# AK47 and variant information

By Paul Popov on Saturday, December 13, 2014 at 10:59am

**The AK-47 (contraction of Russian: Автомат Калашникова образца 1947 года; Avtomat Kalashnikova obraztsa 1947 goda; "Kalashnikov's automatic rifle model of year 1947") is a selective fire, gas operated 7.62mm assault rifle developed in the Soviet Union by Mikhail Kalashnikov. Six decades later, the AK-47 and its variants and derivatives remain in service throughout the world. It has been manufactured in many countries and has seen service with regular armed forces as well as irregular, revolutionary and terrorist organizations worldwide.

The AK-47 was one of the first true assault rifles and, due to its durability, low production cost and ease of use, the weapon and its numerous variants remain the most widely used assault rifles in the world—so much so that more AK-type rifles have been produced than all other assault rifles combined. It was also used by the majority of the member states of the former Warsaw Pact. The AK-47 was also used as a basis for the development of many other types of individual and crew-served firearms.

Design work on the AK began in 1944. In 1946 the rifle was presented for official military trials, and a year later the fixed stock version was introduced into service with select units of the Red Army (the folding stock model was developed later). The AK-47 was officially accepted by the Soviet Armed Forces in 1949. An early development of the design was the AKS-47 (S—Skladnoy priklad), which differed in being equipped with an underfolding metal shoulder stock.

Design background

During World War II, the Germans developed the assault rifle concept, based upon research that showed that most firefights happen at close range, within 300 meters. The power and range of contemporary rifle cartridges was excessive for most small arms firefights. As a result, armies sought a cartridge and rifle combining submachine gun features (large-capacity magazine, selective-fire) with an intermediate-power cartridge effective to 300 meters. To reduce manufacturing costs, the 7.92x57mm Mauser cartridge case was shortened, the result of which was the lighter 7.92x33mm Kurz.

The resultant rifle, the Sturmgewehr 44 (StG44) was not the first with these features; its predecessors were the Italian Cei-Rigotti and the Russian Fedorov Avtomat design rifles. The Germans, however, were the first to produce and field sufficient numbers of this assault rifle to properly evaluate its combat utility. Towards the end of the war, they fielded the weapon against the Soviets; the experience deeply influenced Soviet military doctrine in the post-war years.

Mikhail Kalashnikov began his career as a weapon designer while in a hospital after being wounded during the Battle of Bryansk. After tinkering with a sub-machine gun design, he entered a competition for a new weapon that would chamber the 7.62x41mm cartridge developed by Elisarov and Semin in 1943 (the 7.62x41mm cartridge predated the current 7.62x39mm M1943). A particular requirement of the competition was the reliability of the firearm in the muddy, wet, and frozen conditions of the Soviet frontline. Kalashnikov designed a carbine, strongly influenced by the American M1 Garand, that lost out to the Simonov design that would later become the SKS semi-automatic carbine. At the same time, the Soviet Army was interested in developing a true assault rifle employing a shortened M1943 round. The first such weapon was presented by Sudayev in 1944; however in trials it was found to be too heavy. A new design competition was held two years later where Kalashnikov and his design team submitted an entry. It was a gas-operated rifle which had breech-block mechanism similar to his 1944 carbine and curved 30-round magazine.

Kalashnikov's rifles (codenamed AK-1 and -2) proved to be reliable and the gun was accepted to second round of competition along with designs by A.A Demetev and F. Bulkin. In late 1946, as the guns were being tested, one of Kalashnikov's assistants, Aleksandr Zaytsev, suggested a major redesign of AK-1, particularly to improve reliability. At first, Kalashnikov was reluctant, given that their rifle had already fared better than its competitors; however eventually Zaytsev managed to persuade Kalashnikov. The new rifle was produced for a second round of firing tests and field trials. There, Kalashnikov assault rifle model 1947 proved to be simple and reliable, under a wide range of conditions with convenient handling characteristics. In 1949 it was therefore adopted by the Soviet Army as '7.62mm Kalashnikov assault rifle (AK).

