

fits into the front sight hole, then it is 250 meters away (Fig. 3.1.21G). If when aiming at the side, the first and last track rollers go beyond the front sight, then it is also 250 meters away from the tank (Fig. 3.1.21E). If when aiming at the side, the tank fits completely into the front sight hole, then it is 500 meters away (Fig. 3.1.21E). In Figure 3.1.21, the sight is set to "2", that is, at 200 meters. Grenades have different ballistics, therefore, due to the type of grenades, they have different aiming angles (Table 3.4).

Table 3.4. Scale for aiming angles of a mechanical sight

Grenade/Distance	100	150	200	250	300	350	400	450	500												
PG-7V, PG-7VM, PG-7VS					2		2		2		3		3		4		4		5		5
PG-7VL					2		3		4		5		5		-		-		-		-
PG-7VR, TBG-7V					5		5		5		-		-		-		-		-		-



A – 85 m B – 85 m

B – 170 m D – 250 m D – 250 m E – 500 m

Figure 3.1.21 – T-72B3M in the opening of the mechanical sight of the 1985 model of the RPG-7 grenade launcher: front and side

The divisions of the sight scale are selected according to the distance to the target (for example, for shooting at a target at a distance of 400 m, sight 4). Dot

Aiming at such and greater distances is selected using a mechanical sight at the upper part of the target, and when firing using the PGO-7V optical sight, aim at the middle part of the target. In tense moments of battle, when the conditions of the situation do not allow changing the sight setting depending on the distance to the targets, it is necessary to fire at distances not exceeding the distance of a direct shot, with a sight scale division of "3" (PG-7VL - "4"; PG-7VR, TBG-7V - "5"), aiming at the middle of the target, when using the PGO-7V optical sight - at the lower edge of the target.

Chapter 2. RPG-18 "Fly"

The RPG-18 "Mukha" anti-tank rocket-propelled grenade (Fig. 3.2.1) is intended for to destroy enemy armored targets, fortifications and shelters, elimination of enemy forces in premises, buildings and structures. RPG-18 grenade launcher – disposable. A caliber grenade of cumulative action is used for firing.



Figure 3.2.1 – RPG-18

The propellant charge burns completely in the barrel before the grenade leaves the barrel. The RPG-18 grenade flies like a ballistic body after leaving the barrel, so it is less sensitive to crosswinds than grenades with an RPG-7 jet engine operating on the trajectory. At firing distances of less than 100 m, crosswind corrections are insignificant and are not practically necessary.

The armor penetration of the RPG-18 is the same as that of the PG-7VM grenade, the RPG-7 grenade launcher is insufficient to destroy the latest generation tanks, but it is quite effective for destroying fortified firing points, BMP, BMD, APC, SG.

The RPG-18 was successfully used by the Chechen army during both Chechen campaigns. When using this weapon against Russian tanks, the fighters achieved good results. Even the Kontakt-1 anti-tank missile system does not always work with the RPG-18 grenade.

Grenade caliber:	63-mm;
Initial flight speed:	114 m/s;
Aiming distance:	200m;
Direct shot distance:	135 m;
Armor penetration: The RPG-18 is capable of	300 mm.
penetrating reinforced concrete, brick and wood-earth	

obstacles whose thickness does not exceed 1.0, 1.5 and 2.0 meters respectively.

Shooting with RPG-18

The sight's diopter has two closely spaced diopter holes: the upper one is for aiming at air temperatures from 00 C. to – 500 C, lower – from 00 C to + 500 C (Fig. 3.2.2).

The upper and lower diopter holes are covered by a shutter, for which its lower curved end is fixed in the extreme positions (" - " or " + ") using a figured groove present in the middle part of the diopter.

The lower end of the shutter turns to the left at sub-zero air temperatures or to the right at plus temperatures. RPG-18s came from the factory with +. There are no shutters on the diopters of early releases, be remembered that the upper when the shutter is installed on the diopter holes are open, so it must hole is for firing at temperatures below 00 C, the lower one is for firing at temperatures above 00 C.

There is a rectangular slot on the upper end of the diopter for aiming in conditions of limited visibility and at night. The RPG-18 uses two types of front sight: the 1972 model is glass; the 1975 model is stamped metal (Fig. 3.2.2).

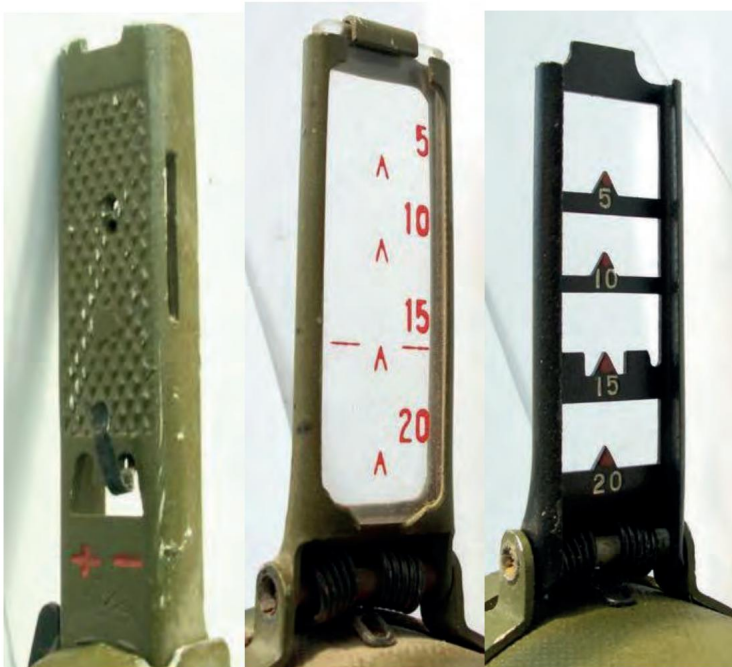


Figure 3.2.2 – RPG-18 diopter (left); In the center – glass front sight of the 1972 model; On the right – metal front sight of the 1975 model

The front sights are marked with numbers: 5, 10, 15, 20, which determines the distance to the target: 50, 100, 150, 200 meters, respectively.

The distance to the targets is determined by eye or by means of horizontal strokes of the front sight. With the apparent width of the tank contour equal to the width between the outer ends of the horizontal strokes, the distance to the tank corresponds to 150 m (Fig. 3.2.3). It should be remembered that the width of the T-72/T-90 tank (on average 3.5 m) is approximately equal to half its length (7 m).



Figure 3.2.3 – Visibility through the sight of the RPG-18 model of 1972. The distance to the T-72B3 tank is 150 m.

At a sighting mark of 200 m, a dimension of about 5 m is visible, that is, when firing at the side of a tank from this distance, its dimension will protrude slightly beyond the sight frame. (Fig. 3.2.4).



Figure 3.2.4 – Visibility through the sight of the RPG-18 model of 1975. The distance to the T-90 tank is 200 m.

On the upper part of the front sight there is a protrusion designed for shooting in conditions of limited visibility and at night.

In conditions of limited visibility and at night, when the desired aiming mark is not visible through the diopter hole, aiming is carried out through the protrusion in the upper part of the front sight and the upper rectangular diopter slot. In these conditions, the night sight is designed for a distance of 75 m with direct aiming (Fig. 3.2.5).



Figure 3.2.5 – Night visibility through the RPG-18 night sight, the distance to the T-90A tank is 75 m

When firing while lying down, you should position your body in relation to the RPG to avoid burns at an angle of 45° from the exhaust stream.

APCs, BMDs, BMPs, and SGs of all modifications are breaking through from all directions.

