

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.

WALTHER TPH .22 PISTOL

INTRODUCED in Germany just after the passage of the 1968 Gun Control Act, the Walther TPH was for many years rarely seen in this country, as the little pistol failed to meet that law's import criteria. In the mid-eighties, Walther decided to have the TPH (which stands for "Taschen Pistole, Hahn" or "Pocket Pistol, Hammer") made here in the U.S.

Ranger Mfg. Co., of Gadsden, Alabama, (a subsidiary of Mid-South Industries, Inc.) had been producing a Walther-licensed copy of the PPK/S, the "Walther American," since 1978, and it was thus the logical choice to manufacture the TPH domestically. In 1989, after a year or so of TPH production (done partially on equipment also used for PPK/S fabrication), Ranger ceased to exist as a separate corporate entity, with all manufacturing now under the Mid-South banner.

Although sales of the TPH were initially brisk, demand for the little pistol decreased by the early 1990s, causing a hiatus



The American-made TPH combines good accuracy with Walther standards of quality.

The original German-made TPH offered an aluminum frame and both .22 LR and .25 ACP chamberings. American-made TPHs, however, are produced in 400-series stainless steel and .22 LR only. The TPH frame is investment cast, while the slide is machined

from a special extrusion. The TPH barrel is machined from solid bar stock, and button rifled in-house. Most of the TPH's internal steel parts are also of the stainless variety; those that aren't are electroless-nickel plated.

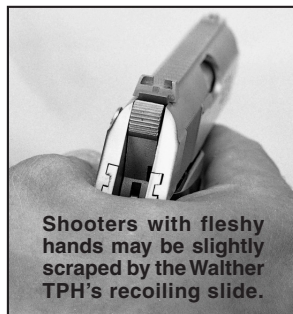
In both outward appearance and internal lockwork the TPH resembles the PPK. The TPH is not just a scaled-down copy, however. Though both guns feature a single right-sided trigger bar, the TPH's acts directly on the hammer in the double-action mode, unlike the PP/PPK-series design, in which a cocking piece intermediary trips the hammer.

Also different is the location of the magazine catch. Unlike its bigger brothers' thumb-accessible button positioned to the rear of the trigger, the TPH's magazine catch is at the bottom of the frame behind the magazine well. Other characteristics of TPH design and function have been previously noted (February 1989, p. 60).

According to Interarms, which markets the pistol, TPHs made by Mid-South are identical in design and tolerances to those made in Germany, yielding complete

ACCURACY RESULTS

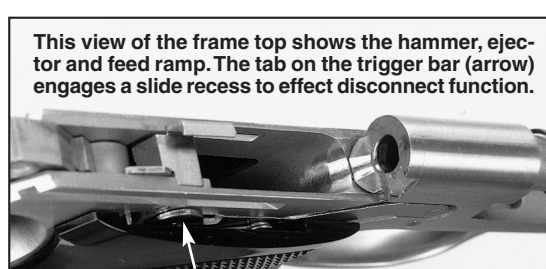
.22 LR Cartridge	Vel. @15' (f.p.s.)	Smallest (ins.)	Largest (ins.)	Average (ins.)
CCI No. 00051 Pistol Match	810 Avg. 14 Sd	2.18	3.13	2.77
Rem. No. 1600 HPHV	848 Avg. 15 Sd	2.62	4.35	3.57
Win. No. X22LRD Dynapoint HV	790 Avg. 26 Sd	2.08	3.88	3.12
Average Extreme Spread				3.15
Five consecutive 5-shot groups from 50 ft., fired from sand-bags. Abbreviations: Sd (standard deviation), Rem. (Remington), HPHV (hollow-point high velocity), Win. (Winchester), HV (high velocity)				



Shooters with fleshy hands may be slightly scraped by the Walther TPH's recoiling slide.

tus in production that allowed Mid-South to upgrade tooling and fixturing and institute a separate TPH production line to allow greater output. These proved to be wise steps, as public call for the pistol increased in 1995, necessitating the reinstatement of production.

The TPH is a blowback-operated, double-action, .22 Long Rifle semi-automatic pistol with a fixed barrel, decocking safety, 6-round magazine and black plastic stocks.



This view of the frame top shows the hammer, ejector and feed ramp. The tab on the trigger bar (arrow) engages a slide recess to effect disconnect function.

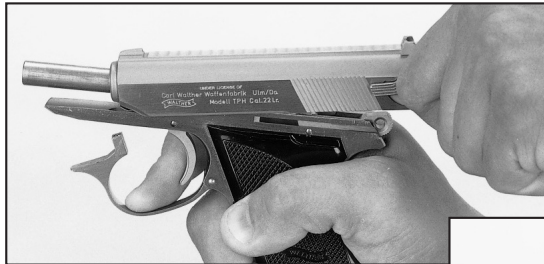
WALTHER TPH

MANUFACTURER: Interarms, Dept. AR, 10 Prince St., Alexandria, VA 22314
MECHANISM TYPE: double-action semi-automatic pistol
CALIBER: .22 Long Rifle
OVERALL LENGTH: 5 $\frac{3}{8}$ "
BARREL LENGTH: 2 $\frac{3}{16}$ "
WEIGHT: 14 oz.
WIDTH: 1 $\frac{15}{16}$ "
HEIGHT: 3 $\frac{1}{16}$ "
MAGAZINE CAPACITY: 6
TRIGGER: single-action pull, 2 $\frac{1}{2}$ lbs.; double-action pull, 11 lbs.
SIGHTS: fixed, rear drift-adjustable for windage
STOCK: black plastic
ACCESSORIES: test target, plastic case
PRICE: \$440

parts interchangeability, regardless of place or date of production.

