Although much has been published regarding new small arms developments in Russia, scant note has been taken of the ammunition for these innovative small arms, even though the Russians designed them as complete systems, integrating ammunition and firearm. They have recently introduced several new rounds to improve performance in existing weapons, many touted as having enhanced penetration capability.

One such improved round is the SP-4, successor to the SP-3, a 7.62x62.8mm captive-piston, sound-suppressed cartridge used in the MSP two-barrelled "assassination pistol." (*SOF* was the first to expose this round: see "Mystery Bullet," May '90 and "Combloc Connection," July '90.) The SP-3 cartridge functions in such a way to make it next to impossible to design a semiautomatic or automatic weapon for it, because when this cartridge is fired, the internal piston that propels the bullet protrudes from the case mouth for over half its length. The same is true for the older 7.62x35mm silent cartridge.

This protruding piston problem was solved with the SP-4 7.62x42mm, which retains the propelling piston completely inside the cartridge. This improvement also allows the cartridge to be used in compact, self-loading firearms, such as the PSS "Vul" silent pistol.

The ancestor of both the SP-3 and SP-4 cartridges was probably the 7.62x35mm suppressed cartridge, of which little is known. The weapon firing this cartridge has never been publicly shown, but the fact that two cartridges are held in a clip implies that it is used in a two-barreled firearm similar to the MSP. It is possible that performance of the 7.62x35mm round was inadequate, thus leading to the design of the larger SP-3 7.62x62.8mm suppressed cartridge.

Moreover, the 7.62x35mm case wall appears to be no thicker than standard, which could have been problematic due to the necessity of retaining the high-pressure gases inside the fired cartridge case. For differing reasons, both the 7.62x35mm and 7.62x62.8mm cartridges appear equally complex to manufacture. What is significant is that both fire a 122-grain steel-cored bullet virtually identical to that of any 7.62x39mm weapon. This is highly desirable in a clandestine firearm, serving to confuse authorities attempting to identify an assassin's gun. It would not be surprising to find that rifling in the MSP, and whatever weapon fires the 7.62x35mm round, is very similar to a standard AK.

The SP-3 cartridge, used in the MSP assassination pistol, is an improvement on the 7.62x35mm, probably specifically designed as an integral component of the MSP weapons system. The SP-3 casing is lacquered steel with much thicker case walls than standard — indicating the earlier 7.62x35mm round did have case rupture problems.

A comparison of all three suppressed cartridges shows the first, 7.62x35mm, has case walls virtually identical to a standard cartridge. The 7.62x62.8mm SP-3 has extremely thick case walls and a threaded case head incorporating an integral firing pin and internal primer completely sealing the cartridge head. The most recent SP-4 7.62x42mm cartridge is an "in between" design with more conventional case head and primer, and a case thickness that falls between the earlier cartridges.

The PSS pistol/SP-4 cartridge system is an innovative, sophisticated combination allowing use of a suppressed cartridge in a semiautomatic pistol. The SP-4 bullet is a new design, comprising a low alloy steel cylinder, splined at one end with a copper driving band swaged onto it. There is a recess at the rear of the bullet mating to a tit on the top of the drive piston. This centers the bullet in the cartridge casing and helps stabilize it as the piston pushes it out to engage the rifling.

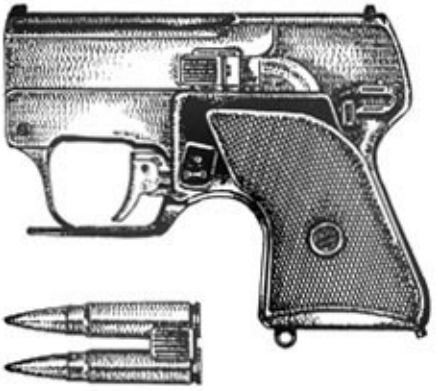
Russians claim the SP-4 approaches the 9x18mm Makarov in power, which would place it in the 9x17mm (.380 ACP) class. The 9x18mm Makarov cartridge develops 237 foot-pounds muzzle energy in its standard military load, while the 9x17mm generates approximately 200 foot-pounds — both significantly less than standard NATO 9x19mm rounds generating 465 foot-pounds.