The T-62, T-72, T-80 and T-90 tanks can only penetrate the side, stern, roof of the hull and turret, which are not protected by the anti-aircraft missile system. The T-72BV, equipped with the Kontakt-1 anti-aircraft missile system, can be hit in the hull side along the entire plane, however, the Kontakt-1 anti-aircraft missile system is triggered in 50% of cases, so it is better not to take risks and shoot at areas not protected by the anti-aircraft missile system.

Below, in Fig. 3.2.6-3.2.7, we present the instructions for using the RPG-18, located on the grenade body, at the request of the fighters, because it is often erased and illegible.



Figure 3.2.6 – RPG-18 Instructions



Figure 3.2.7 – RPG-18 Instructions

Chapter 3. RPG-22 "Netto"

RPG-22 "Netto" anti-tank rocket-propelled grenade (Fig. 3.3.1) designed to destroy enemy armored targets, their fortifications and shelters.

The RPG-22 grenade launcher is a single-use device. It uses a caliber grenade of cumulative action for firing.



Figure 3.3.1. RPG-22. Top view – general view

Grenade caliber:	72.5-mm;
Initial flight speed:	133 m/s;
Aiming distance:	up to 250m;
Direct shot distance:	160 m;
Armor penetration:	400 mm.

The propellant charge burns completely in the barrel before the grenade leaves the barrel. The RPG-22 grenade flies as a ballistic body and has a high cruising speed and good accuracy of fire.

APCs, BMDs, BMPs, SGs of all modifications are penetrated from all directions. T-62M, T-72, T-80 and T-90 tanks are penetrated only in the side, stern, hull roof and turret, which are not protected by DZ. It also penetrates the gun mask of all Russian tanks.

A T-72BV equipped with the Kontakt-1 anti-aircraft missile system can be hit in the hull side over the entire area, however, the Kontakt-1 anti-aircraft missile system is triggered in 50% of cases, so it is better not to take risks and shoot at areas not protected by the anti-aircraft missile system.

Shooting with an RPG-22

The front sight has sighting marks marked "5", "15", "25". They correspond to firing ranges of 50 m, 150 m and 250 m. At the mark "15", which corresponds to a distance of 150 m, there are rangefinder protrusions. The distance between the protrusions corresponds to the projection of the width of the tank at this distance (Fig. 3.3.2).

The flight time of a grenade at a distance of a direct shot (160 m) is 1.19 s, this provides a close to 100% tank hit rate.

On the safety post, which serves to attach the diopter, there are marks "+" and "-" which are intended for introducing temperature corrections for the ambient temperature from 0°C to +50°C and from -50°C to 0°C, respectively, which must be combined with the white dot on the post before firing.

The shot from the RPG-22 is very loud, so you need to use earplugs that come with the RPG, or tactical headphones.

When firing at a distance of 250 m, the side projection of the tank is 2/3 corresponding sighting mark "25" (Fig. 3.3.3).



Figure 3.3.2 – Visibility through the RPG-22 sight. The distance to the T-90 tank is 150 m.



Figure 3.3.3 – Visibility through the RPG-22 sight. The distance to the T-90A is 250 m

In case of poor visibility and at night, aiming should be done using the front sight protrusion through the slot on the upper end of the diopter. In this case, the aiming angle corresponds to a distance to the target of 100 m, at a shorter distance the dot

Aiming should be chosen below the middle of the target (Fig. 3.3.4). When shooting

while lying down, the body should be positioned in relation to the RPG to avoid burns from the at an angle of 90°. exhaust stream.



Figure 3.3.4 – Night visibility through the RPG-22 night sight, the distance to the T-90 tank is 100 m. Vertical white lines – diopter rack mounting

Below, in Fig. 3.3.5-3.3.6, we present the instructions for using the RPG-22, located on the RPG body.



Figure 3.3.5 – Instructions for use of the RPG-22, general view



Figure 3.3.6 – Instructions for using the RPG-22

Chapter 4. RPG-26 "Aglen"

RPG-26 "Aglen" anti-tank rocket-propelled grenade (Fig. 3.4.1) single-use, designed to combat tanks, infantry fighting vehicles, armored personnel carriers and other armored enemy targets. In addition, the anti-tank rocket-propelled grenade can be used to destroy enemy manpower located in shelters, as well as in urban structures. A caliber grenade of cumulative action is used for firing.



Figure 3.4.1 – RPG-26

Grenade caliber: 72.5 mm; Initial flight speed: 144 m/s;

Sighting distance: 250m;

Direct shot distance: 170 m; Armor penetration: 440 mm.

Armor penetration is slightly better than the RPG-22, but slightly less than the PG-7VL, RPG-7 grenade launcher. APCs,

BMDs, BMPs, SGs of all modifications penetrate from all directions.

The T-72, T-80, T-90 tanks can only be penetrated in the side, stern, hull roof and turret, which are not protected by DZ. The gun mask and the cheekbones of the turret can also be penetrated. The T-62M can penetrate anywhere.

Shooting with RPG-26

The propellant charge is completely burned in the barrel before the grenade leaves the barrel. The RPG-26 grenade flies like a ballistic body and has a high cruising speed and good accuracy of fire. The average deviations of the RPG-26 grenades at a direct shot distance of 170 m, both in height and in the lateral direction, do not exceed 0.5 m, which

provides a close to 100% hit rate on a tank at this distance.

In moderate crosswinds (4-6 m/s), corrections at shooting distances up to 100 m are so insignificant that they can be ignored. For example, at a distance of 150 m the correction is 30 cm, at a distance of 250 m – 72 cm.

To take into account the air temperature on the sighting device diopter there are signs "+", "-", "±15". At an ambient temperature of -150 C to +150 C, the sign "±15" must be combined with the white dot on the safety post. At an ambient temperature above +150 C, the sign "+" must be combined with the white dot on the safety post. At an ambient temperature below -150 C, the sign "-" must be combined with the same dot (Fig. 3.4.2). The RPG-26 came from the factory with the setting for the sign "± 15".

The distance to targets is determined using sighting marks sight, which differs from the RPG-18 and RPG-22 sights (Fig. 3.4.2).

Figure 15



Figure 15



Figure 150

In case of poor visibility and at night, aiming should be done using the front sight protrusion through the slot on the upper end of the diopter. In this case, the aiming angle corresponds to a distance to the target of 100 m, so at a greater distance You should aim above the center of the target, for shorter distances, the aiming points should be chosen below the center of the target (Figure 3.4.4).



Figure 3.4.4 – Visibility at night through the RPG-26 night sight, the distance to the T-90A tank is 100 m.

When firing while lying down, you should position your body in relation to the RPG at an angle of 90° to avoid burns from the exhaust stream.

The covers that protect the barrel are made of rubber or a petal membrane, which allows you to shoot without opening them; they fly off by themselves when fired (Fig. 3.4.5).



Figure 3.4.5 – RPG-26 in combat position with rubber covers

Fig. 3.4.6 shows the instructions for using the RPG-26, located on the RPG body, because it is often erased and unreadable.



Figure 3.4.6 – RPG-26 Instructions

Chapter 5. Disposable anti-tank rocket-propelled grenade launcher AT4

The AT4 anti-tank grenade launcher (Fig. 3.5.1) is designed primarily for use against armored targets, but can also be used against infantry and has good armor-piercing and fragmentation effects. The AT4 is a development of SAAB Bofors Dynamics (Sweden) and ATK (USA).



*Figure 3.5.1 – AT4 RPG. The green arrow shows the sliding front cover and the direction of its movement when placed in the firing position;
The blue arrow shows the sliding sight cover and the direction of its movement when placed in the firing position.*

The AT4 RPG uses a cumulative grenade without a jet engine. The propellant charge burns completely in the barrel before the grenade leaves the barrel. That is, the ballistics are similar to the RPG-26. Due to the high initial velocity of 290 m/s, the accuracy of shooting is higher than that of the RPG-26.

AT4 has an aiming distance of 500 meters.