The TPH we received was fully up to Walther cosmetic standards, with a well-executed polished finish on the stainless steel slide and frame. The only hint of its nationality were the "Made in U.S.A." and "Under License Of" stampings visible on the slide.

We fired the TPH for accuracy, with the results listed in the accompanying table, and function-fired it with CCI, Federal, Fiocchi, Remington and Winchester ammunition. Accuracy was good for a pocket pistol—and slightly better than the TPH tested here earlier—but at 50 ft., the bullets impacted four to six inches above and an inch or two to the left of the point of aim. Most loads fed and ejected flawlessly;




Lower the trigger guard and pull the slide rearward and up (I.), then move it forward to free it from the frame (below I.). The field-stripped frame (below) shows the barrel, recoil spring, and right-side trigger bar (arrow).

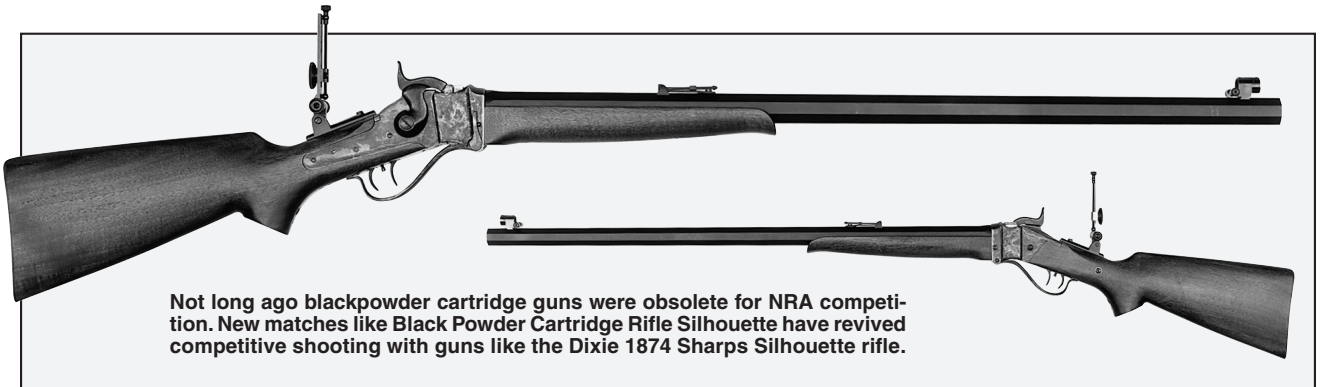
jams occurred only with hyper-velocity rounds with extreme tip shapes, which are not recommended by the manufacturer.

There were several ignition failures, possibly attributable to light hammer fall (though all the misfiring rounds showed a positive firing pin indentation on the case rim). According to Interarms, certain brands of rimfire ammunition, most notably Remington, have historically given ignition problems with the TPH. Most of our misfires did indeed involve Remington loadings and were usually ignited by a second, double-action pull of the trigger. TPH owners are well advised to test any rimfire ammo they may use for reliable ignition.

On two occasions the trigger bar moved a small distance outward from the frame, preventing its tab from resetting into its recess in the underside of the slide and rendering the trigger inoperable. This condition is caused, according to Interarms, by slight warpage of the trigger bar assembly during heat treatment. Though this warpage is rare, a special inspection process has been instituted by Mid-South to detect it.

Though the TPH's \$440 suggested retail price may seem steep to some, it may be reasonable to those who value top-quality, American manufacture and the prestige of the Walther name—particularly when the pistol's reliability ills are fully cured. 

DIXIE 1874 SHARPS SILHOUETTE



Not long ago blackpowder cartridge guns were obsolete for NRA competition. New matches like Black Powder Cartridge Rifle Silhouette have revived competitive shooting with guns like the Dixie 1874 Sharps Silhouette rifle.

THOUGH the Sharps rifle is perhaps best known for its part in the decimation of the buffalo herds during our expansion into the West, it is also known for its accuracy. This accuracy proved itself more than 100 years ago in the NRA Matches at Creedmoor and later at Sea Girt, until about 1900 when smallbore smoke-

less powder guns dealt a deathblow to blackpowder arms in NRA competition.

In only the last few years, blackpowder guns have been brought back to NRA national competition, thanks to renewed interest in the guns and the creation of events specifically for them. One such event is NRA Black Powder Cartridge Rifle

Silhouette—and the Dixie 1874 Sharps Blackpowder Silhouette Rifle is built just for it.

Pedersoli of Italy is making the gun for Dixie, and it's one of the better-looking reproduction guns we've seen from that country. The satin oil finished walnut stock is uncheckered, and it has a pistol grip, shot-

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gun butt with blued steel buttplate and schnabel fore-end.

Two slotted screws secure the fore-end to a substantial 30" blued octagonal barrel that tapers slightly from 1.10" at the breech to .99" at the muzzle. Rifling is six-groove, 1:18" RH twist for the .45-70 rifle, and 1:16" twist for the .40-65 cal. The flip-up, steel rear sight has an elevator regulated in increments of 100 yds. to 800 yds., and a 3/8" dovetail slot retains the blued steel base with silver blade front sight that is drift adjustable for windage.

The massive action, lever, lock and trigger plate are beautifully color casehardened, and the top tang is drilled and tapped 10-28, 2/4" center-to-center for a tang sight. The double set triggers are externally adjustable for set trigger pull weight.



With the unloaded Dixie 1874 Sharps in the half-cock position and with the rifle's action closed, depress the plunger pin (arrow) and rotate the lever hinge pin down.



Invert the gun, and remove the pin. Next, lift the lever with breechblock and extractor from the bottom of the rifle's action.

