

# KALASHNIKOV'S —

# 7 OF THE BEST

Text and photos by Peter G. Kokalis

## Born in Bulgaria, Made in the USA

**KOKALIS SAYS THE AKs BEING OFFERED BY ARSENAL, INC., ARE THE BEST HE'S SEEN. THEY'RE EXPENSIVE AND WORTH EVERY PENNY.**

In numbers produced, no infantry rifle in the history of modern warfare even comes close to Mikhail T. Kalashnikov's famous assault rifle. It has been estimated that almost 100 million have been produced by more than a dozen countries, including Albania, Bulgaria, China, East Germany, Egypt, Finland, Hungary, Iraq, Israel (the Galil derivative), North Korea, Poland, Romania, Russia, South Africa (the R4 series) and the former Yugoslavia.

Chambered originally for the 7.62x39mm intermediate-size cartridge, the Kalashnikov assault rifle was adopted by the Red Army in 1949 after more than four years of development. Between 1948 and 1950, the AK47 (Avtomat Kalashnikova obrazets 1947g—Kalashnikov assault rifle model 1947) was manufactured with a sheet-metal receiver.

By 1951, this type had been replaced by the far more common variant with a machined, drop-forged receiver (there were two models of this variant and they differed principally in the method by which the buttstock was attached to the receiver).

The AKM (Modernizirovanniy Avtomat sistemi Kalashnikova) version, again with a pinned and riveted sheet-metal receiver, was introduced in 1959. My personal druthers have always been for the AK47 with its more substantial machined, drop-forged receiver. The accuracy potential is slightly greater, as there is less twisting of the receiver around the barrel's axis during the recoil cycle.

Forged receiver AK47s all have a distinctive rectangular lightening mill cut directly above and forward of the magazine well on both sides of the receiver.

I have examined and fielded literally hundreds of Kalashnikovs in Bosnia-Herzegovina, Angola, Afghanistan and El Salvador. Among the very best are those manufactured by Arsenal in Bulgaria. Arsenal now has a subsidiary in the United States, which is in full-scale production of a wide range of semi-automatic-only AK47-type rifles.

SHOTGUN NEWS was recently sent three distinctly different models of Arsenal rifles for test and evaluation. While the

method of operation remains the same in each case and some of the features and dimensions are identical, there are a number of clear-cut differences.

The models sent to SGN were an SA M-7 Classic, a reincarnation of the original Soviet AK47 of the third type; SAS M-7 A1, a down-folder type; and the SA M-7 SF, a side-folder of the type used by the Bulgarian army.



The SA M-7 SF has a side-folding stock and represents the AK configuration currently in service with the Bulgarian armed forces. It's as rigid as a fixed stock.

Each rifle comes equipped with one 30-round magazine, a sling, black plastic oil bottle, instruction manual and the standard AK buttstock kit, which includes a nylon bristle bore brush, jag tip for the cleaning rod, a drift and combination tool with a screwdriver on one end and a front sight adjustment tool on the other. All of these Arsenal AK47s have a black satin baked enamel finish very similar to that found on Soviet Kalashnikovs.

The down-folding stock on the SAS M-7 A1 was taken by Mikhail Kalashnikov directly from the German World-War-II-era MP40 submachine gun, a weapon with which he was probably far more familiar than he ever cared to be.

This stock design does not have a reputation for great rigidity over time. I examined an early folding-stock AK47 in Angola that when mounted to the shoulder could be rotated about 20° in either direction around the bore's axis. However, the Arsenal version is the sturdiest I have ever encountered and down-folder AKs have always been popular with the ground pounders on either side of the firing line.

The tubular steel side-folding stock on the SA M-7 SF model is every bit as secure a firing platform as any rigid-stock infantry rifle. The stock folds to the right and is held in place by a prominent spring-loaded catch/release on the receiver body.

The sheet metal buttplate, welded to the stock struts, has ribs to provide a secure gripping surface for the shoulder pocket. Both of these models have black polymer handguards and pistol grips. All of the furniture on the SA M-7 Classic is made of a dense, very attractive light beech.



The SA M-7 Classic is a reincarnation of the original Soviet AK47 of the third type. Kokalis suspects that folders will be the most popular versions of these AKs.