Armor penetration is 420

mm. APCs, BMDs, BMPs, SGs of all modifications can be penetrated from all directions.

The T-72, T-80, T-90 tanks can only be penetrated in the side, stern, hull roof and turret, which are not protected by DZ. The gun mask and the cheekbones of the turret can also be penetrated. The T-62M can penetrate anywhere.

The jet from the nozzle can cause serious injury to the person behind and the shooter, especially in a narrow space. Therefore, there should be no people, walls, or other obstacles behind at least 10 meters in sector 300; When shooting while lying down, the body should be positioned at an angle of 90° to the RPG so that there are no burns from the exhaust current. **Immediately after the shot, without waiting for its result, it is necessary to leave the position as quickly as possible, because the shot will be unmasked by the shooter and the enemy will open fire in return.**

Bringing the AT-4 RPG into combat position and firing it

- Pull out the transport ring at the rear (Fig. 3.5.2);
- Move the shutter to position “2” – firing position (Fig. 3.5.3);
- Fold down the front handle and shoulder rest (Fig. 3.5.4);
- Raise the sight and front sight vertically, for this purpose the sight cover move forward, and slide the front sight cover back (Figure 3.5.1);
- Place the RPG on your shoulder (Figure 3.5.5);
- Set the distance to the target. To do this, move the check mark to sight at the desired distance with marks 1,2,3,4,5, which corresponds to distances of 100, 200, 300, 400, 500 meters respectively. Shallow intermediate lines correspond to distances of 150, 250, 350, 450 meters (Fig. 3.5.6). The distance to the target is determined visually;

– Aim the scope through the diopter at the front sight. The front sight has three selections. When moving forward or on stationary equipment, aim at the center of the front sight. When moving obliquely, take the bias on the front sight to the left or right of the center. When moving laterally, take the bias on the extreme front sight (Fig. 3.5.7 and 3.1.24 on page 72);

– Press the safety catch (red) with the middle finger of your right hand. rectangle on the top of the body) up, and with the thumb of the right hand press the trigger (round red button on the right side of the body, just below the safety (Fig. 3.5.8). Before firing, give the command **“Shot” loudly.**



Figure 3.5.2 – Transport ring, marked with a red arrow



Figure 3.5.3 – Left – bolt in stowed position; Right – bolt in firing position



Figure 3.5.4 – Front handle and shoulder rest in the folded position



Figure 3.5.5 – Soldiers with AT4 RPGs ready to fire



Figure 3.5.6 – Sight in combat position. The arrow indicates the diopter.



Figure 3.5.7 – Front sight.



Figure 3.5.8 – Left – the safety is pushed up; Right – Location of the trigger button behind the safety on the RPG. The yellow arrows show the direction of movement of the push

Chapter 6. Lightweight disposable grenade launcher M141 Bunker Defeat Munition (BDM), үү SMAW-D (SMAW-Disposable)

M141 is a disposable rocket-propelled grenade launcher (Fig. 3.6.1), designed to destroy the enemy located in field fortifications, buildings and lightly armored BTT. The grenade has a double action with a plastic VR charge. When hitting an infantry fighting vehicle or a building, the main part seems to spread over the surface of the obstacle and explodes. The greater the angle of inclination of the obstacle, the larger the area of the hole. Under these conditions, the grenade pierces 20 mm of armor, or 200 mm of concrete, or 300 mm of brick, forming a breach with a diameter of up to 600 mm and a large number of secondary fragments, striking the enemy. It pierces an earthen parapet or a wall with sandbags up to 2.1 meters. The aiming distance of the fire is 500 m.



Figure 3.6.1 – M141 in stowed (top) and combat positions

The M141 does not penetrate tank armor. But it is very effective against BMP, BMD, SG, BTR, SAM of all modifications (armor thickness 7-19 mm) and acts against them similarly to the TBG-7V grenade of the RPG-7 grenade launcher. It easily penetrates their thin armor and does more devastating damage than cumulative grenades. The jet from the nozzle can cause serious injury to the person behind, and the shooter, especially in a narrow space.

Therefore, there should be no people, walls, or other obstacles behind at least 5 meters in the 300 sector; When firing while lying down, the body should be positioned in relation to the RPG at an angle of 45°

so that there are no burns from the exhaust current. **Immediately after the shot, without waiting for its result, it is necessary to leave the position as quickly as possible, because the shot will be unmasked by the shooter and the enemy will open fire in return.**

Bringing the M141 RPG into combat position and firing it

- Pull out the transport pin at the rear (Fig. 3.6.2);
- Holding the locking button with one hand, pull it out with the other the internal rear tube of the grenade launcher (Fig. 3.6.3);
- Turn the pulled out pipe in the direction of the yellow arrow indicated on the body and click. Make sure the inner tube is locked by trying to turn the inner tube counterclockwise (opposite the yellow arrow). If the tubes are not locked, the ammunition will not cock and there will be no shot (Fig. 3.6.4);

CONSTRUCTION

Receiver
Controls
Independently

Mechanism
(red);
Controls
Controls
Mechanism
Controls
Safety:



Figure

Figure



Figure 3.6.4 – Pulling and locking the pipe

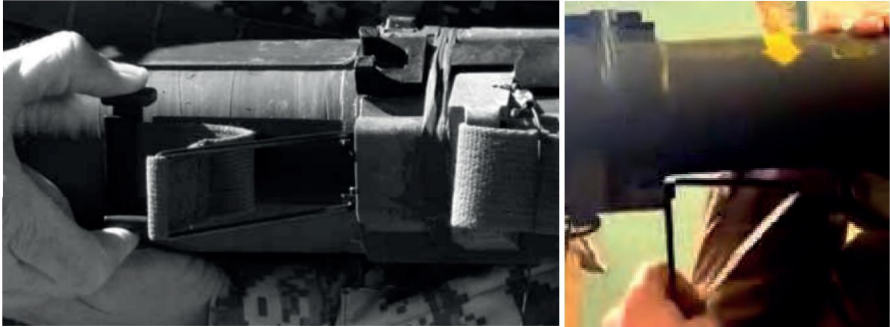


Figure 3.6.5 – Unlocking and deploying the shoulder stop

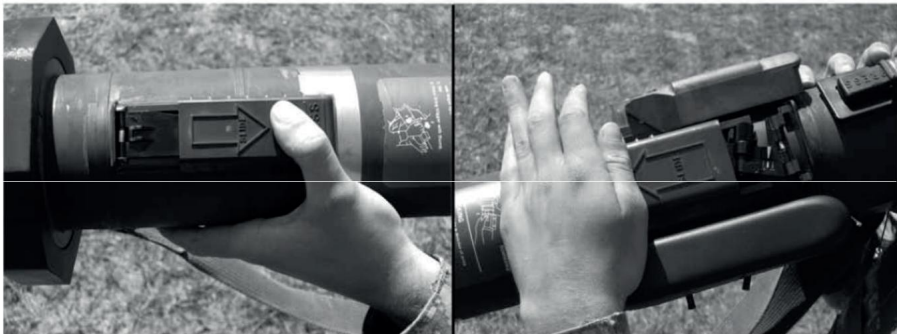


Figure 3.6.6 – Opening the rear sight and front sight covers. On the left is the front sight, on the right is the rear sight. The arrows show the direction of movement