7.62 mm MSP Groza silent pistol

Description

The MSP Groza (Thunderstorm) was designed by TsNIITochMash and produced by the Tula Arms Plant in the 1970s for use by SPETsNAZ, KGB and other special operations forces for what the Russians refer to as 'wet work', a euphemism for assassinations. The pistol itself is a conventional double-barrelled over/under Derringer-type two shot weapon, firing cartridges which appear to be 7.62 × 39 mm cartridges held in a special clip.

The pistol has no firing pins; these are in the base of the special silent cartridges. When the cartridge is fired, however, an internal piston is driven forward by the expanding powder gases, propelling the bullet out of the barrel. The gases are held in check inside the case by the piston which obturates against the shoulder of the cartridge case and protrudes some distance beyond the case mouth. This precludes automatic extraction, but results in absolute silence when the pistol is fired, as opposed to suppression. When the barrels are tipped upwards, an extracting rod moves back and pushes the spent cartridges out of the breech for manual ejection. Eliminating a large external suppressor also results in a very compact pistol which can be unobtrusively carried in a jacket pocket.



7.62 mm MSP Groza silent pistol (L Haywood)
1998/0008566

Rifling on fired bullets appears to be the same as that in 7.62 × 39 mm Kalashnikov rifles. The bullets themselves also appear to be standard 7.62 × 39 mm types. The MSP is known to have been used operationally in Central America during the Cold War and by SPETsNAZ units in Afghanistan.

Specifications

Cartridge: 7.62 × 35 mm silent
Operation: manual
Locking: projecting lug
Feed: 2-round clip
Weight: 530 g
Length: 115 mm
Barrel: 2 × 66 mm
Rifling: 4 grooves, rh, 1 turn in 235 mm
Sights: fore, blade; rear, notch

Manufacturer

Tula Arms Plant.

Status

Production probably complete.

Service

Soviet, Russian and others.

VERIFIED

S4M 7.62 mm S4M silent pistol

Development

Little is known of the development of the S4M 7.62 mm silent pistol. Presumably it was developed as a follow-on and improvement to the MSP as it shares the same basic concept but with improvements both in ammunition and overall operation of the pistol.

S4M 7.62 mm S4M silent pistol (L Haywood)
1999/0037066

Description

The S4M 7.62 mm silent pistol is similar in concept to the MSP described in the previous entry, but with significant differences. As with the MSP, the S4M is a two-barrelled over/under Derringer intended for the same type of missions as the MSP. It is slightly larger than the MSP to accommodate the longer cartridges involved. Ammunition is similar in concept but, again, different from that of the MSP.

The 7.62 × 62.8 mm cartridge used with the S4M, possibly designated PZAM, bears no resemblance to any other cartridge and has much thicker case walls than the 7.62 × 38 mm cartridge used witih the MSP, indicating that there may have been case failures with the earlier ammunition. The 7.62 × 62.8 mm cartridge uses a piston system similar to that of the 7.62 × 38 mm to propel the bullet. As with the MSP, the S4M has no firing pins, as these are integral to the cartridge. Bullets are identical to those fired from an AK-47 or AKM rifle and rifling on fired bullets also appears similar to that of bullets fired from the rifles.

The overall design of the S4M is an improvement on that of the MSP in that opening the barrel of the S4M automatically cocks the pistol. Cocking the MSP was via a separate lever beneath the trigger guard. The protruding piston of the spent cartridge precludes conventional extraction and ejection, but this system results in near absolute silence when the pistol is fired. Moreover, on missions for which the S4M would be used, leaving spent cartridge casings lying about is not desirable.

Specifications

Cartridge: 7.62 × 62.8 mm PZAM(?)
Operation: manual
Feed: 2-round clip
Length: 140 mm
Height: 105 mm
Barrel: 2 × ca 80 mm
Sights: fore, blade; rear, adjustable notch

Manufacturer

Tula KBP, Krasnoarmeyskiy Prospekt 17, Tula 300001

Status

Production probably complete.