Arsenal AK47s are made with an old style mill-finished drop-forged receiver, shown with an unfinished receiver forging and several trigger mechanism components.

All of these rifles have four-groove barrels with a 1:9.45 (1:240mm) right-hand twist. The chambers and bores are chrome-lined. The barrel length in each case is 16.34 inches (415mm). The weight, without the magazine, of the SA M-7 Classic is 7.70 pounds (3.50kg). The weight, without magazine, of the SA M-7 SF side-folder is 7.88 pounds (3.58kg). The weight, without magazine, of the SAS M-7 A1 down-folder is 7.79 pounds (3.54kg).



Markings found on the SA M-7 SF drop forged receiver: Kokalis says that the forged receiver is ideal for the sporting user, as it is stiffer than the stamped.

Overall length of the SA M-7 Classic (of which only 243 were manufactured) is 34.4 inches (875mm). The pull length (the distance from the center of the front face of the trigger to the center of the buttplate) is only 12.375 inches.

This is quite short by U.S. military standards. However, remember this is a reincarnation of the original AK47 and while Russians are in general of the same stature as Americans, it must be remembered that they often operate in severe cold with a substantial thickness of padded clothing.

Overall length of the SA M-7 SF side folder is 38.0 inches (965mm). The length of pull is 14 inches. Overall length of the SAS M-7 A1 down-folder is 37.32 inches (948mm). The length of pull is 12.75 inches. Both the SAS M-7 A1 down-folder and the SA M-7 SF side-folder have very effective sheet metal heat shields inside the bottom handguard.



The SA M-7 SF side-folder is equipped with the conventional Soviet-type side rail for mounting optical devices. Kokalis recommends the Kobra red dot sight here.

Fearsome appendages that they are, there are bayonet lugs on all three of the Arsenal AK47s. The SA M-7 SF side-folder also has a rail riveted to the left side of its receiver for mounting optical devices.

Within the last five years so-called "red dot" sights have become de rigeur on modern military shoulder-mounted weaponry. The very best red dot sight you can attach to the SA M-7 SF side-folder is the Russian Kobra. Manufactured by Motozavod Izhevsk "Axion," (website: www.cobra.guns.ru; e-mail: Cobrasights@izh.com) the Kobra is an open collimator sight currently in use by the Russian military.

The model we attached to the Arsenal SA M-7 SF side-folder was the second generation EKP-8-02 attached to a solid (previous models were skeletonized) side mount for an AK-type side-receiver-rail. The Kobra provides extremely fast target acquisition of both static and moving targets.

This version was developed as a consequence of experience gained fighting the Chechen Islamic terrorists. The EKP-8-02 comes equipped with a camouflage-pattern carrying pouch, coin-sized cell battery, special adjusting tool, cleaning cloth and instruction manual. The following 3-volt CR series batteries can be used to power the Kobra EKP-8-02: 2325, 2330, 2335, 2340 and 2345.

To power on the Kobra EKP-8-02, the operator simply rotates the switch on the right side of the unit counterclockwise. Pressing a button to the rear of the power switch sequentially offers the operator four red reticle patterns: T-bar, red dot over an arrow pointer, arrow pointer and red dot. A rocker arm switch provides the operator with 16 brightness levels.

Based upon requests from the Russian military, the windage adjustment knob has been moved to the right side of the Kobra body at the rear. The elevation knob remains on top of the unit's body at the rear.

Other improvements include a slightly raised optical lens for an unobstructed field of view and improved weatherproofing. This is a battle-proven, rugged combat red dot sight.



Arsenal SAS M-7 down-folder: Kokalis says that Russian down-folding stocks become loose shortly after fielding, but this one exhibited far better workmanship.



The Arsenal SAS M-7 A1 is a classic example of the AK47 with the down-folding stock that is a perennial favorite of ground pounders on both sides of the firing line.



**The tubular steel side-folding stock on the SA M-7 SF side-folder model is every bit as secure a firing platform as any rigid-stock infantry rifle. Still short, though.**

The AK47-type muzzle nut on the SA M-7 Classic can be removed. The SAS M-7 A1 down-folder and the SA M-7 side-folder have a removable flash hider, 80mm in length, with four longitudinal slots.

