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SHOULDER-FIRED ANTITANK WEAPONS

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Antitank weapons such as the RPG-2 and RPG-7, which appeared late in the Second World War, are now among the most commonly used weapons designed to ~~combat~~ armored targets. Motorized rifle Podrazdeleniye are equipped with these weapons.

The purpose of these weapons is to destroy tanks, self-propelled artillery weapons, armored transportors, armored vehicles and various field type strong barriers and emplacements. The weapons fire powerful armor-penetrating shells, capable of penetrating the armor of any modern tank and destroying its crew, armament, ammunition and equipment.

The primary characteristics of the RPG-2 and the PG-2 shells it fires are presented in the Table below.

Characteristics		RPG-2
Weapon caliber	mm	40
Caliber of shells in nose portion	mm	80
Barrel length	mm	950
Length of shell with powder charge	mm	670
Weight of weapon	kg	2.86
Weight of shell with powder charge	kg	1.84
Muzzle velocity of shell	m/sec	84
Maximum velocity of shell	m/sec	84
Effective range	m	150

The weapons are low in weight, reliable and simple in design (Figures 1 and 2). Their operation is based on the use of the dynamic reaction principle. Its essence is as follows.

When the weapon is fired, the gases form in the barrel force the shell out in the direction of the target. A portion of the gases, flowing outward through the open rear end of the barrel or through the nozzle and funnel of the barrel, create a reaction force which balances the recoil force. If this were not done, the recoil energy, calculations show, would be 425 kgm.



Figure 1. Shoulder Fired RPG-7 Antitank Weapon.

Let us recall that when a carbine is fired, the soldier feels a significant recoil at the shoulder, while the recoil energy of this weapon is only 1 kgm. Of course, no one could withstand the recoil of the antitank weapon.

The weapon consists of a barrel, firing mechanism with a safety and sighting device. The barrel of the RPG-2 is smooth, open at both ends and has a diameter of 40 mm. The diameter of the shell (forward portion) is 80 mm, i.e., the shell is a supercaliber shell.

The bases for attachment of the trigger and sighting frame, base of firing pin and sear for connection of the firing mechanism to the barrel are welded to the barrel. Two wooden pieces are fastened to the barrel to protect the operators hands from burns during firing.



Figure 2. RPG-2 Shoulder Fired Antitank Weapon:  
1, barrel; 2, firing mechanism; 3, sight; 4, sighting frame; 5, firing pin; 6, PG-2 shell;  
7, wooden protective pieces; 8, shoulder strap.

The firing mechanism is used to fire the weapon.

The base of the firing mechanism is a body containing: the hammer, safety, trigger, sear and rod with firing spring.

To fire the weapon, after it is loaded, the hammer must be set over the firing cap. This is done by pressing against the hammer with the right thumb, forcing it downward. The hammer compresses the firing spring, the sear enters the catch in the hammer and holds it in this position until the trigger is squeezed, which withdraws the sear.

The safety is done in design to eliminate accidental firing. The safety is moved to the off position by pressing on its right side, pressing it down even with the body of the firing mechanism.

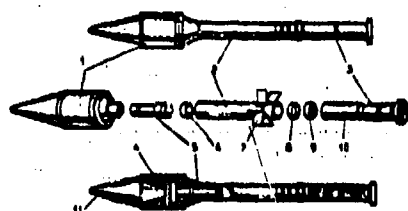


Figure 3. PG-2 Antitank Shell:  
1, body; 2, stabilizer; 3, powder charge; 4, explosive; 5, base fuse; 6, ring; 7, stabilizer pins; 8, stabilizer pin retaining ring; 9, base; 10, paper bottom; 11, ballistic tip.

If the trigger is now squeezed, it rotates about its axis and its upper tooth raises the sear, i.e., disengages it from the hammer. The hammer, moved by the compressed firing spring, strikes the cap. The cap ignites the powder charge. The charge burns. The weapon fires.

The aiming device is used to aim the weapon at the target and, in the RPG-2, includes the front sight and sighting frame with three sighting apertures: the lower aperture for firing up to 50 meters, the middle aperture -- from 50 to 100 meters, and the upper aperture -- from 150 meters. The sighting rules are the same as those used for firing a rifle or pistol.

The PG-2 antitank shell (Figure 3) consists of a body, stabilizer, powder charge and base fuse.

Within the body of the shell, consisting of the outer shell, ballistic tip and cover with seat for fuse, is a cumulative-action charge. The charge is shaped with a funnel-shaped depression, in order to concentrate the explosive energy in one narrow direction. The velocity of the cumulative stream is over 10,000 meters per second, the pressure in the zone of the explosion reaches several thousands of atmospheres. As a result of its tremendous velocity

and density, the cumulative stream penetrates the armor of any modern tank. The powerful effect of the explosive charge on the armor thus results from the caliber of the shell, the shaping of the charge, the use of explosives with high detonation properties and is independent of the velocity of the shell at the moment that it strikes the tank.

The stabilizer consists of a tube, six flexible fins, a retaining circle and base. The stabilizer assures stable flight of the shell after firing.

The threaded retaining ring connects the stabilizer to the body of the shell.

The powder charge is used to impart forward motion to the shell. It includes a paper sleeve, filled with smoking gunpowder and a metal tip with a thread which connects to the base of the stabilizer.

The base contains the ignitor cap, which ignites after the trigger of the firing mechanism is squeezed.

The base fuse is an inertial type fuse, used to ignite the bursting charge of the shell when it impacts with a barrier.

The PG-7V antitank shell is basically similar in design.

When it is fired following the impact of the firing pin on the cap, the main powder charge is ignited. The gases formed by ignition of the powder charge force the shell out of the barrel at 84 meters per second.



Figure 4. PG-7V Antitank Shell.

After the shell flies out of the barrel, the stabilizer fins open.

The antitank weapons can be fired from the prone, kneeling or standing position, as well as from trenches and from behind cover. In all cases, the weapon must be fired from the right shoulder. Resting of the breech portion of the weapon against any object or against the soil during firing is categorically forbidden. A distance of at least 2 meters must be maintained between the breach section of the barrel and the wall of a trench or other cover.

The operator must also be sure that the cover is removed from the breach portion of the weapon, and that the breach portion is not blocked by snow, dirt, sand or other objects before firing. Otherwise, the barrel of the weapon may burst, severely injuring the operator.

The operator must be particularly careful that no personnel, weapons, explosives or fuel are located within 30 meters to the rear when the weapon is fired.