NEW ENTR

7.62 mm PSS silent pistol

Description

Designed by Viktor Levchenko and developed by TzNIITochMash, the 7.62 mm PSS, also known as the Vul, is a small blowback pistol firing the SP-4 7.62 × 42 mm special cartridge capable of generating a sound level comparable to that of an air pistol. The trigger mechanism is single or double action with an external hammer, and there is a slide-mounted safety catch which lowers the hammer safely on a loaded chamber.

There is no conventional silencer in the weapon. Instead, the SP-4 special cartridge contains a piston between the propelling charge and the blunt-nosed slug-type bullet which weighs 10 g; a complete cartridge weighs 24 g. On firing, the propelling charge ignites, driving the piston forward; this impels the bullet forward. The piston is then arrested by the cartridge shoulder, which is securely held by a shoulder in the pistol chamber. Thus the noise and flash signatures of the propellant detonation are retained inside the brass cartridge case, and the only noise is that of the air trapped between the piston and the bullet as it escapes from the muzzle.

The bullet has an effective range of 50 m and the fixed sights are calibrated for that range. It can penetrate 2 mm of vertical steel plate or a standard steel helmet at 25 m range and still have sufficient energy to inflict a lethal wound.

The PSS can be employed over a temperature range of from −50 to +50°C.

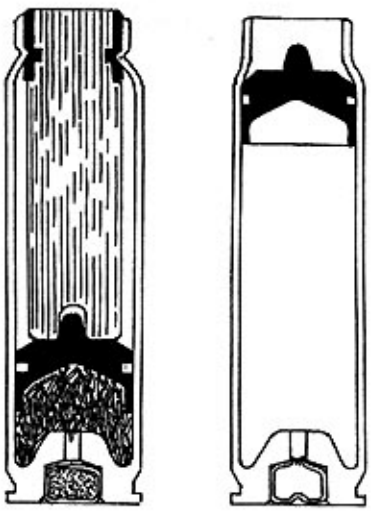
Specifications

Cartridge: 7.62 × 42 mm SP-4
Operation: blowback, semi-automatic, single or double action
Feed: 6-round detachable box magazine
Weight: empty, 700 g, loaded, ca 850 g
Length: 165 mm
Height: 140 mm
Width: 30 mm
Sights: fore, fixed block; rear, fixed wide notch
Muzzle velocity: ca 200 m/s
Max effective range: 50 m

7.62 mm PSS silent pistol with magazine on right (C Cutshaw) 1999/0021845

7.62 mm PSS silent pistol with slide retracted (C Cutshaw) 1999/0021846

SMALL ARMS AND CANNON AMMUNITION



The 7.62 × 42 mm SP-4 cartridge has a maximum effective range of 50 m and will penetrate body armour and steel helmets at 20 m and still retain its lethal potential once through. The bullet will penetrate 2 mm of steel plate or a SSH-1 steel helmet at 25 m. Muzzle velocity is 195 to 205 m/s.

Specifications

Round length: 42 mm
Bullet weight: 10 g
Cartridge weight: 24 g
Muzzle velocity: 195-205 m/s

Cross-section drawing of 7.62 × 42 mm SP-4 cartridge in unfired state (left) and fired (right) (L Haywood)
1999/0038391

RUSSIAN FEDERATION AND ASSOCIATED STATES (CIS)
Agency: Rosvoorouzhenie
Type: Silent Ball: Steel; 10 g; Vo 200 m/s

UPDATED

Silenced Cartridge .38 Calibre

This unique round was an outgrowth of research that began during the Vietnam War to assist the U.S. Army in arming the "tunnel rats" (men of short stature whose unenviable task it was to go down into the Vietcong tunnels and ferret out the enemy). Since firing regular ammo underground would momentarily deafen and blind the shooters, they needed a silent, flashless weapon. Silencers were tried but proved unsuitable. A quiet, special-purpose round was developed and shipped over for testing. The round fired a type of shot load that misfired due to improper primer seating, and it received a negative evaluation.

CIA recognized the merits of the round, however, and developed this silenced cartridge, which fires a .38 bullet (prior to this, it had been virtually impossible to fire a revolver silently).