There are two sling mounting points on the SA M-7 SF side-folder: an eyelet on the left side of the forearm's front retaining holder, which is pinned to the barrel, and a hinged swivel on the left side of the receiver to the rear of the scope rail.

Sling mounting points on the SA M-7 Classic are identical. The SAS M-7 A1 down-folder's rear sling mounting point is a hinged swivel attached to the stock catch/release button on the left side of the receiver.

The iron sights are essentially those of previous Kalashnikovs. The front sight is a threaded round post with protective ears that is adjustable for both elevation and windage zero. While windage can be altered with a punch and hammer, both Russian and Chinese armorers tools can be located that were designed specifically for this purpose and prevent marring.

Remember, to move the point of impact up, you must move the front sight post down. Also, to move the point of impact to the left, you must move the front sight to the right.

The rear sight is a sliding tangent-type with an open U-notch. In the European manner, it is adjustable for elevation only to 800 meters in 100-meter increments. There is a battle sight setting (marked with a Cyrillic "P") just behind the 100-meter mark. In elevation, it is the equivalent of 300 meters.

Bulgarian caliber 7.62x39mm magazines for these rifles are available in 10-, 30-, or 40-round capacities. No tool is required to load these two-position-feed, staggered-column, detachable box-type magazines.



**The SA M-7 side-folder and SAS M-7 A1 down-folder both have a removable flash hider, 80 mm in length, with four longitudinal slots. The Classic has a muzzle nut.**

Kalashnikov magazines, among the most reliable ever fielded, have undergone an interesting evolution. The very first Soviet AK magazines had plain slab-sided steel bodies. Subsequent steel-bodied magazines had lighter stamped sheet-metal bodies with prominent reinforcing ribs.

When the AKM was introduced, a magazine with a light-weight aluminum body was fielded. It proved to be insubstantial and was quickly withdrawn from service.



**Bulgarian caliber 7.62x39mm AK magazines are available in 10-, 30- and 40-round capacities and are made of a rugged, durable black fiberglass-reinforced thermoplastic.**

This aluminum magazine was replaced by the well-known magazine featuring a body made of glass-reinforced, rust-colored, AG-4S cellulose resin. This was followed in turn by a magazine with a body of dark-brown butyrate plastic (also called ABS) of the type commonly used in appliance manufacture in the United States. The body was injection-molded.

Bulgarian AK magazines, usually marked with a "10" in a double circle, are made from black, fiberglass-reinforced, thermoplastic (this indicates that it can be injection-molded) polyamide (epoxy-based resin) with a "waffle" pattern to add further structural rigidity.

Injection-molded polyamides are super industrial-strength synthetics well-known for their resistance to high temperatures, corrosion, wear, chemicals and radiation. Lighter than steel, they have a higher tensile strength than aluminum.

With one exception, Kalashnikovs do not have a hold-open device and thus after the last round has been fired, the bolt group will travel forward into battery without chambering a round. There has been some criticism of this, but in the field many operators first load two or three rounds of tracer, if available, to indicate that the magazine is running dry.

Yugoslavian AK magazines have a projection on the follower that will hold the bolt group rearward. However, when the empty magazine is removed, the bolt will immediately fly forward.

AK magazines must be rocked into and out of the magazine well during insertion and removal and tactical reloading suffers as a consequence. In this area, the M16 clearly wins, although M16 magazines are distinctly inferior to those of the Kalashnikov.



**The sliding tangent rear sight is adjustable for elevation to 800 meters in 100-meter increments. The battle sight setting (the Cyrillic "P") is equivalent to 300 meters.**