Design concept

The AK-47 is best described as a hybrid of previous rifle technology innovations: the double locking lugs and unlocking raceway of the M1 Garand/M1 carbine, the trigger and safety mechanism of the John Browning designed Remington Model 8 rifle, and the gas system, layout, and intermediate cartridge of the StG44. Kalashnikov's team had access to all of these weapons and had no need to "reinvent the wheel", though he denied that his design was based on the German Sturmgewehr 44 assault rifle. Kalashnikov himself observed: "A lot of [Soviet Army soldiers] ask me how one can become a constructor, and how new weaponry is designed. These are very difficult questions. Each designer seems to have his own paths, his own successes and failures. But one thing is clear: before attempting to create something new, it is vital to have a good appreciation of everything that already exists in this field. I myself have had many experiences confirming this to be so."

Receiver development history

There were many difficulties during the initial phase of production. The first production models had stamped sheet metal receivers. Difficulties were encountered in welding the guide and ejector rails, causing high rejection rates. Instead of halting production, a heavy machined receiver was substituted for the sheet metal receiver. This was a more costly process, but the use of machined receivers accelerated production as tooling and labor for the earlier Mosin-Nagant rifle's machined receiver were easily adapted. Partly because of these problems, the Soviets were not able to distribute large numbers of the new rifle to soldiers until 1956. During this time, production of the interim SKS rifle continued.

Once manufacturing difficulties had been overcome, a redesigned version designated the AKM (M for "modernized" or "upgraded" — in Russian: Автомат Калашникова Модернизированный Avtomat Kalashnikova Modernizirovanniy) was introduced in 1959. This new model used a stamped sheet metal receiver and featured a slanted muzzle brake on the end of the barrel to compensate for muzzle rise under recoil. In addition, a hammer retarder was added to prevent the weapon from firing out of battery (without the bolt being fully closed), during rapid or automatic fire. This is also sometimes referred to as a "cyclic rate reducer", or simply "rate reducer", as it also has the effect of reducing the number of rounds fired per minute during automatic fire. It was also roughly one-third lighter than the previous model. Both licensed and unlicensed production of the Kalashnikov weapons abroad were almost exclusively of the AKM variant, partially due to the much easier production of the stamped receiver. This model is the most commonly encountered, having been produced in much greater quantities. All rifles based on the Kalashnikov design are frequently referred to as AK-47s in the West, although this is only correct when applied to rifles based on the original 3 receiver types. In most former Eastern Bloc countries, the weapon is known simply as the "Kalashnikov".

In 1978, the Soviet Union began replacing their AK-47 and AKM rifles with a newer design, the AK-74. This new rifle and cartridge had only started being exported to eastern European nations when the Soviet Union collapsed, drastically slowing production of this and other weapons of the former Soviet bloc.

Receiver type Description(this naming convention continues with all types)Type 2A/B Milled from steel forging.Type 3A/B "Final" version of the milled receiver, from steel bar stock. The most ubiquitous example of the milled-receiver AK-47.Type 4A/B Stamped AKM receiver. Overall, the most-used design in the construction of the AK-series rifles.

FeaturesAn Afghan National Police instructor using an AKSThe RK 54 – the Finnish designation for the AK-47 - is used by the reserve forces.

The main advantages of the Kalashnikov rifle are its simple design, fairly compact size and adaptation to mass production. It is inexpensive to manufacture, and easy to clean and maintain; its ruggedness and reliability are legendary. The AK-47 was initially designed for ease of operation and repair by glove-wearing Soviet soldiers in Arctic conditions. The large gas piston, generous clearances between moving parts, and tapered cartridge case design allow the gun to endure large amounts of foreign matter and fouling without failing to cycle. This reliability comes at the cost of accuracy, as the looser tolerances do not allow for precision and consistency. Reflecting Soviet infantry doctrine of its time, the rifle is meant to be part of massed infantry fire, not long range engagements. The average service life of an AK-47 is 20 to 40 years depending on the conditions to which it has been exposed.

The notched rear tangent iron sight is adjustable, and is calibrated in hundreds of meters. The front sight is a post adjustable for elevation in the field. Windage adjustment is done by the armory before issue. The battle setting places the round within a few centimeters above or below the point of aim out to about 250 meters (275 yd). This "point-blank range" setting allows the shooter to fire the gun at any close target without adjusting the sights. Longer settings are intended for area suppression. These settings mirror the Mosin-Nagant and SKS rifles which the AK-47 replaced. This eased transition and simplified training.