Based on the captive piston principle, the round acts as a miniature engine. With but one stroke, it impels the bullet down the barrel at high speed, and yet contains all the forces of explosive combustion within the shell casing. The stainless-steel casing is, of necessity, thicker than a regular round, and the primer is also shrouded and held in place by a rear bulkhead or threaded end cap. The piston is checked in its forward motion by a machined shoulder that slams against a corresponding neck within the round and effectively seals the gasses; hence, it is rendered both noiseless and flashless.

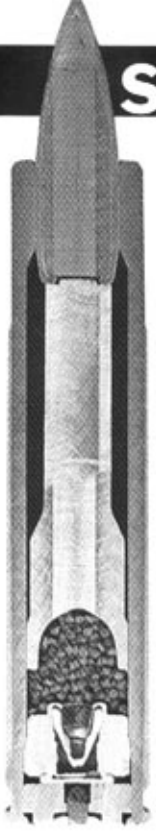
Although it is not recommended, it is possible to reload this type of round. There is no telltale smell of smoke after firing this round, and when it is fired from a disguised weapon, no one but the victim is any the wiser. It is best used at close combat ranges of up to thirty feet.

The silent .38 cartridge. (Author illustration.)

This field-reloadable silent 30-gauge cartridge is custom-built. The captive piston seen extending from the cartridge case pushes the aluminum projectile. The assembled round lies alongside it (right).

SILENT KILLER

Assassination is an ugly, sinister word, heavily charged with fear. While the act itself is as old as humanity, it would appear now to be wildly out of sync with the current state of world affairs and trends portrayed by both politicians and the media. But, beneath the facade of perestroika and supposedly crumbling communism lies the Machiavellian world of the assassin, who is still very much in business — from Beirut to San Salvador.



In this cross-section of the low-signature cartridge, the captive piston can be seen directly behind the projectile.

While once no more than a dagger would suffice, the assassin's tools have in modern times become ever more specialized. Silence is the cloak behind which the assassin operates. There have been no end of devices and gimmicks designed to permit the assassin to terminate his victim in silence and successfully elude subsequent pursuit by the victim's avengers. In an exclusive report (see SOF, "Mystery Bullet," page 60, May '90), SOF recently exposed the new ComBloc 7.62x62.8mm low-signature cartridge intended solely for termination with extreme prejudice. Although we have still not obtained a specimen of the handgun chambered for this clandestine round, during my trip to El Salvador I did procure a photograph of the weapon —published here for the first time.

From the photograph, the firearm's salient features can be determined. It is, in essence, nothing more or less than a small over/under double-barreled derringer with the grip-frame configuration of a pocket semiauto pistol.