## Arsenal AK Specifications

<b>Caliber:</b>	7.62x39mm.
<b>Operation:</b>	Gas-operated without a regulator, locked-breech with a rotary bolt, fires from the closed-bolt position.
<b>Feed:</b>	10-, 30- and 40-round staggered-column, two-position-feed, detachable box-type magazines.
<b>Weight, without magazine:</b>	SA M-7 Classic: 7.7 pounds (3.50kg) SA M-7 side-folder: 7.9 pounds (3.59kg) SAS M-7 A1 down-folder: 7.5 pounds (3.40kg).
<b>Length, overall:</b>	SA M-7 Classic: 34.4 inches (875mm) SA M-7 SF side folder: 38.0 inches (965mm) SAS M-7 A1 down-folder: 37.3 inches (948mm).
<b>Barrel:</b>	Four-grooves with a 1:9.45 (1:240mm) RH twist. Chrome-lined chambers and bores.
<b>Barrel length:</b>	16.34 inches (415mm).
<b>Sights:</b>	Front sight: round post with protective ears adjustable for both elevation and windage zero. Rear sight: sliding tangent-type with an open U-notch; adjustable for elevation only to 800 meters in 100-meter increments. There is a battle sight setting (marked with a Cyrillic "P") just behind the 100-meter mark. In elevation, it is the equivalent of 300 meters.
<b>Finish:</b>	Black satin baked enamel.
<b>Suggested retail price:</b>	\$1,100 to \$1,300.
<b>Manufacturer:</b>	Arsenal, Inc., Dept. SGN, 5015 West Sahara Avenue, Suite #125, Las Vegas, Nev. 89146; phone: 1-888-539-2220; fax: 1-702-643-2088; website: www.arsenalinc.com

T&E summary: Highest possible quality in an AK, with mill-finished drop forged receivers. Close duplicates of the original Soviet AK47. Total reliability, yet built to closer tolerances than most Kalashnikovs.

The AK's magazine catch/release is a spring-loaded paddle in a housing at the front end of, and integral with, the stamped sheet-metal trigger guard.

### Conclusions

Accuracy has long been an area of criticism with the Kalashnikov series. Very rarely will any AK shoot better than 3 to 4 moa. Surely ammunition is usually part of the problem, as rarely is true match-grade ball ever available in 7.62x39mm.

In addition, the AK's exceptional reliability is partially a result of manufacturing tolerances designed to maximize reliability under the adverse conditions. This, without doubt, affects the rifle's accuracy potential. However, the question remains how much accuracy is necessary, or even desired, for a battlefield infantry rifle? In most instances the Kalashnikov is more than "good enough for government work."

The manufacturer's suggested retail price for these Arsenal semiautomatic-only AK47-type rifles varies from \$1,100 to \$1,300. They are well worth it in my opinion.



**In the author's opinion, the very best red dot sight you can attach to the SA M-7 SF side-folder is the Russian Kobra, developed during fighting against the Chechens.**

These are, without doubt, the highest quality and most accurate Kalashnikov rifles I have ever examined and no matter what we did we simply could not induce a malfunction during our firing tests.

Yes, you might be able to purchase two or more imported AKM-type rifles with sheet metal receivers for that price. But, keep in mind the mechanism of their legal importation into the United States.

The receivers are manufactured overseas with magazine wells that accept only single-column magazines. Once imported, the magazine wells must be hogged out with an end mill to accept a standard staggered-column AK magazine and then re-finished and assembled with a required number of U.S.-made components.

These Arsenal semiautomatic-only AK47s are surely an instance of getting what you pay for.



**The SA M-7 SF side-folder uses a selector much like the Galil ARM's. A vertical lever on the left side of the pistol grip can be manipulated to operate the selector.**

### AKs—How They Operate

Almost all Kalashnikov series assault rifles are gas-operated, but have no gas regulator. I have never seen a Kalashnikov malfunction as a result of fouling. Two variants, the Polish PMK-DGN-60 and Yugoslavian M70B1/AB2, have gas cutoffs to permit firing rifle grenades with ballistite (blank) cartridges. AKs are locked-breech designs with rotary bolts and fire from the closed-bolt position.

They operate as follows: After ignition of the primer and propellant, gases are diverted into the gas cylinder on top of the barrel. The piston is driven rearward and the bolt carrier, attached to the piston extension, goes through the necessary amount of free-travel until the gas pressure drops to a safe level.

A cam-slot milled into the bolt carrier engages the bolt's cam lug and rotates the bolt about 35° to the left to unlock it from its recesses in the barrel extension. Unlike many other designs, the Kalashnikov provides no primary extraction during bolt rotation. Thus, in any of its calibers, an exceptionally large extractor claw is required.