DIXIE 1874 SHARPS

MANUFACTURER: Davide Pedersoli & C. s.n.c., Via Artigiani, 57-25063, Gardone V.T. (BS), Italy

IMPORTER: Dixie Gun Works, Inc., Dept. AR, Gunpowder Ln., Union City, TN 38261

MECHANISM TYPE: single-shot, falling block rifle

CALIBER: .45-70 (tested), .40-65

OVERALL LENGTH: 47 1/2"

BARREL LENGTH: 30"

WEIGHT: 10 lbs., 3 ozs.

RIFLING: six-groove 1:18" RH twist (1:16" in .40-65 cal.)

TRIGGER: double set: 16 lbs. un-set; 8 ozs. set

SIGHTS: steel flip-up ladder rear, silver blade front

STOCK: walnut: length of pull, 13 3/4"; drop at heel, 2 1/4"; drop at comb 7/8"

PRICE: \$895

To load, begin with the muzzle pointed downrange and the hammer in the half-cock position. Extend the lever downward to open the breech and insert a .45-70 Govt. cartridge *fully* into the chamber and return the lever to close the action. Next, point the rifle toward the target and fully cock the hammer. It is now ready to fire using the heavy, un-set front trigger, or alternately the front trigger can be set to a hair trigger by first depressing the rear trigger until it sets.

To field-strip the rifle for cleaning, first ensure the gun is unloaded by opening the lever and looking into the chamber. With the action closed, place the hammer in the half-cock position and depress the plunger pin on the right side of the frame just in front of the lever hinge pin.

While pressing in on the plunger pin, turn the arm of the lever hinge pin forward past the plunger pin until it points straight down. Turn the rifle upside down and pull out the lever hinge pin, freeing the breechblock and lever to be lifted from the bottom of the action. The extractor will also come free with the removal of the block.



Reassembly is in reverse order. If it is difficult to insert the hinge pin, remove the fore-end and loosen the lever spring screw to relieve pressure from the lever. Be sure to retighten the lever spring screw before reattaching the fore-end.

At the advice of Dixie Gun Works we equipped our 1874 with a Soule rear and spirit level front sight from Montana Vintage Arms Co. (Dept. AR, 2354 Bear Canyon Rd., Bozeman, MT 59715), both of which are also available from Dixie, and fired the gun for accuracy with results shown in the accompanying table. There were no malfunctions of any kind during the course of our testing, and the Dixie with tang sights proved to be every bit as accurate as many a scoped, high-powered, mass-produced bolt gun.

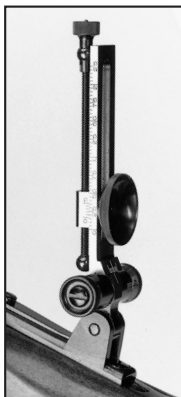
Our handload using the behemoth 480-gr. Lyman No. 457658 with Thompson Blackpowder lube and wad over 73.7 grs. of Goex CTG did not do as well as the jacketed factory ammunition in our test gun. Cast bullet handloads can be finicky, however, and time simply did not allow tailoring this load to the rifle, but the consistency of this powder and high ballistic coefficient of the bullet clearly hint of better long range accuracy potential.

Function-firing was at bowling pins



If it is difficult to re-insert the gun's lever hinge pin during reassembly, remove the fore-end and loosen the lever spring screw to relieve pressure from the lever itself.

We function fired the Dixie 1874 Sharps at bowling pins using crossed shooting sticks from Underwood Rests. Recoil was not bad owing to the gun's heft and sizeable buttplate. At the advice of Dixie GunWorks we equipped our sample rifle with a Soule rear sight (r.) supplied by Montana Vintage Arms, Dept. AR, 2354 Bear Canyon Rd., Bozeman, MT 59715.



using Federal and Remington ammunition and collapsible shooting sticks from Underwood Rests (Dept. AR, P.O. Box 924, Mocksville, NC 27028). During testing we had occasion to stop when an unplanned cease-fire was required. To render the gun

safe quickly, the action lever was opened as the trigger had already been set. Once the commence firing command was given, we closed the lever and the gun fired upon closing. Users should take note to open and unload the gun, lower the hammer to half-cock and load as explained above should a similar situation arise.


Recoil, though authoritative, was not punishing owing to the gun's heft and the large surface area of the buttplate.

Though the days of the buffalo are gone forever and the range at Creedmoor is silent and paved over, the Dixie 1874 Sharps Silhouette rifle can today devastate rows of steel chickens, turkeys, pigs and rams. Members interested in obtaining more information on NRA Black Powder

ACCURACY RESULTS

.45-70 Govt. Cartridge	Vel. @15' (f.p.s.)	Smallest (ins.)	Largest (ins.)	Average (ins.)
Federal Classic 300-gr. HPFN	1773 Avg 26 Sd	1.01	1.86	1.44
Remington R4570L 300-gr. SJHP	1784 Avg. 40 Sd	1.16	2.23	1.60
Rem. case and 9/14 primer, Lyman No. 457658 bullet, Thompson BPC Lube and wad, 73.7-grs. Goex CTG	1099 Avg. 14 Sd	2.95	3.76	3.40
Average Extreme Spread				2.14