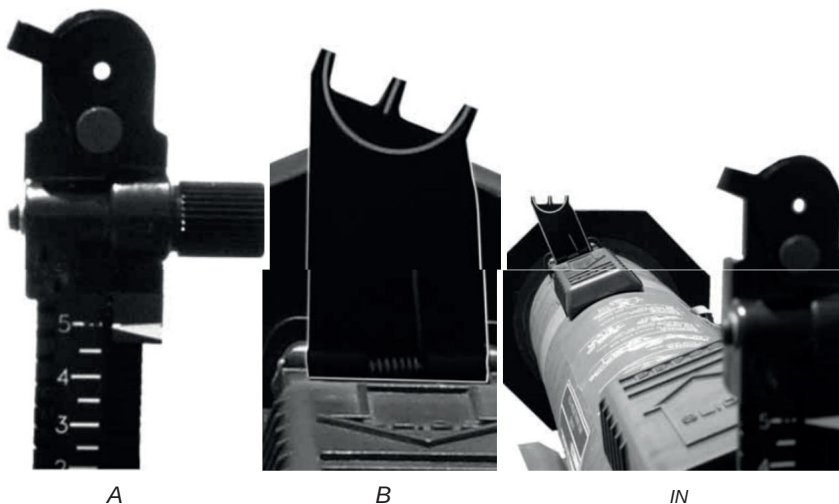


Figure 3.6.7 – A – Rear sight; B – Front sight; C – Rear sight with front sight



Figure 3.6.8 – Deploying the firing mechanism safety cover



Figure 3.6.9 – Firing a shot

Chapter 7. Hand-held anti-tank grenade launcher "Panzerfaust 3"

"Panzerfaust 3" (abbreviated as Pzf 3) - a semi-disposable German manual anti-tank grenade launcher (Fig. 3.7.1). It consists of a reusable fire control unit (Fig. 3.7.2) and a disposable launcher. The fire control unit includes folding handles, trigger and safety mechanisms, a folding shoulder rest and an optical sight. The grenade launcher fires dual-mode rocket-propelled grenades with a cumulative/high-explosive warhead.



Figure 3.7.1 – RPG "Panzerfaust 3" in equipped form



Figure 3.7.2 – Reusable fire control unit

The Pzf 3 design incorporates the recoilless launch principle of the "Davis" Gun" - the rear part of the tube, filled with plastic granules, which minimizes the effect of the explosion according to the so-called recoilless counterweight principle, which allows firing from closed rooms, while the jet engine charge burns completely in the launch tube. After being ejected from the launcher, the projectile travels a safe distance of 5 m, and then the rocket engine ignites, accelerating it to maximum speed. However, the danger zone behind the shooter, for other soldiers, remains and is - 10 m.

The Pzf 3 grenade launcher is equipped with an IS-2000 optical sight with image intensification. The sight allows the operator to correct errors during aiming. The minimum firing distance is 15 m, which allows hitting enemy armored personnel carriers almost point blank. The maximum aiming distance is 400 m.

The warhead is equipped with a head-bottom fuse and a rod that is extended into the working position by the operator when firing at tanks; when firing at unarmored, lightly armored targets (APC, BMD, BMP, SG) and fortifications, the rod is not removed. Firing at T-72 tanks, without a DZ, showed high armor penetration

of the warhead, which is 700 mm: when hitting the frontal armor of the tank turret, the cumulative jet pierces it all the way through, including the rear wall.

T-72, T-80 and T-90 tanks equipped with DZ are guaranteed to penetrate through the DZ into the hull side.

Bringing the RPG "Panzerfaust 3" into combat position and firing it

1. Attach the fire control unit to the disposable grenade tube.
- Securely clamp the block to the pipe, fix it in special grooves (Fig. 3.7.3). 2. Unfold and fix the front handle and stock (Fig. 3.7.4).
3. Open the handle containing the trigger (Fig. 3.7.5).
4. If firing at a tank, pull out and twist the rod (Fig. 3.7.6)
5. Remove the safety catch. Red **"F"** position for firing (Fig. 3.7.7).
6. Aim at the enemy and shoot by pressing the index finger on the trigger.
7. After firing, throw away the disposable tube by disconnecting it from the block. fire control, and change position.



Figure 3.7.3 – Connecting the fire control unit. The red arrow shows the groove for connection



Figure 3.7.4 – Opening the front handle and stock



Figure 3.7.5 – Opening the trigger handle



Figure 3.7.6 – Bringing a grenade from a high-explosive to anti-tank position, the red arrow shows the direction of movement



Figure 3.7.7 – White "S" – on the fuse;
Red **"F"** – removed from the fuse

Chapter 8. RPG-76 Komar hand-held anti-tank grenade launcher

The RPG-76 (Fig. 3.8.1), a single-shot grenade launcher, was developed in Poland as a smaller and lighter alternative to the RPG-7 for use by airborne troops. It is suitable for use in buildings and vehicles, as the launch tube is closed from the rear. It is effective against lightly armored targets. The RPG has a caliber of 40 mm and a mass of 2.1 kg. The supercaliber projectile is equipped with a cumulative warhead with armor penetration of 260 mm. The aiming range is up to 250 m.

T-62M, T-72, T-80 and T-90 tanks can only be penetrated in the side, stern, roof of the hull and turret. The cheekbones of the turret can also be penetrated. APCs, BMDs, BMPs, SGs of all modifications can be penetrated from all directions.



Figure 3.8.1 - RPG-76 Komar in the stowed position

The grenade's jet engine starts immediately at the moment of the shot, so when using it, it is advisable to wear glasses and gloves, although the strong deviation of the nozzles from the axis (angle 45°) protects the shooter from the effects of the jet exhaust.

Bringing the RPG-76 Komar into combat position and firing it

1. Fold back and lock the stock. In the stowed position, the shoulder stop is folded over the trigger tube, and the mainspring of the trigger mechanism, which is hidden in the buttstock tube, is not cocked. The mainspring is cocked automatically when the buttstock is moved to the firing position, and in the event of a misfire, it is possible to cock the spring again by folding and unfolding the buttstock. When the buttstock is deployed, the mainspring is automatically unclamped, which provides protection against accidental shots. The rear sight and front sight in the stowed position are folded along the barrel and automatically transferred to combat position when unfolding the butt (Fig. 3.8.2).



Figure 3.8.2 – RPG-76 after opening the butt in combat position

2. Hold the RPG with your left hand in the area of the yellow stripe with arrows and with the inscription "TU TRZYMAC REKA" (hold your hand here) to avoid burns (Fig. 3.8.3).



Figure 3.8.3 – Yellow stripe – RPG storage location

3. Remove the fuse from the main parts of a grenade (Fig. 3.8.4).

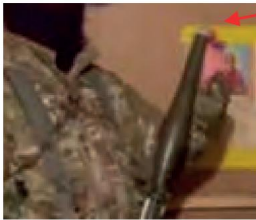


Figure 3.8.4 – Removing the fuse from pomegranate, marked in red arrow

4. Using the sight Using the bar marked 5, 15, 25 (50, 150, 250 meters, respectively), the front sight and the optical determination of the distance to the target, we aim the RPG at the enemy (Fig. 3.8.5).



Figure 3.8.5 – Sighting bar

5. With your right hand, remove safety and press the shot button (Fig. 3.8.6).



Figure 3.8.6 – Blue arrow – safety catch; red arrow – firing button



Figure 3.8.7 – Instructions for use of the RPG-76, located on the body

Chapter 9. RPG-75 hand-held anti-tank grenade launcher

RPG-75 is a single-shot hand-held anti-tank grenade launcher developed in Czechoslovakia (Czechoslovakia) (Fig. 3.9.1). It is designed to combat armored personnel carriers and to destroy enemy manpower located in light shelters and urban-type buildings. In 2022, the party was transferred to Ukraine by the authorities of the friendly Czech Republic to fight against the Russian invaders.



Figure 3.9.1 – RPG-75

Aiming range – 300 m, Armor penetration – 330 mm. Ballistics and combat capabilities – as in the RPG-18 “Mukha”. APCs, BMDs, BMPs, SGs of all modifications are penetrated from all directions. T-62M, T-72, T-80 and T-90 tanks are penetrated only in the side, stern, hull roof and turret.