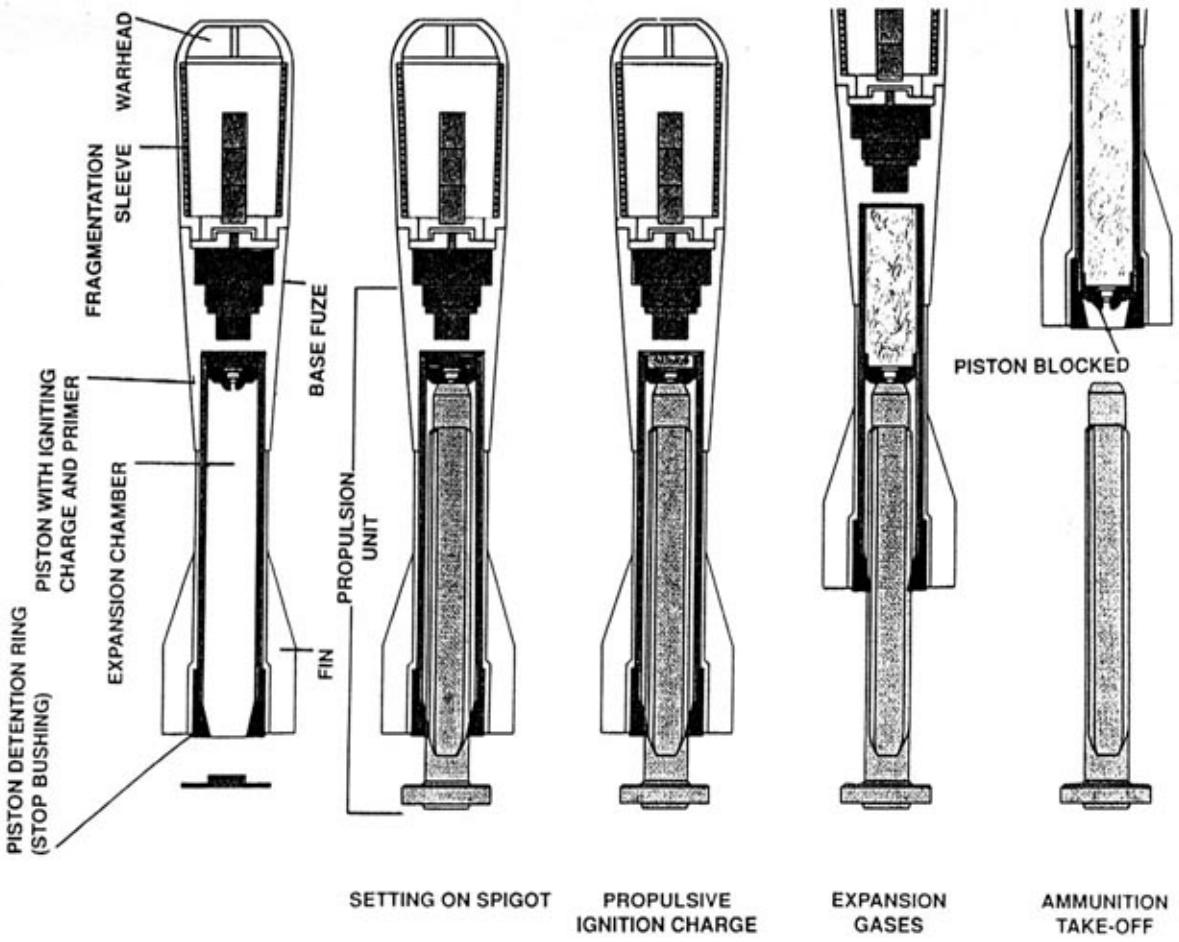
Overall length is approximately 5.8 inches. The height is about 4.1 inches. The superposed barrels, a monobloc unit, are hinged to the frame (directly in front of the trigger guard) and break open after a spring-loaded, serrated catch-release lever (on the left side of the frame) with a knurled button is pivoted downward. The barrel length is about 3.3 inches. However, almost 2.4 inches of that dimension is taken by the chamber required for the 7.62x62.8mm low-signature cartridge case. That leaves less than a inch for the bore. The barrels are crowned and project slightly from the barrel block. A rectangular slot milled between the barrels at the rear obviously accommodates the finger-grip ends of the two-round clip used to insert and remove the cartridges.

Cross-section of the 7.62x62.8mm low-signature cartridge showing position of the components after ignition.

The checkered plastic grip panels are each retained by a single screw. The fixed front and rear sights are surprisingly substantial for a handgun of this size and intended purpose. The trigger is non-pivoting and appears to be of the plunger type. The hammer is not exposed, and I assume this is a double-action-only mechanism. A safety lever is mounted to the left side of the frame directly above the grip panel.

While it cannot be determined from the photograph, it may be that the bores are not rifled. Based upon what we know of previous experiments in captive piston technology, we have projected the velocity of the cartridge's projectile to be somewhere near 500 fps. The extremely short bore was probably designed to reduce drag to a minimum and preserve the limited velocity potential provided by piston propulsion. A smooth bore would further reduce drag on the bullet. The World War II FP-45 Liberator pistol had a smooth bore and the keyholing of its 230-grain .45 caliber bullet was considered to be an attribute. In any event, the 122.5-grain boattail bullet of the 7.62x62.8mm low-signature cartridge will probably commence significant yaw in flight shortly after it leaves the muzzle. It is doubtful that the system's useful accuracy potential extends very much beyond 10 feet.