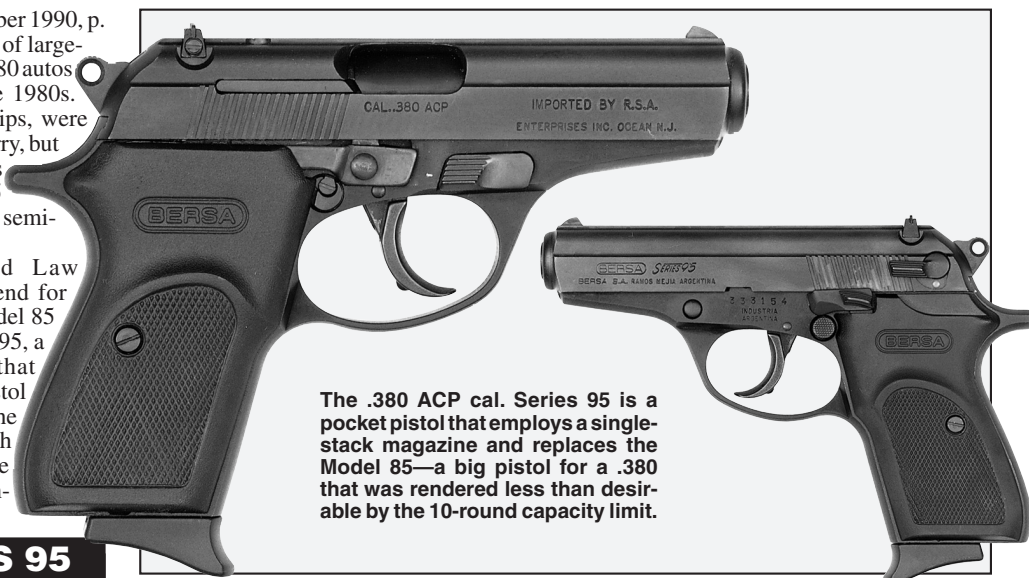
Five consecutive 5-shot groups from 100 yds., fired from sandbags. Abbreviations: Sd (standard deviation), Fed. (Federal), HPFN (hollow-point flat-nose), SJHP (semi-jacketed hollow-point) Rem. (Remington), BPC (black powder cartridge)

Cartridge Rifle Silhouette competition or details on matches held in their area should contact the NRA Competitions Division at (703) 267-1477. 

BERSA SERIES 95 PISTOL

THE Bersa Model 85 (October 1990, p. 51) was one of that breed of large-capacity double-action .380 autos that appeared at the end of the 1980s. These, thanks to long, thick grips, were considered too big for pocket carry, but offered only .380 ACP ballistics at a time when 9 mm and .45 compacts were coming onto the semi-auto pistol market.

The Violent Crime and Law Enforcement Act spelled the end for that pistol class, and so the Model 85 has been replaced by the Series 95, a single-stack magazine .380 that more closely fits the pocket pistol format established in 1929 by the Walther PP. The Series 95 is much taller than the PP, but most of the difference comes from a large fin-



The .380 ACP cal. Series 95 is a pocket pistol that employs a single-stack magazine and replaces the Model 85—a big pistol for a .380 that was rendered less than desirable by the 10-round capacity limit.

BERSA SERIES 95

MANUFACTURER: Bersa, S.A., Dept. AR, Castillo 312, 1074 Ramos Mejia, Argentina

IMPORTER: Eagle Imports, Inc., Dept. AR, 1750 Brielle Ave., Wanamassa, NJ 07712

MECHANISM TYPE: blowback-operated, semi-automatic pistol

CALIBER: .380 ACP

OVERALL LENGTH: 6 3/4"

BARREL LENGTH: 3 3/8"

WEIGHT: 19 ozs.

WIDTH: 1 1/8"

HEIGHT: 5 1/8"

MAGAZINE CAPACITY: 7

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

SIGHTS: three-dot with rear click-adjustable for windage

PRICE: \$274.95

ger rest at the base of the pistol's magazine.

As before, the barrel is pressed and pinned into the anodized aluminum frame, with the recoil spring surrounding it. An addition since the Model 85 is a manual slide stop, allowing convenient slide closing on an empty magazine.

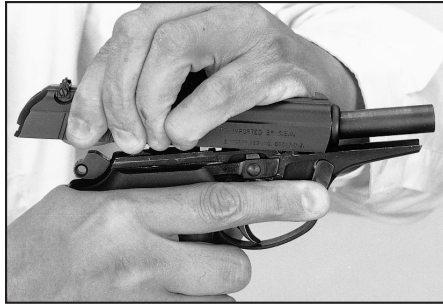
The lockwork is fairly conventional, though with an unusually long sear that is styled "cocking piece" in the exploded view that accompanies the pistol. The trigger bar on the Series 95 is outside the frame under the right grip panel; a bump on its top serves as a disconnecter when not aligned with a cut in the bottom of the pistol's slide.

A bar that passes through the right side

Muzzle blast and recoil from the Series 95 were both mild, even with the high-velocity Cor-Bon loads we used during testing.



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Disassembly of the Series 95 begins with removing the magazine and making sure the chamber is empty. Press down on the disassembly lever at the frame's right, then pull back and up on the slide, allowing it to move forward and off of the gun's frame Walther-style.



of the grip frame serves both as the magazine safety and the magazine ejector. A C-shaped wire spring presses it down except when a tab at the bottom of the magazine box presses up on it. This allows the trigger bar to move into line with the hammer's double-action notch or with the sear to allow firing.

The other safety mechanism is a Walther-style safety/decocker. Pressing it down interposes the safety shaft between hammer and firing pin. At the same time a horseshoe-shaped firing pin stop drops around the rear of the firing pin, preventing it from moving forward.

Finally, a cam surface on the shaft presses down the hammer release, a plate located just to the right of the hammer. This in turn presses down the trigger bar, allowing the hammer to fall against the safety shaft. The safety lever remains down, preventing engagement of the trigger bar and hammer.



The Series 95's sights are arrayed in a three-dot pattern and are part of a flat-top rail at the top of the slide. The rear sight is click-adjustable for windage. There is no provision for elevation adjustment. Our sample hit about 8" to the right out of the box.

Pressing it up again returns the trigger bar to position, allowing firing.