Safety precautions: when shooting, no one should be within 20 m of the target. arrow behind.

Bringing the RPG-75 into combat position and firing it

1. Remove the rubber cover and press the front sight raising button (Fig. 3.9.2).



Figure 3.9.2 – Removing the rubber cover (left), red arrow – direction of movement; Front sight button (right), green arrow direction of movement when pressed

2. Remove the central rubber band and lift the sighting bar (Fig. 3.9.3).



Figure 3.9.3 – Releasing the sighting bar

3. Turn the back cover counterclockwise. Pull and pull out the inner tube as far as it will go, then turn the back cover clockwise to lock the tube in place (Fig. 3.9.4).

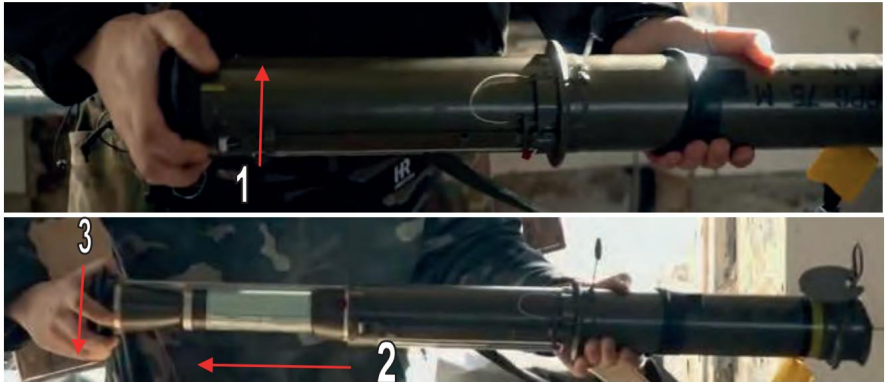


Figure 3.9.4 – From top to bottom: 1. Rotating the back cover, arrow – direction of movement; 2. Pulling out the tube, arrow – direction of movement; 3. Rotating the back cover, arrow – direction of movement

4. We pull out the safety thread, which causes the case to rise. fire button (Fig. 3.9.5).

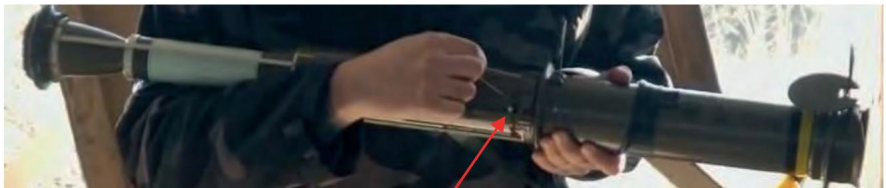


Figure 3.9.5 – Pulling out the safety thread. Red arrow – shot button

5. Aim the grenade launcher at the target and look at the offset sighting bar with the front sight, we make a shot (Fig. 3.9.6).



Figure 3.9.6 – Shooting positions

Chapter 10. Manual anti-tank grenade launcher "Instalaza C90-CR (M3)"

C90-CR is a single-action hand-held anti-tank grenade launcher developed in the Kingdom of Spain (Fig. 3.10.1). It is intended to combat BTT and for destroying enemy manpower located in light shelters and urban facilities. On March 2, 2022, the batch was transferred to Ukraine by the Spanish authorities, "To help it repel the Russian invasion," said Spanish Defense Minister Margarita Robles.



Figure 3.10.1 – RPG C90-CR

Sighting distance – 350 m, armor penetration – 480 mm or 1.2 meters of reinforced concrete.

Bringing the C90-CR RPG into combat position and firing it

1. Remove the mounting tape and the front rubber cover (Fig. 3.10.2).



Figure 3.10.2 – Removing the rubber cover. Arrow – direction of movement

2. Remove the protective tape and optics covers (Fig. 3.10.3-3.10-4).



Figure 3.10.3 – Removing the cover from the scope – pull the string



Figure 3.10.4 – Removing the covers from the package

3. We cock the RPG and remove it from the safety (Fig. 3.10.5).



Figure 3.10.5 – 1. Cocking lever; 2. Safety catch; 3. Firing button

4. We aim the enemy armored object at the crosshairs of the optical sight and make a well-aimed shot (Fig. 3.10.6).



Figure 3.10.6 – Shooting Position

APCs, BMDs, BMPs, and SGs of all modifications are breaking through from all directions.

The T-72, T-80 and T-90 tanks can only be penetrated in the side, stern, hull roof and turret, which are not protected by DZ. The gun mask and the cheekbones of the turret can also be penetrated. The T-62M can be penetrated anywhere.



Chapter 11. Hand-held anti-tank grenade launcher “RGW90 HH Matador – MP”

The Matador RPG (Mananportable Anti-Tank, Anti-DOoR) is a disposable hand-held anti-tank grenade launcher developed as a result of cooperation between DND (Germany), SAF and DSTA (Singapore), and RAFAEL (Israel).

A batch of these weapons was purchased by the Government of Ukraine from the German arms company Dynamit Nobel Defense (DND) in March 2022, and is already being supplied to the Armed Forces of Ukraine.

A characteristic feature of the Matador (Fig. 3.11.1) is the presence of a dual-mode grenade fuse. A special rod in the head of the grenade allows it to be switched to the HEAT (anti-tank cumulative, with armor penetration of 500 mm) or HESH (armor-piercing high-explosive) position.

HEAT mode allows you to hit the main Russian tanks T-72, T-80, T-90s in places not protected by DZ. T-62Ms can break through anywhere.

HESH mode allows you to hit fortified buildings and lightly armored vehicles. It makes a hole in the wall with a diameter of more than 0.5 meters, hitting the enemy hiding behind it. APCs, BMPs, SGs break through in both modes, but HESH causes more damage to such equipment than the HEAT mode. This RPG is designed for close combat, as the minimum firing distance is only 14 meters. The maximum aiming distance is up to 500 meters.



Figure 3.11.1 – Matador RPG with extended rod, HEAT mode

The Matador RPG grenade is insensitive to wind due to its propulsion system, meaning it is a very accurate weapon and there is no need to make any assumptions.

Safety: A counterweight of crushed plastic, which is released from the rear of the RPG when fired, counteracts the recoil of the shot. This plastic quickly slows down due to air resistance, allowing the RPG to be fired safely in confined spaces. In addition, the location of the counterweight takes into account the center of gravity of the RPG to ensure good balance for better shooting accuracy.

The Matador RPG has a built-in optical day/night sight with a scale of 500 meters with LD, which allows you to quickly determine the distance to the target and quickly destroy the enemy.

Bringing the Matador RPG into combat position and firing it

1. Fold back the stop handle, pistol grip, shoulder rest and optical sight (Fig. 3.11.2).

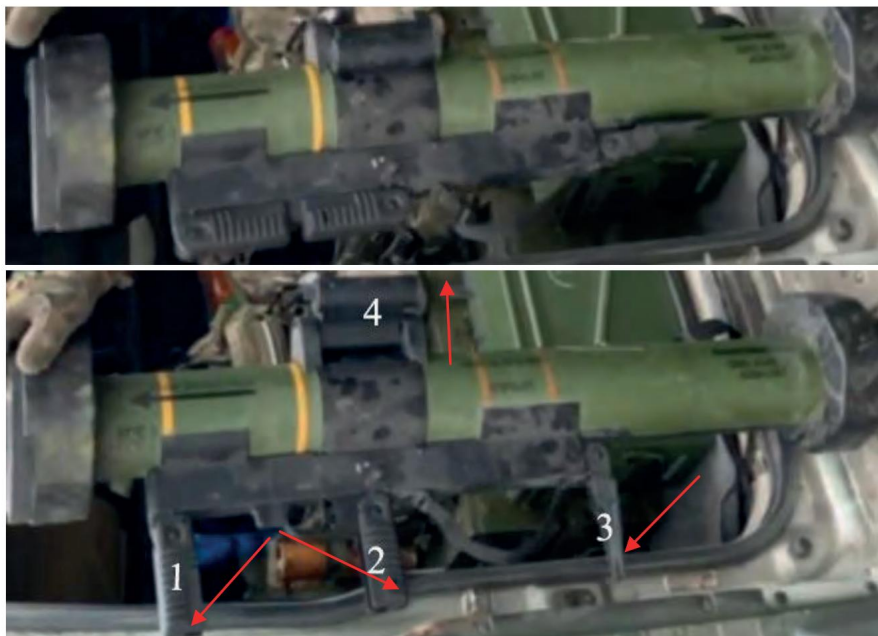


Figure 3.11.2 – RPG "Matador". In the upper photo – in folded form. In the lower photo: 1 – Stop handle; 2 – Pistol grip; 3 – Shoulder rest; 4 – optical sight. Arrows – direction of unfolding movement