We have determined the propellant charge-weight of the 7.62x62.8mm low-signature cartridge to be 2.3 grains of a lime-green extruded tubular kernel powder. The charge completely fills the cavity in the base of the piston. We can speculate that the powder is extremely fast burning and in that regard probably lies somewhere between Hercules Bullseye and Unique. Through metallurgical analysis we have further determined that the cartridge case was made from mild steel with a tensile strength of 45,000 to 50,000 psi.



FLY-K Individual Weapon System NR 8111A5

The FLY-K weapon system uses a spigot, combined with a propulsion unit sealed within the bomb, to produce effective mortar fire with very little noise, no emission of explosive gases, no flash, and therefore no firing signature capable of detection. In addition the design ensures that the mortar barrel does not get hot, therefore there is no detectable infra-red emission.

The FLY-K mortar consists of a guide tube, inside which is a central spigot; a rear body containing the percussion firing mechanism; and a spade-like baseplate. The projectile is a fin-stabilised bomb with a hollow tail boom, lined with a high-strength steel cylinder, at the upper end of which is a propulsion cartridge. To fire, the bomb is inserted into the muzzle of the guide tube so that the spigot enters the tail boom. On releasing the firing pin, located in the spigot, the propulsion cartridge explodes. The lower portion of the cartridge acts as a piston, expanding against the inside of the tail tube so as to form a seal and being propelled down the tube by the force of the explosion. Since this piston is resting on top of the spigot, the effect is to throw the bomb out of the mortar. As the piston reaches the end of the tail tube it is arrested and locked, so that none of the explosion gas, flame or heat is allowed to escape. The FLY-K is therefore virtually silent and emits no detectable signature.

The FLY-K was originally developed by PRB of Belgium. Upon the liquidation of PRB in 1990, the rights to the system were purchased by Artifices Titan, who have made some modifications to the original PRB pattern.

Data

Calibre: 51 mm
Overall length: 605 mm
Weight: 4.80 kg with sight
Elevation: 0-85°
Max range: 675 m

Armbrust short-range anti-armour weapon

Development

The Armbrust short-range anti-armour weapon was originally designed and manufactured by Messerschmitt-Bolkaw-Blohm GmbH of Germany who ceased production in 1988, at which time the designs and manufacturing rights were sold to Chartered industries of Singapore.

Description

The Armbrust short-range anti-armour weapon has unique features which set it apart from most other similar weapons. It has no firing signature, emits neither smoke nor blast from the muzzle nor flash from the rear, is quieter than a pistol shot, can be fired from small enclosures or roofed foxholes without danger or discomfort to the firer, has no recoil, requires no maintenance and weighs only 6.3 kg.

The Armbrust's 67 mm diameter HEAT warhead can penetrate 300 mm of rolled homogeneous armour at 0°. In addition it will penetrate materials such as masonry, reinforced concrete and so on.

The Armbrust is a man-portable, shoulder-fired weapon with a maximum range of about 1,500 m and an operational range against armoured vehicles of up to 300 m. Time of flight to 300 m is 1.6 seconds; muzzle velocity is 210 m/s. The fuze will function at an impact angle of up to 78°. Once the weapon has been fired, the launcher is discarded.

ARMBRUST DISPOSABLE ANTI-TANK WEAPON

Armbrust (Crossbow) is a man-portable, shoulder-fired, recoilless expendable weapon with a maximum range of about 1,500 metres and an operational range against armoured vehicles of up to 300 metres using a HEAT round. An anti-personnel fragmentation round is also available.