**When folded to the right, the SA M-7 SF buttstock is securely retained by a spring-loaded catch/release on the receiver. This is a study, rugged folding stock.**

As the bolt travels back, it rolls the hammer over and compresses the recoil spring. The bolt group ceases its rearward travel when the carrier slams into the rear end of the receiver. The recoil spring then drives the bolt group forward, another round is stripped from the magazine and chambered, and the bolt then comes to rest.

The bolt carrier itself continues onward for about 5.5mm after the bolt's two locking lugs have engaged their recesses in the barrel extension. The long, single-strand recoil spring is wrapped around a guide rod consisting of two telescoping steel rods on Bulgarian milled-receiver AKs.

The front retaining cap permits user separation of the spring and rods. The rear end of the guide rod assembly slides into a notch on top of the receiver's end piece and serves to hold the stamped sheet-metal receiver top cover in place.

Soviet AKM and AK74 top covers have a ribbed configuration for added strength. The SA M-7 SF side-folder uses this cover; however, most Arsenal AK47 series rifles use the heavier, smooth top cover characteristic of milled receiver construction.

The trigger mechanism is based upon the .30 M1 Garand's. The hammer has two hooks, and there are two sears: a primary sear on an extension of the trigger and a spring-loaded secondary sear directly to the rear. When the hammer is in the cocked position, its left side hook is held by the primary sear. When the trigger is pulled, the trigger extension rotates forward and the primary sear disengages, leaving the hammer free to rotate forward.

In semiautomatic fire, when the bolt rolls the hammer back, it is caught by the secondary sear. When the trigger is released, the trigger extension and primary sear move back to catch the hammer as it is released by the secondary sear.

In a full-auto rifle, a boss on the selector-lever axis pin forces the secondary sear back so that it plays no role in controlling the hammer. The trigger mechanism's mainspring is of the multiple-strand type, which lasts longer and offers better performance under adverse conditions.

The trigger pull weights on the three semiautomatic-only Arsenal AK47s used in SGN's test and evaluation were exceptionally light. Trigger pull weights on both the SA M-7 Classic and SAS M-7 A1 down-folder were only 3.5 pounds, while that of the SA M-7 SF side-folder was 4.0 pounds.



**The selector lever and a flapper-type magazine catch/release are standard AK features. Kokalis counts the selector one of the AK's weak points, as it is noisy.**

On selective-fire AK rifles there is also an auto-safety-sear that protrudes through a slot in the right receiver rail. In full-auto, the auto-safety-sear holds the hammer back and it must be tripped by the bolt carrier in order to free the hammer to fire another round. The auto-safety-sear has been deleted by BATFE regulations on semiautomatic-only AKs.



**All of the furniture on the SA M-7 Classic is made of a dense, very attractive light beech, but Kokalis suspects most users will go for the black synthetic stocks.**

The selector lever, a stamped sheet-metal bar on the right side of the receiver is manipulated by the thumb and remains, in my opinion, one of the Kalashnikov's few defects. It is noisy, stiff and difficult to operate, but its firing modes have been located in a logical manner.

The top position is "safe." In this position, the trigger is blocked, but the bolt can be retracted just enough to see if the chamber contains a loaded round. The middle position provides for full-auto fire in selective-fire models. The next position down is for semiautomatic fire.

Under stress, the operator will invariably push the selector bar all the way downward into the semiautomatic position. That is exactly how the weapon should be employed in almost every instance.

Thus, to obtain full-auto fire, the operator must consciously push the selector bar back up to the full-auto notch. The SA M-7 SF side-folder sent to SGN for test and evaluation has a selector feature taken directly from the selective-fire Galil ARM.

A vertical lever on the left side of the pistol grip at the top can be manipulated to operate the selector. Pushing the lever forward rotates the selector lever on the right side of the receiver up into the "safe" position. Pulling back on the lever draws the selector bar down into the "fire" position. From the operator's perspective this orientation is exactly opposite of what it should be.



**Forged receiver AK47s all have a distinctive rectangular lightening mill cut directly above and forward of the magazine well on both sides of the gun's receiver.**

### Bulgarian Small Arms

The history of small arms design and manufacture in Bulgaria dates back to the 19th century. In 1878 a factory was established in Rousse to supply the needs of Bulgaria's new army. Called the Artillery Arsenal, it was originally managed by officers of the Russian Czarist army. In 1884 General Simeon Simeon Nikolov Vankov was appointed as the first Bulgarian managing director.