The prototype of the AK-47, the AK-46, had a separate fire selector and safety. These were later combined in the production version to simplify the design. The fire selector acts as a dust cover for the charging handle raceway when placed on safe. This prevents intrusion of dust and other debris into the internal parts. The dust cover on the M16 rifle, in contrast, is not tied to the safety.

The bore and chamber, as well as the gas piston and the interior of the gas cylinder, are generally chromium-plated. This plating dramatically increases the life of these parts by resisting corrosion and wear. This is particularly important, as most military-production ammunition during the 20th century contained Potassium chlorate in the primers. On firing, this was converted to corrosive and hygroscopic Potassium chloride which mandated frequent and thorough cleaning in order to prevent damage. Chrome plating of critical parts is now common on many modern military weapons.

Operating cycle

To fire, the operator inserts a loaded magazine, moves the selector lever to the lowest position, pulls back and releases the charging handle, aims, and then pulls the trigger. In this setting, the firearm fires only once (semi-automatic), requiring the trigger to be released and depressed again for the next shot. With the selector in the middle position (full-automatic), the rifle continues to fire, automatically cycling fresh rounds into the chamber, until the magazine is exhausted or pressure is released from the trigger. As each bullet travels through the barrel, a portion of the gases expanding behind it is diverted into the gas tube above the barrel, where it impacts the gas piston. The piston, in turn, is driven backward, pushing the bolt carrier, which causes the bolt to move backwards, ejecting the spent round, and chambering a new round when the recoil spring pushes it back.

## Disassembly

Dismantling the rifle involves the operator depressing the magazine catch and removing the magazine. The charging handle is pulled to the rear and the operator inspects the chamber to verify the weapon is unloaded. The operator presses forward on the retainer button at the rear of the receiver cover while simultaneously lifting up on the rear of the cover to remove it. The operator then pushes the spring assembly forward and lifts it from its raceway, withdrawing it out of the bolt carrier and to the rear. The operator must then pull the carrier assembly all the way to the rear, lift it, and then pull it away. The operator removes the bolt by pushing it to the rear of the bolt carrier; rotating the bolt so the camming lug clears the raceway on the underside of the bolt carrier and then pulls it forward and free. When cleaning, the operator will pay special attention to the barrel, bolt face, and gas piston, then oil lightly and reassemble.

BallisticsMain article: 7.62x39mm

The standard AK-47 or AKM fires the 7.62x39mm cartridge with a muzzle velocity of 710 metres per second (2,300 ft/s). Muzzle energy is 2,010 joules (1,480 ft·lbf). Cartridge case length is 38.6 millimetres (1.52 in), weight is 18.21 grams (281.0 gr). Projectile weight is normally 8 grams (120 gr). The AK-47 and AKM, with the 7.62×39mm cartridge, have a maximum effective range of around 400 metres (1,300 ft).

Variants

Kalashnikov variants include:1955 AK-47 Type 3

* AK-47 1948–51, 7.62x39mm — The very earliest models, with the Type 1 stamped sheet metal receiver, are now very rare. * AK-47 1952, 7.62x39mm — Has a milled receiver and wooden buttstock and handguard. Barrel and chamber are chrome plated to resist corrosion. Rifle weight is 4.2 kg (9.3 lb). * AKS-47 — Featured a downward-folding metal stock similar to that of the German MP40, for use in the restricted space in the BMP infantry combat vehicle, as well as by paratroops. * RPK, 7.62x39mm — Squad automatic rifle version with longer barrel and bipod. * AKM, 7.62x39mm — A simplified, lighter version of the AK-47; Type 4 receiver is made from stamped and riveted sheet metal (see schematic above). A slanted muzzle device was added to counter climb in automatic fire. Rifle weight is 3.1 kg (6.8 lb) due to the lighter receiver. * AKMS, 7.62x39mm — Folding-stock version of the AKM intended for airborne troops. Stock may be either side- or

under-folding * AK-74 series, 5.45x39mm * AK-101 series * AK-103/AK-104 series * AK-107/AK-108 series