2. Turn the main part of the boom according to the yellow arrow to the position "B" (cumulative) or "M" (high-explosive) (Fig. 3.11.3). When setting the "B" position, the rod must be pulled out (Fig. 3.11.1).

3. Set the fuse to the letter "F" (removed from the fuse: Fig. 3.11.3).

4. We put the RPG on our shoulder, aim it at the target, measure the distance, We pull the trigger (Fig. 3.11.3) – the missile is fired, the target is destroyed.



Figure 3.11.3 – Main part of the boom (left). On the right – fuse (red arrow) and trigger (blue arrow)

Chapter 12. M72 EC Mk.I LAW (Light Anti-Tank Grenade Launcher)

Anti-Tank Weapon) үй M72 ү6 LAW

The M72 RPG is a disposable hand-held anti-tank grenade launcher developed in the United States. Large batches of this weapon, two modifications, "M72 EC Mk.I LAW" and "M72 A6 LAW" (Fig. 3.12.1), were provided to Ukraine by friendly countries Denmark and Norway, in the wake of the Russian invasion.



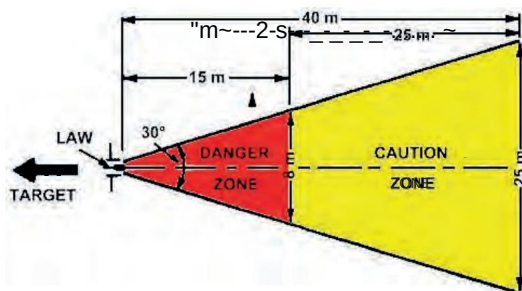
Figure 3.12.1 – M72 A6 LAW RPG in the stowed position (top);
RPG M72 EC Mk.I LAW in combat mode (bottom)

The M72 A6 LAW RPG has an aiming range of 200 m, a minimum range of 15 m. Armor penetration is 150 mm of armor or 600 mm of reinforced concrete or 1.8 m of soil and a powerful armor-piercing effect. Therefore, it is better to use it against lightly armored vehicles and enemy infantry in field shelters. It penetrates tanks only in the side and stern of the hull and turret, which are not protected by DZ.

The M72 EC Mk.I LAW RPG has an aiming range of 350 m, minimum distance – 20 m. Armor penetration – 450 mm, but it also penetrates tanks only in the side and stern of the hull and turret, which are not protected by DZ. It also penetrates the mask of the tank gun. T-62Ms penetrate anywhere.

The grenade is quite stable in flight, and the aiming distance is short, so There is no point in throwing prejudice to the wind.

Safety precautions: The body position when shooting is at an angle of 45° to the RPG. When firing from an RPG, the exhaust of fire reaches 40 m behind the shooter. There are two zones of possible damage if safety precautions are not followed. 1. Danger zone



(Danger zone). All personnel, equipment and communications must be removed from this zone. 2. Caution zone.

The flash may not be objects located in hook this area, What but it is better to remove them (Fig. 3.12.2).

Figure 3.12.2 – Safety zones

Bringing the M72 LAW RPG into combat position and firing it

Both modifications are brought into battle in the same way:

1. Pull out the check behind the housing (Fig. 3.12.3), after which it will automatically The rear and front rubber covers and belt are removed.



Figure 3.12.3 – Pulling out A6 checks (left) and EC Mk.I (right),
arrows – direction of movement

2. We take the RPG by the anti-slip covers and with a sharp movement we stretch the pipes in sides until it clicks (Fig. 3.12.4). The front sight is immediately released (Fig. 3.12.5).



Figure 3.12.4 – Stretching of A6 (left) and EC Mk.I (right) pipes;
arrows – direction of movement

3. Slide the sight cover and release the sight; Safety catch move forward in the direction of the letter "F" (Fig. 3.12.5).



Figure 3.12.5 – Moving the safety catch – red arrows and direction of movement A6 (left) and EC Mk.I (center); Sight – blue arrow; Front sight (right)

4. We visually determine the distance to the target; We aim the sight at the target with with the front sight and execute the shot - on A6 press the black button down, and on EC Mk.I press the red button forward (Fig. 3.12.6).



Figure 3.12.6 – A6 (left) and EC Mk.I (right) trigger button – arrow direction

Chapter 13. SPG-9 "Spear" ("Spis", "Lancea")

SPG-9 is a 73-mm recoilless gun, which according to official (still Soviet) terminology is an easel anti-tank grenade launcher "SPG" (Fig. 3.13.1). It has a number of modifications: SPG-9D (with a wheeled tripod mount), SPG-9N (with a night sight), SPG-9DN (with a wheeled tripod mount and a night sight), SPG-9M (with an improved sight), SPG-9MD (with an improved sight and a wheeled tripod mount), SPG-9MN (with improved and night sights) and SPG-9AM "Lanceya", modern Ukrainian production. All modifications have a common structure, a single loading and guidance. SPG is designed to defeat armored and unarmored equipment, as well as manpower in defensive structures of various types. For firing, caliber grenades of cumulative and fragmentation action are used. This is a long-range and fairly accurate weapon, allowing you to destroy the enemy at a distance of up to 4.5 km.



Figure 3.13.1 – SPG-9 on bipod with PG-9VS grenades (top) and OG-9V prepared for firing (bottom)

The barrel of the LNG in the combat position is placed on a tripod. The machine allows you to aim the grenade launcher horizontally and vertically. In addition, the design of the legs of the machine is made in such a way that without losing stability, you can adjust the height of the line of fire within the range from 390 to 700 mm from the supporting surface.

Ammunition used:

– **PG-9VS** – Anti-tank cumulative grenade, weighing 2.9 kg. Armor penetration – 400 mm. The distance of a direct shot is 765 meters, and the initial speed (before the engine is turned on) is 435 m/s. After leaving the barrel, the grenade's jet engine is turned on, which increases its speed to 700 m/s.;

- **OG-9V** – High-explosive fragmentation shot, weighing 3.6 kg. At launch, it has a speed of – 315 m/s, direct shot distance – 345 m. It does not have a jet engine.

Safety precautions. The shooter must take into account that fragments of armor and grenades have a range of up to 200 m, so it is advisable to shoot from distances greater than 200 m. Behind the SPG-9, when firing, no one should be within 30 m, as this will lead to burns. Also, in the rear sector there should be no explosive and flammable substances and walls within 7 meters.

The tactics of using the SPG-9 can be similar to that of an RPG, especially since two people can quickly change the position of this SPG, and shooting from the shoulder is also allowed. This has been proven by the practice of fighting in Syria and in the ATO. It was Viktor Degtyarev "Sensei", the commander of the "Kupol" group in the Donbass battalion, who fired the SPG-9 from the shoulder. However, the SPG-9 has a much greater range and shooting accuracy than RPGs, so it is more advantageous to use it from ambushes in pre-prepared and well-camouflaged positions.