In 1891, the plant facility was moved to Sofia and was named the Sofia Artillery Arsenal. In Russia, small arms development to this day has been traditionally the domain of the artillery ministry. In 1924 this manufacturing plant was moved to Kazanlak and renamed the "State Military Factory."



**The round post front sight with protective ears is adjustable for both elevation and windage zero. It can be drifted, but the proper armorer's tool is the better choice.**

Its prime directive was to “produce and repair all military equipment necessary for the army, the police, the border troops and all state security organs, as well as the testing of new models.” During this time frame, rifles, pistols and small arms ammunition were produced at Kazanlak.

After World War II, the manufacturing base of the plant was diversified and it commenced production of agricultural equipment, diesel engines, electric motors, batteries and other products. In 1948, the State Military Factory was transferred from the Defense Ministry to the Ministry of Industry and Crafts and designated as Factory 10.

Between 1956 and 1958, Factory 10 commenced manufacture of a recoilless cannon (B10) and the AK47 assault rifle under Soviet license. The first AK47 came off the assembly line in 1958. The 1 millionth Bulgarian AK47 was assembled in 1982. Several of its derivatives are still fielded by the Bulgarian military.

In 1964, the plant was renamed again as the United Industrial Plant Friedrich Engels. Production facilities were expanded to include facilities to produce springs, CNC machinery, a computer center and the ability to manufacture propellants, primers and pyrotechnic material.



**Left to right: Arsenal semiautomatic-only SA M-7 SF side-folder, SA M-7 Classic and SAS M-7 A1 down-folder AK47 types. Kokalis says these are the best AKs ever made.**



**The ammunition used in SGN's test and evaluation of the three Arsenal AK47s was imported by Wolf Performance Ammunition. It's reliable, accurate and cost-effective.**

Between 1977 and 1989, the factory added the licensed production of the following military products: Makarov pistol and 9x18mm ammunition, PK, PKM and PKT (tank version) caliber 7.62x54R General Purpose Machine Guns, Zu23-2 23mm anti-aircraft cannon, 5.45x39mm ammunition and the AK74 series of rifles and the 122mm howitzer.

Today the company is known the Arsenal Corporation (Dept. SGN, 58 Simeonovsko Shosse Boulevard, BL-1700, Sofia, Bulgaria). The Bulgarian defense-marketing agency, Kintex (Dept. SGN, 66 James Boucher Street, Sofia 1407, Bulgaria), offers the largest variety of AK47 and AK74 rifles and squad automatics in the world. Available calibers include 7.62x39mm, 5.45x39mm, 5.56x45mm NATO and .22 LR. The Bulgarian armed forces issue a substantial number of the variants available.

In December 1999, Arsenal, Inc. opened a facility in the U.S. (Dept. SGN, 5015 West Sahara Avenue, Suite #125, Las Vegas, Nev. 89146; phone: 1-888-539-2220; fax: 1-702-643-2088; website: www.arsenalinc.com). Many of the personnel at this facility were trained at Tula Arsenal in Russia. The quality of semiautomatic Kalashnikov-type rifles manufactured here duplicates at every level the products produced in Russia and in many instances exceeds them.

#### **M43 Cartridge—History and Wound Ballistics**

Attributed to designers Nikolai M. Elizarov and Boris V. Semin, Soviet historians contend that work on the M43 (model 1943) 7.62x39mm cartridge began in 1939, was temporarily suspended because of The Great Patriotic War and then re-commenced and finalized in 1943.

Others have stated that it was derived from the German 7.92x33mm Kurz Patrone (short cartridge) developed for the world's first assault rifle produced in significant quantities, the World War II MP43/44 (StG44/45).

This latter scenario is highly unlikely, as the Soviets would have required specimens of 7.92x33mm Kurz ammunition at least a year or two prior to their adoption of the 7.62x39mm round in 1943—well before the MP43 was fielded on the Eastern front (first reported use was December 1942).

Whatever the case, the Soviet M43 cartridge is a true intermediate-size assault rifle round. First prototypes featured cases 40.29mm in length (thus: 7.62x41mm). The case was trimmed to 38.6mm as the original projectile proved unsatisfactory and a new bullet was adopted that required a shorter case.