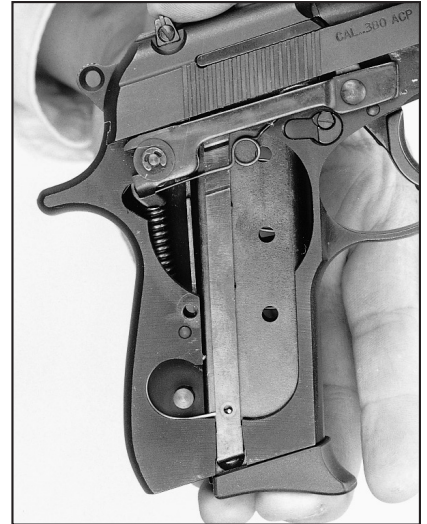
The magazine catch resembles the M1911's, and falls readily under the thumbs of right-handers.

The three-dot sights are part of a flat-topped rail at the top of the slide; the rear sight is click-adjustable for windage. The extractor is pivoted at the rear of the flared ejection port.

Disassembly is on Walther principles, though with a twist. Remove the magazine (it will be forcibly ejected) and clear the chamber. Instead of lowering the trigger guard as on the Walther, press down the disassembly lever at the right front of the frame. Then pull back and up on the slide and allow it to run forward and off the frame. This exposes the barrel for cleaning. Reassembly is in reverse order.

The Bersa Series 95 was fired for accuracy with results shown in the accompanying table, and function-fired with Black Hills, Cor-Bon, Remington, Samson, Speer and Winchester ammunition. There were no failures of any kind during our testing.

We were unimpressed with the trigger of the Model 85 we previously examined here, but the new Series 95 pistol's trigger seemed far more useful to us, though the takeup is still very long in both single- and double-action firing. Those who like to try and attempt to "stage" the double-action trigger pull will find the suspense almost unbearable.



The trigger bar is outside the frame under the right grip panel. The Series 95 is supplied with both a manual Walther-style safety/decocker and a magazine safety.

The three-dot sights stood out proudly, and we experienced none of the tendency to shoot low we found with the Model 85. The pistol was sighted about 8" to the right as it came from the importer out of the box, however.

Muzzle blast and recoil with the Series 95 were mild, even with the high-velocity Cor-Bon loads, reminding us that for some users, there is a useful difference between the .380 and the 9 mm.

Magazine safeties are disliked by many authorities who point out they have the potential to prevent firing at a crucial moment. This opinion is countered by thousands of home defense owners who like the idea of storing gun and magazine separately.

The Bersa Series 95 seems an economical and reliable choice for home defense or trail use.

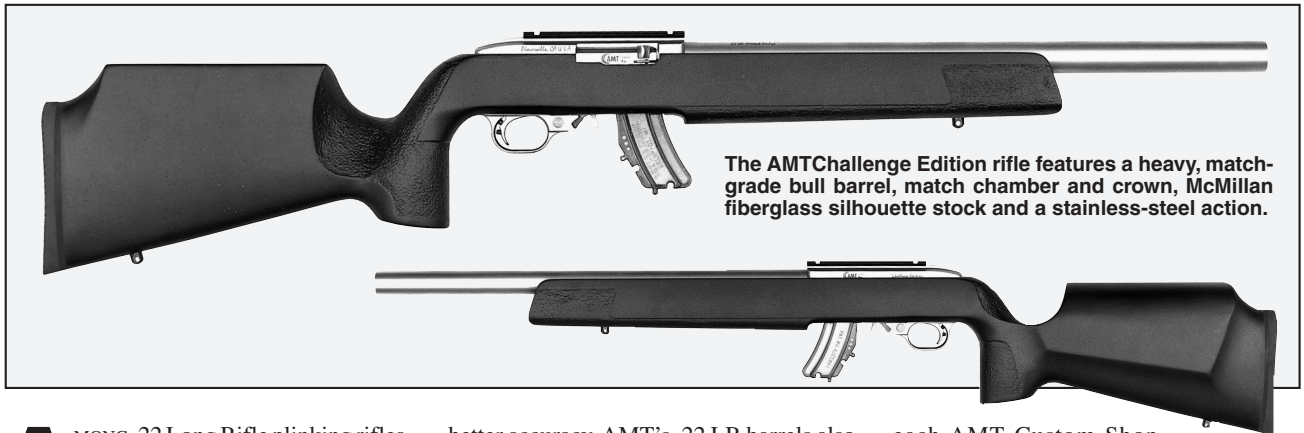
NRA

The magazine's base has a large finger rest that helped control the pistol while firing. The base, however, does add some height to the pistol.

ACCURACY RESULTS

.380 ACP Cartridge	Vel. @15' (f.p.s.)	Smallest (ins.)	Largest (ins.)	Average (ins.)
Cor-Bon 90-gr. JHP	998 Avg. 27 Sd	3.40	5.18	4.26
Speer No. 23606 90-gr. GDHP	899 Avg. 29 Sd	2.82	4.80	3.75
Winchester 90-gr. JHP	845 Avg. 12 Sd	2.95	3.62	3.37
Average Extreme Spread				3.79
Five consecutive 5-shot groups from 25 yds., fired from Ransom Rest. Abbreviations: Sd (standard deviation), JHP (jacketed hollow-point), GDHP (Gold Dot hollow-point)				

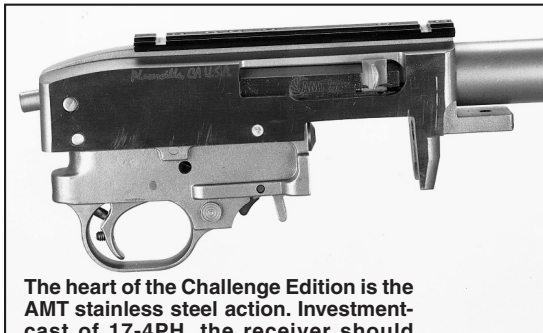
AMT CHALLENGE EDITION



The AMT Challenge Edition rifle features a heavy, match-grade bull barrel, match chamber and crown, McMillan fiberglass silhouette stock and a stainless-steel action.