PG-9VS grenade, aiming and adjustments

Shooting a PG-9VS cumulative grenade from an SPG-9, using an **optical sight**, is carried out according to the same rules as the RPG-7 (Fig. 3.13.2).

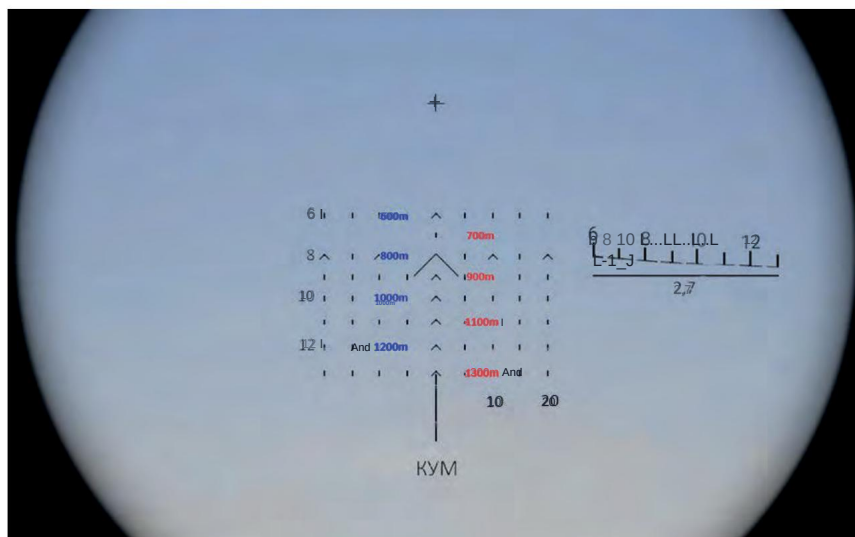


Figure 3.13.2 – PGOK-9 sight scale for a cumulative grenade

From Figure 3.13.2, it is clear that the PGOK-9 has a greater aiming distance than the PGO-7 of the RPG-7 grenade launcher. The distance scale is divided into marks from 600 to 1300 meters and is indicated by the numbers 6, 8, 10, 12 (600, 800, 1000, 1200 meters).

The blue and red numbers are our distance markings, they are not on the scope. The lateral correction scale divisions are marked 0-05 to the right and left of

central column. The scale numbers of lateral corrections 10 and 20 in thousandths are marked at the bottom right of the scale. The scale of lateral corrections corresponding to a distance of 800 meters is highlighted to facilitate aiming (made in the form of alternating squares and vertical dashes). Aiming at the target is done by the vertex of the square (dashed line) corresponding to a certain distance to the target and lateral correction.

The rangefinder scale is designed for a target height of 2.7 m. The scale is used in the same way as the PGO-7 sight of the RPG-7 grenade launcher (section "Distance to the target", pages 36-38; Figure 3.1.18; Table 3.3).

For LNG, the wind correction is taken using the grid of the lateral correction scale and can be remembered as follows: "The wind deflects the anti-tank grenade by half the division of the grid of the sight scale". Accounting for corrections when aiming LNG, when firing the PG-9VS is carried out according to the same rules as for the RPG-7 (section "Crosswind", page 38-39), because the grenade deflects into the wind. The above rule corresponds to firing distances up to 1100 m. The differences are indicated in Table 3.5.

The correction for **a strong** (10 m/s) **wind** blowing at an angle of 90° to the plane of fire when firing a cumulative grenade at distances from 500 to 1000 m is equal to 1 division of the lateral correction scale, and at distances of 400, 1100, 1200 meters - 0.5 divisions of the lateral correction scale. The correction is taken in the direction where the wind is blowing; after 1100 m the grenade flies as a ballistic body and the correction is taken in the direction of the wind. When firing with a mechanical sight, the correction is taken into account by changing the aiming point in the direction by 1 figure in the frontal projection - from 500 to 1200 m and 0.5 figures at 400 m, or 0.5 in the lateral projection from 500 to 1200 m.

Table 3.5. Direction corrections for crosswind (10 m/s) during firing a PG-9VS cumulative grenade

Distance (m)	For firing a PG-9VS cumulative grenade				
	tabular corrections		corrections (rounded)		
	in thousandths of a meter		In the divisions of the lateral correction scale (price per division 5 thousand)	in tank figures	
				Frontal projection (tank width 3.5 m)	Side projection (length 7 m)
300	0,4	0,12	-	-	-
400	2,7	1,08	0,5	0,5	-
500	4,5	2,25	1	1	0,5
600	5,8	3,48	1	1	0,5
700	6,0	4,2	1	1	0,5
800	5,8	4,64	1	1	0,5
900	5,0	4,5	1	1	0,5
1000	4,1	4,1	1	1	0,5
1100	3,1	3,41	0,5	1	0,5
1200	1,9	2,28	0,5	1	0,5
1300	0,6	0,78	-	-	-

In case of **a crosswind**, the correction is reduced by half; at a wind speed of less (more) than 10 m/s, the value of the lateral correction is proportionally reduced.

(increasing). The correction for **longitudinal wind** at a distance of up to 1000 m is practically not taken into account. If **the wind is headwind**, when shooting at a distance of more than 1000 m, aim at the upper edge of the target, and at the lower edge - if **the wind is tailwind**. **Shooting at moving targets, overtaking**
and waiting

is carried out according to the same rules as the RPG-7. The rule for taking the bias when firing at moving targets is as follows: "For every 10 km/h of speed during flanking movement of the target, take the bias – one division of the scale of lateral corrections of the sighting grid". The speed of movement of tanks on the battlefield is usually 12-15 km/h. For such targets, the bias during flanking movement of the target is taken: one and a half divisions of the scale of lateral corrections. When the target moves obliquely, the bias is half as small as when it moves flanking. The bias is counted in all cases from the middle of the target so that with the correct selection of the initial settings and aiming, the average trajectory passes through this point.

**Table 3.6. Recommended lead times when firing a PG-9VS cumulative
grenade**

Sighting (m)	For firing a cumulative grenade						
	Time flight grenades, (с)	Overtaking (rounded)					
		In the divisions of the lateral scale amendments			In tank figures during flank movement (tank length 6.9 m)		
		9-10 km/year.	18-20 km/year.	24-25 km/year.	9-10 18-20 km/year.	24-25 km/year	km/year.
300	0,5	1,5	1,5	2,5		0,5 0,5	
400	0,66	1	1,5	2,5		0,5 1	
500	0,82	1	1,5	2,5	0,5	0,5	1
600	0,92	1	1,5	2,5	0,5	0,5	1
700	1,13	1	1,5	2,5	0,5	1	1
800	1,36	1	1,5	2,5	0,5	1	1,5
900	1,61	1	1,5	3	0,5	1	2
1000	1,90	1	2	3	1	1,5	2
1100	2,21	1	2	3	1	1,5	2
1200	2,50	1	2	3	1	2	2
1300	2,87	1	2	3	1	2	2

Shooting a PG-9VS cumulative grenade with an SPG-9, using
A mechanical sight, which has scales marked 4, 6, 8, 9, 10, 11, 12, 13, corresponding to . What
distances of 400, 600, 800, 900, 1000, 1100, 1200, 1300 m, respectively, is carried out according to the
same rules as using an optical sight.

In tense moments of battle, when the conditions of the situation do not allow changing the
sight setting depending on the distance to the targets, fire on the armored personnel carrier at a direct
shot distance is conducted using the "8" sighting mark.
(both sights), when aiming at the bottom edge of the target.