(It has been proposed by writer J. Hartikka that the M43 cartridge was cloned from the Genschow & Co. [GECO] 7.75x39mm cartridge of 1935, but it cannot be demonstrated that this is anything other than internet chat room speculation.)

The following countries have manufactured ammunition in this caliber: Austria, Belgium, Brazil, Bulgaria, Cuba, Czechoslovakia, East Germany, Egypt, Finland, France, Hungary, Iraq, Israel, Netherlands, North Korea, Norway, Peru, Poland, Portugal, People's Republic of China, Romania, South Africa, South Korea, Sweden, Syria, United States, USSR, West Germany, and Yugoslavia.

In addition to ball ammunition, it has been produced with hollow point, tracer, API (Armor-Piercing Incendiary), and IT (Incendiary Tracer) projectiles.

Special-purpose loads include heavy subsonic ball (for use with sound suppressors), practice blanks, short-range loads and drill rounds. Ball ammunition will be encountered in two configurations. Most prevalent is a 123-grain boattail bullet that usually consists of a copper-washed steel jacket, lead and antimony sleeve, and a mild steel core (Soviet Type PS).

Yugoslavia's M67 ball ammunition, as well as that of several other countries, uses a flat-based bullet of approximately the same weight, with a copper-alloy jacket and lead core. Muzzle

velocity of both types is between 2330 and 2400 fps.

In its boattail configuration, the 7.62x39mm bullet travels point-forward about 10 inches in soft tissue before significant yaw occurs. At that point the bullet will yaw to less than 90°, then come back down to a point-forward position, and finally yaw 180° and end its travel in a base forward position.

Bi-lobed yaw cycles of this type are commonly observed with pointed, non-deforming bullets. Total penetration in living tissue is almost 29 inches.

Abdominal shots usually exhibit no greater tissue disruption than that produced by a .38 Spl. pistol bullet since, after 10 inches of travel without yawing, the bullet has generally passed through the abdominal cavity. However, of course, this round is capable of inflicting such damage at far greater ranges than a handgun.

While I was working at the Wound Ballistics Laboratory at the Letterman Army Institute of Research in San Francisco, we tested the lead-cored, flat-base Yugoslav bullet and found it to be considerably more effective.

It commences its yaw cycle after only 3 to 4 inches of penetration. Once again, the yaw cycle is generally bi-lobed. The bullet reaches its maximum penetration of 23 to 26 inches traveling base-forward, somewhat flattened and retaining almost all of its original weight (two or three small fragments are shed in the area of maximum cavitation).

Although the flat-based 7.62x39mm bullet is shorter (.93") than the more common boattail projectile (1.040 inches), it will be expected to cause more damage to the abdomen, liver, spleen or pancreas because the bullet passes through these organs at a large yaw angle.

Remember, if we have neither mushrooming nor fragmentation, yawing is all that remains to maximize tissue disruption and enhance the bullet's performance—always provided we do not sacrifice adequate penetration.



**Mikhail Kalashnikov clearly took the down-folder buttstock on the AK47 from the German MP40 submachine gun. It has been carried and used in all corners of the world.**

The ammunition used in our test and evaluation of the three Arsenal AK47s was imported by Wolf Performance Ammunition (Dept. SGN, 1225 North Lance Lane, Anaheim, Calif. 92806; phone: 888-757-9653; fax: 714-632-9232; Email: info@wolfammo.com; website: www.wolfammo.com) and manufactured at Tula Cartridge Works in Russia.

Headstamped “7.62X39 WOLF”, the lacquered steel case has a red case mouth sealant and primer annulus. This ammunition is Berdan primed. Boattail projectiles in the standard weight, 122-123 grains, are available in either Full Metal Jacket (FMJ) or Hollow Point (HP) types.

In this weight, the muzzle velocity is approximately 2400 fps. Testing of 7.62x39mm HP projectiles, designed originally to meet U.S. importation regulations, indicated that most often the bullets became frangible upon contact with the tissue simulant or else exhibited no expansion at all.

A loading with a 154-grain Soft Point (SP) bullet, designed specifically for hunting, is also available. This projectile features a muzzle velocity of approximately 2100 fps. In all calibers, Wolf ammunition has proven to be reliable, accurate and competitively priced.