AMONG .22 Long Rifle plinking rifles, the Ruger 10/22 occupies a preeminent position—and deservedly so. The gun's low price, ruggedness, reliability and accuracy—plus the availability of aftermarket parts and gunsmithing—make a combination that's hard to beat.

There are always those, however, who strive to improve upon a design, no matter how well-conceived or well-executed. Thus, when the Arcadia Machine and Tool (AMT) Custom Shop brought out its own version of the little Ruger in 1995, there were a few changes.



The heart of the Challenge Edition is the AMT stainless steel action. Investment-cast of 17-4PH, the receiver should stand up to tens of thousands of rounds.

As its name implies, the Challenge Edition is inspired by the custom 10/22s used in Chevy Truck Sportsman's Team Challenge (STC) competition (see July 1996, p. 34), and it features a heavy bull barrel, silhouette-type stock, light target-grade trigger and oversized magazine release. AMT Custom Shop also produces the Team Challenge Elite, Sporter and Flyswatter variants, each characterized by a different combination of barrel lengths, stock options and other features.

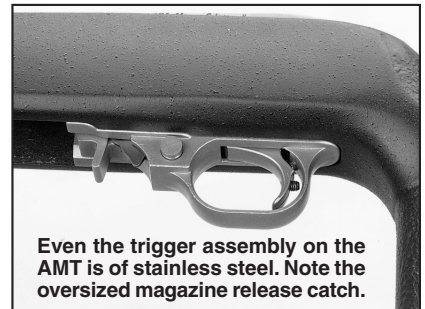
The firm makes its own 6-groove, button-rifled, 1:12" right-hand twist barrels from 416 stainless steel billets. Though most aftermarket 10/22 barrels offer a 1:16" twist, AMT found that the faster twist gave

better accuracy. AMT's .22 LR barrels also feature tight .218" bores, match chambers and recessed crowns, plus an outside diameter of .940", making them slightly fatter (and therefore stiffer) than standard .920"-diameter bull barrels. All barrels are also cryogenically stress relieved at -300° in-house.

Barrel attachment in Custom Shop rifles is by way of a .700"-long shank with a 3/4-20 thread, which engages a matching threaded hole in the receiver. While the original Ruger design, which employs an unthreaded tenon and a V-block retainer, allows easy barrel changing, the tolerances required for the slip fit may allow slight barrel movement, and the retainer block pulls on only one side of the barrel.

AMT considers the threaded joint to offer greater strength and rigidity, plus a more even distribution of stresses on the barrel, yielding an accuracy improvement of perhaps .050" at 50 yds. Since

each AMT Custom Shop rifle must meet an in-house accuracy standard of five-shot groups of .250" or less, a .050" accuracy gain is quite significant. Best accuracy, AMT's gunsmiths have found, is obtained when there is no forebore and the bullet is firmly pre-engraved by the rifling upon chambering. The Bentz cham-



Even the trigger assembly on the AMT is of stainless steel. Note the oversized magazine release catch.

ber reamer used for the barrels for the Challenge Edition and its siblings produces a chamber tighter than most production chambers but still allows reliable functioning with varied ammo. The throat created by this reamer allows about .020" to .050" of pre-engraving, depending upon the ammunition used.

Perhaps the most radical departure from the Ruger design is the replacement of the original aluminum receiver with one of investment-cast 17-4PH stainless steel. AMT claims the steel's increased strength allows a strong, threaded barrel/receiver joint and greater action stiffness for improved bedding. It also allows heavy barrels to be free-floated. Moreover, the steel receiver is thought to resist better both internal frictional wear as well as the stresses caused by the battering of the reciprocating bolt over many thousands of rounds. Reports of cracked Ruger aluminum receivers are quite rare, however, so the increased durability of steel matters most to those who put tens of thousands of rounds

AMT CHALLENGE

MANUFACTURER: AMT Custom Shop, Dept. AR, 6125 Enterprise Dr., #8, Diamond Springs, CA 95616

MECHANISM TYPE: blowback-operated, semi-automatic rifle

CALIBER: .22 LR

OVERALL LENGTH: 36 1/8"

BARREL LENGTH: 17 1/16"

WEIGHT: 8 lbs., 4 ozs.

MAGAZINE CAPACITY: 10

RIFLING: 6 groove, 1:12" RH twist

TRIGGER: single-stage; 2 lbs. pull

SIGHTS: none

STOCK: McMillan Silhouette synthetic; length of pull 13 3/8"; drop at heel 2"; drop at comb 7/8"

ACCESSORIES: Butler Creek magazine, pull-through cleaning kit, hard case

PRICE: \$989.99

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through a rifle per year, such as serious STC competitors.

Bedding is enhanced by a tang lug that protrudes at a downward angle from the end of the receiver and fits snugly into a recess in the stock, pulling the rear of the receiver down into the stock and increasing bedding rigidity. All AMT Custom Shop .22 rifles feature McMillan synthetic stocks having a reinforced area supporting the action to prevent stock crush when the action screw is tightened.



A Weaver-style scope base is mounted on the top of the AMT receiver. Note the tang lug (upper arrow) which engages a recess in the stock (lower arrow), promoting bedding rigidity and allowing barrel floating.

AMT Custom Shop makes all the parts—bolt, trigger, pins, springs and all—used in its 10/22 clone out of stainless steel (with the exception of the hammer and sear, which are of A2 hardened tool steel). AMT claims 100% parts interchangeability between its rifle and the Ruger.

The action features two other small but significant design modifications to the original design: a bushingless hammer and a pretravel set screw on the trigger. The former simplifies manufacture and assembly,

while the latter change totally eliminates trigger take-up.

