed. After about four hours in the field with no action, however, the balance of the gun started to wear on us as it is a lit-

tle muzzle heavy. This was expected, though, as the barrels are swamped to keep the overall weight down, and provide more metal toward the muzzle to accommodate screw-in choke tubes. The added weight at the muzzle does lend itself to a smoother swing and a better follow through.

The Max Lion, then, is a well-made and attractive shotgun with tasteful adornments and practical design features. It points well, comes to the shoulder easily and includes an attractive luggage case. And while FABARM is not a household name, it is making inroads and is backed by an importer synonymous with durable and well-made firearms.

NR

LEE COLLET DIES

NECK sizing only appeals to shooters who reload for center-fire rifle accuracy. Neck sizing begins with fire-forming factory ammunition through the gun for which you intend to reload. As a cartridge is fired, the brass case expands, conforming to the chamber of the gun in which it is fired. Fire-forming creates brass that is ideal for accuracy. So, the next question is how best to size the neck. Lee Collet Dies offer a way to neck size bottleneck cases without lubrication.

Conventional dies size the case by pressing it against the inside walls of the die as the case is inserted. This gives the outside of the case neck the proper shape and dimensions, but leaves the inside of the case neck too small to seat a bullet. As the case is removed from the die, an expander ball on the decapping pin enlarges the neck so a bullet can be seated with slight resistance. The degree of resistance is proportional to the amount of case neck tension required to hold the bullet in place.

In collet dies, petal-shaped segments surround the neck and compress it against a mandrel. As a result, the neck is properly sized on the upward stroke of the ram.

Collet dies offer several advantages. Because there is no expander ball on the decapping pin, cases seldom get stuck in the die. Like carbide dies, collet-sizing dies require no case lubrication. In addition, Lee claims that the uniform diameter of the mandrel utilized in its collet dies helps increase bullet seating concentricity. Lee also claims that expander balls unnecessarily work the case neck metal, leading to brittleness and reduced case life.

Because collet dies neck size only, they are ideal for handloading for bolt-actions or single-shots. But they are not appropriate for a semi-automatic, pump-or lever-action. These actions generally

require full-length or small-base resizing to ensure reliable functioning.

Lee's collet dies are adjusted in a similar manner to that used to adjust conventional dies. Start by inserting the appropriate shell holder in the ram and raising it to the limit of its upward travel. Thread the die into the press until it touches the shell holder, then lower the ram and give the die another full turn. The die is properly adjusted.

The neck is sized during the press arm's down stroke, which requires considerable effort. As the shell holder presses the case into the die, the collet is pressed against the inside of the die, causing the petals to close. With a case in place, the collet closes

on the case neck supported by the mandrel. Cases that have been run through the die should be checked to ensure there is sufficient tension to hold a bullet.

We compared Lee's collet sizing dies in 6.5x55 mm Swedish and .308 Win. against conventional sizing dies of the same caliber using a Lee turret press. The 6.5x55 mm Swedish cases were fire-formed in a Model 96 Mauser sporter, while those for the .308 Win. were fire-formed in a Remington 40X.

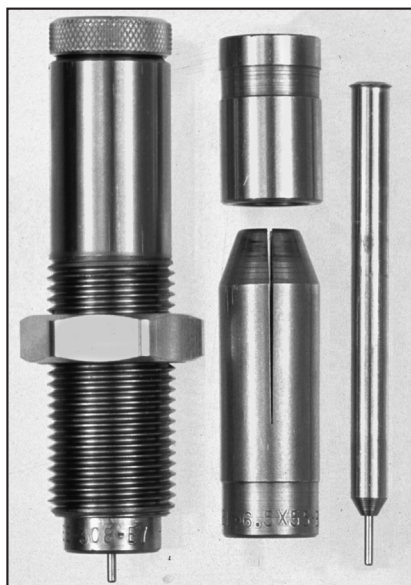
Using the same press, bullet-seating dies, components and loading data, we compared the accuracy of our handloads sized with Lee's collet dies to those sized with conventional dies. While our test sample was too small to be statistically significant and accuracy results were close, groups from cartridges sized using Lee collet dies were measurably smaller than those with standard dies—in some cases as much as 20 percent smaller. Neck runout proved identical, but bullet runout was slightly less in cartridges resized with Lee collet dies. Lee believes its collet dies are the most accurate available and backs up that claim with a money-back guarantee.

The only problem we experienced was when we accidentally closed the collet by lowering the press arm without a case in place. Following instructions included with the die, we were able to disassemble the die and open the collet with a punch.

Lee collet dies should appeal to handloaders loading for single-shot and bolt-action guns. Dispensing with the need for lube should lower the frustration level for beginners, while experienced reloaders in search of accuracy will like the idea of resizing the case neck as little as possible.

Available from: Lee Precision (Dept. AR), 4275 Highway U, Hartford, WI 53027. Price: \$34.98

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Ammunition assembled using Lee's collet dies shot tighter groups than identical loads assembled using standard dies.