Production outside of the Soviet Union/Russia

Military variants only.Country Variant(s)Albania Unknown. OthersTip C (Type C) Sniper RifleBulgaria AKK (Type 3 AK-47), AKKS (Type 3 with side-folding buttstock)AKKMS (AKMS) AKKN-47 (fittings for NPSU night sights)AK-47M1 (Type 3 with black polymer furniture)AK-47MA1/AR-M1 (same as -M1, but in 5.56 mm NATO)AKS-47M1 (AKMS in 5.56x45mm NATO), AKS-47MA1 (same as AKS-47M1, but semi-automatic only)AKS-47S (AK-47M1, short version, with East German folding stock, laser aiming device)AKS-47UF (short version of -M1, Russian folding stock), AR-SF (same as -47UF, but 5.56 mm NATO)AKS-93SM6 (similar to -47M1, cannot use grenade launcher)RKKS, AKT-47 (.22 rimfire training rifle)China Type 56German Democratic Republic MPi-K (AK-47), MPi-KS (AKS), MPi-KM (AKM), MPi-KMS-72 (AKMS), KK-MPi Mod.69 (.22-Lr select-fire trainer);Egypt AK-47, Misr assault rifle (AKM), MaadiHungary AK-63D/E (AMM/AMMSz), AKM-63, AMD-65, AMD-65M, AMP, NGM 5.56Iraq Tabuk Sniper Rifle, Tabuk Assault Rifle (AKM/AKMS), Tabuk Short Assault RifleIndia AK-47 and INSASIran KLS (AK-47), KLF (AKS), KLT (AKMS)Finland RK 62, RK 95 TPNigeria OBJ-006[22]North Korea Type 58A (Type 3 AK-47), Type 58B (stamped steel folding stock), Type 68A (AKM-47) Type 68B (AKMS)Pakistan Reverse engineered by hand and machine in Pakistan's semi-autonomous tribal areasPoland pmK/kbk AK (name has changed from pmK - "pistolet maszynowy Kałasznikowa", Kalashnikov SMG to the kbk AK - "karabinek AK", Kalashnikov Carbine in mid 1960s) (AK-47), kbkg wz. 1960, kbk AKM (AKM), kbk AKMS (AKMS), kbk wz. 1988 Tantal based on the 7.62 mm kbk AKMS wz. 81), kbs wz. 1996 BerylRomania PM md. 63 (AKM), PM md. 65 (AKMS), PM md. 90 (AKMS), collectively exported under the umbrella name AIM or AIMSPA md. 86 (AK-74), exported as the AIMS-74PM md. 90 short barrel (AK-104), PA md. 86 short barrel (AK-105) exported as the AIMRSerbiaFormer Yugoslavia M64 (AK-47 with longer barrel), M64A (grenade launcher)

M64B (M64 w/ folding stock), M66, M70, M70A, M70B1, M70AB2, Zastava M76,M77, M92, M21Sudan MAZ[23], based on the Type 56Vietnam Chinese Type-56Venezuela License granted, factory under construction

Certainly more have been produced elsewhere; but the above list represents known producers and is limited to only military variants. An updated AKM design is still produced in Russia.

DerivativesType 56 and AKS-47

The basic design of the AK-47 has been used as the basis for other successful rifle designs such as the Finnish Valmet 62/76 and Sako RK 95 TP, the Israeli Galil, the Indian INSAS and the Yugoslav Zastava M76 and M77/82 rifles. Several bullpup designs have surfaced such as the Chinese Norinco Type 86S, although none have been produced in quantity. Bullpup conversions are also available commercially.

Licensing

Russia has repeatedly claimed that the majority of manufacturers produce AK-47 without a proper license from IZH. The Izhevsk Machine Tool Factory acquired a patent in 1999, making manufacture of the Kalashnikov rifle system by anyone other than themselves illegal. However, nearly one million AK-47 assault rifles are manufactured illegally each year.

Illicit tradeCambodian AKM with black furniture

Throughout the world, the AK and its variants are among the most commonly smuggled small arms sold to governments, rebels, criminals, and civilians alike, with little international oversight. In some countries, prices for AKs are very low; in Somalia, Rwanda, Mozambique, Congo and Ethiopia, prices are between $30–$125 per weapon, and prices have fallen in the last few decades due to mass counterfeiting. Moisés Naím observed that in a small town in Kenya in 1986, an AK-47 cost fifteen cows but that in 2005, the price was down to four cows indicating that supply was "immense". The weapon has appeared in a number of conflicts including clashes in the Balkans, Iraq, Afghanistan, and Somalia.