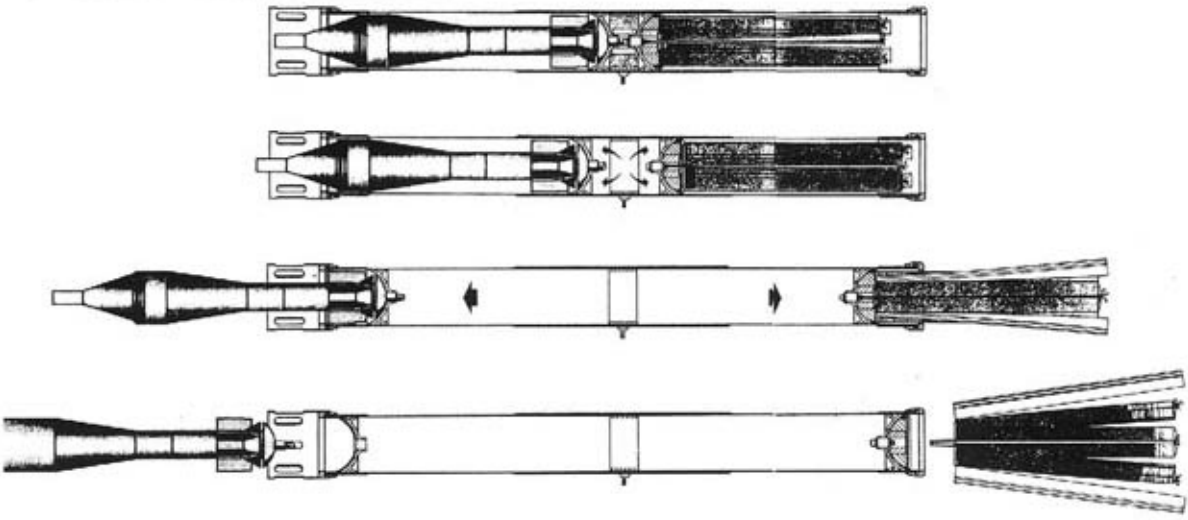
Important characteristics of the weapon include the absence of flash, smoke and blast when fired and a firing noise similar in type and intensity to a pistol shot. It can be safely fired from a small enclosed space with a wall as close as 80 centimetres behind the firer. When fired from the prone position the firer presents no better target than does a rifleman.

Unlike many modern recoilless weapons, which rely for their recoilless action on the rearward expulsion of a large volume of high-velocity gas, Armbrust balances the forward momentum of the projectile by ejecting a counter-mass to the rear. This technique was in fact employed in the earliest recoilless weapons; but the particular ingenuity of the Armbrust system is that, whereas in the early weapons the two masses were expelled from an open tube by the propellant gases, the Armbrust projectile and counter-mass are propelled by pistons. These pistons are themselves driven by the propellant gases; but they are prevented from emerging from the tube by braking recesses at each end into which the piston cups expand and by which they are halted. As the projectile and counter-mass emerge from the tube, therefore, the pistons seal the ends of the tube, thus eliminating flash, smoke and blast and substantially reducing the firing noise relative to that of an equivalent open-ended weapon.

The counter-mass is made up of some 5,000 small plastic flakes which fan out as they leave the launch tube and fall harmlessly to the ground about 10 metres behind it. They will not rebound from the close wall mentioned above.

The Armbrust projectile has a reasonably flat trajectory, the apogee for 200 metres range being a little over one metre and that for 300 metres being about 3-5 metres. The sight reticle has three range lines - for 0-200 metres, 200-250 metres and 250-300 metres giving a maximum height error of only one metre within these brackets and thus giving the firer considerable latitude in his range estimation. The weapon is shoulder-fired, being held by the pistol grip and a handle behind it. Ignition is piezo-electric.

Armbrust is supplied to the firer as a sealed round and no maintenance or pre-firing drills are necessary. Two rounds can be clipped together and one man can comfortably carry four rounds. After firing the pressurised launch tube is discarded: it is hot, but not dangerously so, and the pressure does not constitute an explosion hazard.



Firing sequence for Armbrust from pre-ignition **(top)** *to expulsion of missile and countermass with pistons locked* **(bottom)**

AKS-74U / PBS Silent Fire Device
and
BS-1 Silent Grenade Launcher

The 30mm BS silent grenade launcher operates by using a clip of blanks to move a piston and rod which shoots out the grenade.

The grenade is inserted in the front of the tube and the pistol mechanism is shot. The gas pushes the piston and rod forward and then the gas is bled off. The grenade leaves without any noise.

Pushing a new grenade into the tube recocks the piston.

Notice that the PBS is not a silencer as such, but a silent device. No info available.