AMT also offers complete actions (with and without barrels) and receivers for those wishing to upgrade their 10/22s. Receivers can be supplied for either threaded or unthreaded barrels. Complete actions with 18" barrels can be obtained from either AMT or Brownells (Dept. AR, 200 South Front Street, Montezuma, IA 50171) for \$699.99; barreled actions with longer barrels are supplied only by AMT Custom Shop, and cost \$50 more. The Challenge Edition we received sported a satin finished barrel and a polished receiver. Mounted atop the receiver was a Weaver-style scope mounting rail. The barreled action was in a black McMillan silhouette stock with a pebble-grain finish.

Those who hefted the Challenge Edition rifle immediately noticed the heavier weight provided by the steel receiver and other parts—weight that seemed to make the gun balance better and hold steadier. At about 8¼ lbs. without scope, the rifle is some 3 lbs. heavier than a standard 10/22.

A Burris 8-36X target scope was mounted on the Challenge Edition, and the rifle fired for accuracy with the results shown in the accompanying table. The Challenge Edition was also function-fired with Eley, Federal, Fiocchi, Remington, RWS and Winchester ammunition.

Several feeding jams were noted early on, which seemed to be magazine-related. When the included Butler Creek magazine was exchanged for a standard Ruger unit, reliability was nearly flawless.


ACCURACY RESULTS

.22 LR Cartridge	Vel. @15' (f.p.s.)	Smallest (ins.)	Largest (ins.)	Average (ins.)
Eley Tenex	1097 Avg. 12 Sd	0.46	0.82	0.64
Federal Gold Medal Ultra Match	1176 Avg. 9 Sd	0.37	0.53	0.43
RWS R100 Silhouette	1078 Avg. 14 Sd	0.47	0.83	0.64
Average Extreme Spread				0.57
Five consecutive 10-shot groups from 50-yds, fired from sandbags. Abbreviations: Sd (standard deviation)				

AMT Custom Shop claims that best accuracy is achieved with bullets having a larger forward pressure band (to better pre-engage the rifling), and recommends the use of ammunition having such bullets, such as Eley Bench-Rest Gold, Eley Tenex and Lapua Midas M.

The rifle's 2-lb. trigger—typical for a Challenge Edition—facilitated tight groups, though there was palpable trigger creep. AMT states that a design upgrade, made after our sample gun was produced, now produces trigger pulls having no discernible pre-travel or creep.

With Federal Ultra Match ammunition, our AMT Challenge Edition's 10-round 50-yd. groups averaged .43". Statistically, this is equivalent to a .33" five-shot group average—quite close to AMT Custom Shop's claimed standard of five-shot .250" groups at 50 yds.

Though priced more than \$800 more than a standard Ruger 10/22, the AMT Custom Shop Challenge Edition rifle should satisfy the most stringent requirements for accuracy in a semi-auto .22. 

DAISY 2002 AIR RIFLE



It's not a target rifle, and its proportions are too large for the smallest of shooters, but the 2002 is a fun gun for teaching the operation of an adult-sized pump-action firearm.

DAISY has introduced its Model 2002 35-shot pump-action rifle, the second in its 2000 series of CO₂-powered .177 cal. repeating pellet rifles.

The 2002 features a Monte Carlo imitation walnut plastic stock with molded in checkering at 22 lines per inch on the pistol grip and fore-end. There is a black plastic buttplate with white spacer and no grip

cap. The fore-end rides on dual plastic slide rails for a distance of 1" when pumping the action.

A plastic trigger guard is molded into the black plastic receiver that has a hinged top plate for insertion of the 35-round helical magazine.

The crossbolt, trigger-blocking safety button is in the front of the trigger guard in

Remington Model 870 fashion. A magazine safety prevents the 2002 from being fired when the magazine is removed.

The .30" diameter rifled steel barrel is contained within a steel false barrel shroud tapering from one inch at the receiver to .66" at the muzzle. Welded to the shroud is a steel rear sight adjustable for windage by loosening a small screw at the front of the

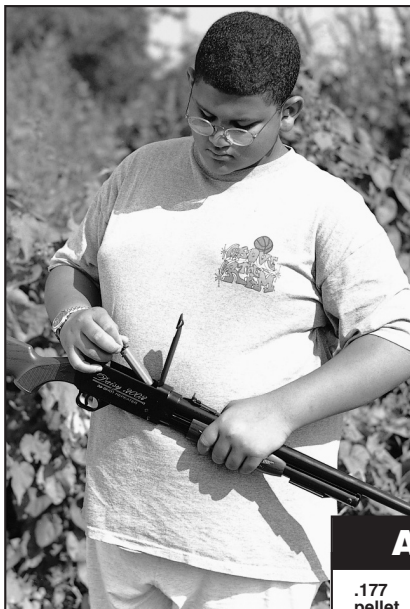
blade and for elevation using the plastic elevator ramp. The generous front sight is of plastic.

A 12-gram CO₂ cylinder is retained in a tubular housing beneath the barrel. To insert a cylinder, put the safety on and push the fore-end toward the muzzle. Open the bottle lever at the front of the fore-end slowly to a 45° angle. Insert a cylinder in the track at the rear of the fore-end, round end first and toward the muzzle. Now, lay the cylinder down flat in its track. With the muzzle pointed in a safe direction, close the bottle lever slowly making sure the small end of the cylinder starts into the puncture pin assembly at the base of the track. The bottle lever will not close if the cylinder does not properly enter the puncture pin assembly. The manufacturer warns that one should never try to force a cylinder into place.