After the Soviet retreat from Afghanistan, the Soviet Army left quantities of weapons including AKs which were subsequently used in the civil war between Taliban and Northern Alliance and were also exported to Pakistan. The gun is now also made in Pakistan's semi-autonomous areas (see more at Khyber Pass Copy). It is widely used by tribes in Africa like the Hamar, amongst others.

The World Bank estimates that out of the 500 million total firearms available worldwide, 100 million are of the Kalashnikov family, and 75 million of which are AK-47s. Mikhail Kalashnikov addressed

the United Nations in 2006 at a conference aimed at solving the problem of illicit weapons, saying that he appreciated the AK-47's role in state-sponsored defense but that counterfeit weapons carrying his name in the hands of "terrorists and thugs" caused him regret.

## Cultural influence

Coat of arms of Mozambique, showing an AK-47 with bayonet

During the Cold War, the Soviet Union, the People's Republic of China and the United States supplied arms and technical knowledge to numerous client-state countries and rebel forces. While the United States used the relatively expensive M-14 battle rifle and M16 assault rifle during this time, it generally supplied older surplus weapons to its allies. The low production and materials costs of the AK-47 meant that the Soviet Union could produce and supply client states with this rifle instead of sending surplus munitions. As a result, the Cold War saw the mass export, sometimes free of charge, of AK-47s by the Soviet Union and Communist China to pro-communist countries and groups such as the Nicaraguan Sandinistas and Vietcong. The AK design was spread to over 55 national armies and dozens of paramilitary groups.

The proliferation of this weapon is reflected by more than just numbers. The AK is included in the flag of Mozambique and its coat of arms, an acknowledgement that the country's leaders gained power in large part through the effective use of their AK-47s. It is also found in the coat of arms of Zimbabwe and East Timor, the revolution era coat of arms of Burkina Faso, the flag of Hezbollah, and the logo of the Iranian Islamic Revolutionary Guards Corps. Western cultures, especially the United States, have seen the AK-47 most often in the hands of nations and groups the United States condemns; first the Soviet Army, then its Communist allies during the Korean and Vietnam Wars. During the 1980s, the Soviet Union became the principal arms dealer to countries embargoed by the United States, including many Middle Eastern nations such as Syria, Libya and Iran, who were willing to ally with the Soviet Union against U.S. interests. After the fall of the Soviet Union, AK-47s were sold both openly and on the black market to any group with cash, including

drug cartels and dictatorial states, and most recently they have been seen in the hands of terrorist factions such as the Taliban and Al-Qaida in Afghanistan and Iraq and even FARC guerrillas in Colombia. The AK-47 has thus garnered a reputation in Western nations as a symbol of anti-Americanism, and has gained a stereotypical role as the weapon of the enemy. In the United States, movie makers often arm criminals, gang members and terrorist characters with AKs.

In 2006, Colombian musician and peace activist César López devised the escopetarra, an AK converted into a guitar. One sold for US$17,000 in a fundraiser held to benefit the victims of anti-personnel mines, while another was exhibited at the United Nations' Conference on Disarmament.

Kalashnikov Museum

The Kalashnikov Museum (also called the AK-47 Museum) opened on November 4, 2004 in Izhevsk, a city in the Ural Mountains of Russia. The museum chronicles the biography of General Kalashnikov, from his childhood to proletarian hero. The Museum Complex of Small Arms of M. T. Kalashnikov, a series of halls and multimedia exhibitions devoted to the AK-47 assault rifle and its offspring. The museum complex has been drawing on average 10,000 visitors a month. The museum serves as Russia's monument to an infantry weapon and to the workers who have made it for 61 years.“ It presents the guns and their history with civic pride and a revived sense of national confidence. Think of Izhesvk as the Detroit of Slavic small arms. The exhibitions, ranging from static displays of weapons to plasma-screen video presentations showing the guns' use in recent decades, reflect a laborer's affection for what has long flowed from nearby foundries and assembly lines. Much of the material is also viewed through the life of Gen. Mikhail T. Kalashnikov, the man credited with designing the weapon in secret trials in 1947, and who still lives a few blocks away.

"We emphasize the peaceful side of this story," said Nadezhda Vechtomova, the museum director. "We are trying to separate the weapon as a weapon of murder from the people who are producing it and to tell its history in our country."