APCs, BMDs, BMPs, and SGs of all modifications are breaking through from all directions.
T-62M, T-72, T-80 and T-90 tanks can only be penetrated through the sides, stern and roof.
hull and turret. Penetrates the gun mask of all Russian tanks.

OG-9V grenade, aiming and adjustments

The optical sight has a **Reticle Switching Unit**, which is used to switch reticles in the field of view - the "KUM" reticle when firing a PG-9VS cumulative anti-tank grenade and the "OSK" reticle when firing a fragmentation grenade.

OG-9V grenade. The divisions of the "OSK" reticle sight scale are marked with the numbers 2, 4, 6, 8, 10, 12, which correspond to the firing ranges in hundreds of meters (200, 400, 600, 800, 1000, 1200 m). For convenience, the squares and dashes on the reticle are called aiming marks, in the central column - central marks, and to the right and left of the central column - side aiming marks. The divisions of the lateral correction scale are marked through 0-05 to the right and left of the central column. The numbers of the lateral correction scale of 10 and 20 thousandths are marked at the bottom right of the scale. The angular value of the height of the dashes is 0-01. The sight and lateral correction scales corresponding to the 400 m distances of the "OSK" reticle are highlighted to facilitate aiming (the squares in the central column are indicated in large size, and the lateral correction scales are made in the form of alternating squares). Targeting is carried out by the vertex of the square (dashed line), which corresponds to a certain distance to the target and lateral correction. The blue and red numbers are our distance designations, they are not on the sight (Fig. 3.13.3).

The rangefinder scale of the "OSK" reticle is designed for a target height of 1.7 m, which approximately corresponds to the average height of a person (Fig. 3.13.3).

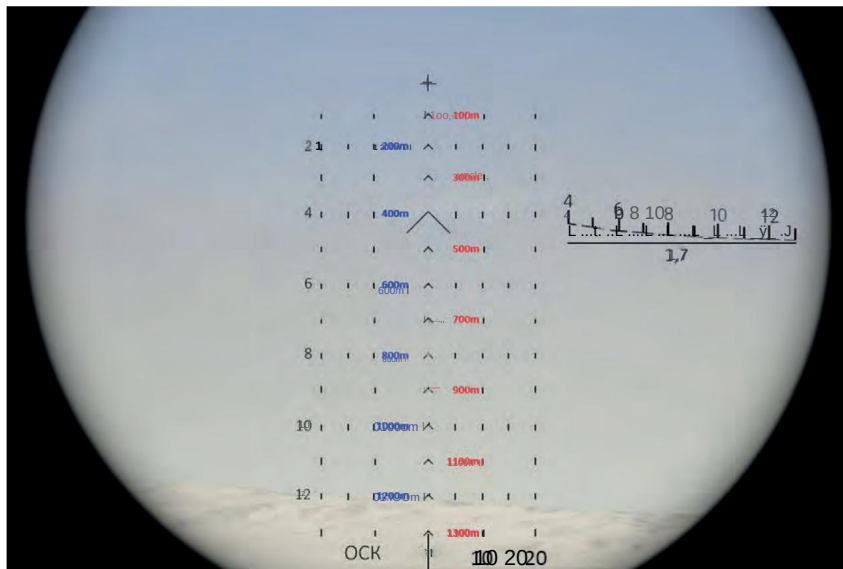


Figure 3.13.3 – PGOK-9 sight scale for fragmentation grenade

A fragmentation grenade, unlike a cumulative one, deflects in the opposite direction – into the wind. When firing a fragmentation grenade with direct fire at a distance of 600-1000 m correction for **strong** (10 m/s) **wind** is – 0.5 divisions of the lateral correction scale, 1100-1300 m – 1 division of the lateral correction scale for wind (Table 3.7).

In case of **a crosswind**, the correction is reduced by half. In case of **a moderate wind**, the correction is also reduced by half.

Table 3.7. Corrections for crosswind direction (10 m/s) when firing a OG-9V fragmentation grenade with direct fire

Distance shooting, (m)	For firing the OG-9 fragmentation grenade with direct fire		
	tabular corrections		corrections (rounded)
	in thousandths	in meters	In divisions of the lateral correction scale (price per division 5 thousand)
300	1,0	0,3	-
400	1,0	0,4	-
500	1,0	0,5	-
600	2,0	1,2	0,5
700	2,0	1,4	0,5
800	3,0	2,4	0,5
900	3,0	2,7	0,5
1000	3,0	3,0	0,5
1100	4,0	4,4	1
1200	4,0	4,8	1
1300	4,0	5,8	1

When firing a fragmentation grenade at a distance of more than 1000 m, aim one figure below the target in **a tailwind** , and one figure above the target in **a headwind** .

Shooting at moving targets, overtaking and waiting for the execution of It is fired according to the same rules as the PG-9VS cumulative grenade (Table 3.8).

Table 3.8. Recommended lead times when firing the OG-9V fragmentation grenade with direct fire

Shooting distance, (m)	For shooting a fragmentation grenade				
	Time grenade flight, (c)	Overtaking (rounded)			
		In the divisions of the lateral scale corrections		In meters	
		9-10 km/year.	18-20 km/year.	9-10 km/year.	18-20 km/year.
300	1,0	2	3,5	2,7	5,5
400	1,3	2	3,5	3,5	7,2
500	1,7	2	4	4,6	9,3
600	2,0	2	4	5,4	11,0
700	2,4	2	4	6,5	13,2
800	2,8	2	4	7,5	15,4
900	3,2	2	4	8,6	17,6
1000	3,6	2	4	9,7	19,8
1100	3,9	2	4	10,5	21,4
1200	4,3	2	4	11,6	23,6
1300	4,7	2	4	12,7	25,8

The fragmentation grenade is not effective against armored personnel carriers; it should be used against enemy infantry and its fortifications, as well as to destroy truck convoys for various purposes.

For firing a fragmentation grenade from a grenade launcher at distances up to 500 m, you can use the scale of the optical sight "KUM" (cumulative) and the mechanical sight. The sight setting should be selected according to Table 3.9. The aiming point is the lower edge of the target.

Table 3.9. Shooting a fragmentation grenade on the scale of the PGOK-9 cumulative sight and mechanical sight

Firing distance, m 200	Installation of the "KUM" sight 6
300	9
400	11
500	12

The procedure for firing a shot from the LNG-9

1. Make sure the trigger is not cocked and the trigger is not pulled. set on the fuse;
2. Take the pencil case with the starting powder charge out of the bag, open it and remove the charge; remove the grenade from the bag and connect the starting powder charge to the grenade (prepare the shot - Fig. 3.13.4);
3. Open the grenade launcher's shutter by turning the handle with your left hand. the locking mechanism to the left back to the stop (Fig. 3.13.4);
4. Take the prepared shot and remove the safety cap;
5. Pull the check by the ribbon and remove it from the main part of the detonator safety cap (do not remove the cap when shooting in the rain);
6. Insert the shot into the breech as far as it will go and close the bolt, for which turn the locking mechanism handle to the right;
7. Remove the trigger from the safety, cock the trigger mechanism, for which pull its handle down as far as it will go;
8. When shooting with **an optical sight** – select on the scale the sight reticle, the distance and bias marks and, using the twists of the vertical and horizontal guidance mechanisms, aim the LNG at the target;
9. When shooting with **a mechanical sight** – drop the front sight and sighting bar; set the desired division of the temperature correction scale; set the sight clamp to the division of the sighting bar, according to the visually measured distance; while rotating the screws of the aiming mechanisms, take a flat front sight and combine it with the aiming point;
10. Shout loudly "Shot!", after which make an aimed shot, pressing the trigger; 11. After the shot, put the trigger on the safety and sharply open shutter; at the same time the diaphragm with the tube is pulled out. In case of incomplete pulling out of the diaphragm with the tube, it is necessary to remove it by hand, having previously put on a glove.