The interesting 35-round helical magazine at first reminded us of the Calico rifle (Jan. 1987, p. 60) that had a 100-round magazine. While the design is different, the principle is the same. A star-shaped carrier holds pellets in a row in each of six splines. The splines are rotated by an actuating pin near the rear of the magazine engaging a block in the receiver having a crooked groove. This block is connected to the fore-end through the receiver so that when the action is pumped, the actuating pin rides in the groove and is pushed around the magazine, returning when the fore-end is pushed forward. A button on the front of the magazine keeps the splined carrier from backing up.

Pellets drop by gravity onto the feed track, and are held in place by spring loaded detents until pressed into the chamber by a feeding rod fixed to the front of the grooved block in the receiver. This rod has a small rubber O-ring to seal the breech.

Two magazines, red and black, are



The 2002 has a 35-round capacity helical magazine. A star-shaped carrier holds the pellets in a row in each of six splines. The magazine is inserted into the unloaded gun by closing the action, opening the top plate, then placing it in the gun with actuating pin down. Press in and down on the tab at the rear of the magazine until it pops into place.

provided for pellets of different lengths. The owners manual has a detailed chart that explains what brand and style goes with each magazine.

Begin loading the magazine by positioning it so that the loading port is facing you. Place the actuating pin in the "pin position." Place pellets

plate open, push the yellow magazine ejector tab rearward with the index finger. The magazine will jump out.

Removal of the magazine does not unload the chamber. Pellets in the chamber must be shot out, or pushed out with a cleaning rod after unloading and carefully removing the CO₂ cylinder.

The Daisy 2002 was tested for accuracy with the results shown in the accompanying table, and function fired with Daisy Quick Silver, Crosman Copperhead Supermatch and Beeman Silver Jet Magnum pellets.

The Daisy 2002 suffered several failures to feed when pellets dropped from the magazine irregularly, and were subsequently smashed against the chamber opening. There were also two occasions when the puncture pin assembly seal failed while fir-

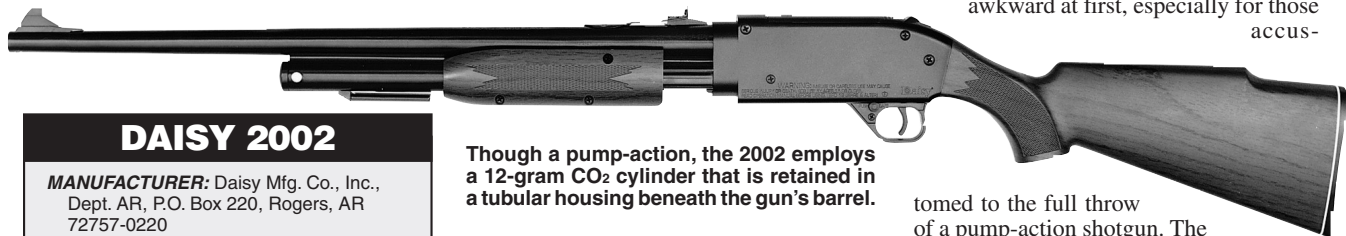
ACCURACY RESULTS

.177 pellet	Vel. @15' (f.p.s.)	Smallest (ins.)	Largest (ins.)	Average (ins.)
Daisy Quick Silver	515 Avg. 9 Sd	0.53	1.00	0.81
Crosman Ch Supermatch	576 Avg. 6 Sd	0.37	0.81	0.55
Beeman Silver Jet Magnum	554 Avg. 13 Sd	0.48	0.82	0.59
Average Extreme Spread				0.65
Five consecutive 5-shot groups from 10 meters, fired from sandbags. Abbreviations: Sd (standard deviation), Ch (Copperhead)				

ing and CO₂ spilled from the cylinder.

Velocity leveled out after a few pellets were fired, but 20 shots later, fell off quickly. We found it possible to fire nearly two full magazines before velocity was so low that pellets merely lobbed out of the barrel and bounced off our cardboard target.

Operating the short pump action is awkward at first, especially for those accus-



DAISY 2002

MANUFACTURER: Daisy Mfg. Co., Inc., Dept. AR, P.O. Box 220, Rogers, AR 72757-0220

MECHANISM TYPE: pump-action CO₂ rifle

CALIBER: .177

OVERALL LENGTH: 40 1/2"

BARREL LENGTH: 23"

WEIGHT: 4 lbs.

MAGAZINE CAPACITY: 35

TRIGGER: single stage, 4 1/4 lbs. pull

SIGHTS: post front, open rear adjustable for windage and elevation

STOCK: plastic; length of pull, 13 1/2"; drop at comb, 1 1/2"; drop at heel, 2 1/4"

ACCESSORIES: one magazine for point-head pellets, one for flat-head pellets.

PRICE: \$82.50

Though a pump-action, the 2002 employs a 12-gram CO₂ cylinder that is retained in a tubular housing beneath the gun's barrel.

into magazine loading port with the solid or point end forward. Push down on the pellet until it rotates slightly past the port. A detent action will be felt. Remaining pellets are loaded in the same fashion.

Insert the magazine by placing the safety on, closing the gun's action, and opening the top plate. Place the magazine in with the actuating pin facing down. Now, press in and down on the tab at the rear of the magazine until it pops into place. Finally, close the top plate.

To remove the magazine, unlatch and open the top plate. While holding the top

tom to the full throw of a pump-action shotgun. The awkwardness does not last long, and once gone, the Daisy 2002 is rather fun to shoot.

Again, removing the magazine does not empty the chamber. The remaining pellet must be either shot out, or pushed out with a cleaning rod. It is also possible to pump into the chamber more than one pellet. We found that six in the barrel is about as much as a fresh CO₂ cylinder can push.

It's not a target rifle, and it's too big for the smallest of young shooters, but the 2002 is good for familiarizing beginner shooters with the feel of a pump-action gun. 