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Fact Sheet

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Weapons Systems Brief

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ZU-23 23-mm Twin Anti-Aircraft Gun



The ZU-23 Anti-Aircraft Artillery Gun was developed referring to the 1954 year Soviet Union requirements. The 2A14 Gun entered service with the Soviet Army under the indexation as the ZU-23 23-mm Twin Anti-Aircraft Gun and also as the 2A13. At the moment the ZU-23 is used by the Russian Army and by more than 20 other countries of the world.

The ZU-23 consists of twin 2A14 Guns, light carriage mount based on two wheel chassis, ZAP-23 automatic anti-aircraft sight, and additional sight used to fire at the ground targets.

The 2A14 Gun is based on the 23-mm rapid fire aviation gun and consists from rifled 87.3 caliber length barrel (2 010 mm), barrel box, lock's frame, lock, and also from feeding, hammer, and returning mechanisms. The returning mechanisms are based on the usage of powder gas from the barrel's channel threw the barrel's walls. Two guns are mounted on the upper mount carriage. Left and right barrels are identical except the feeding mechanism position. It use belt feeding from the ammunition boxes. Each gun's rate of fire is 1 000 rounds per minute. It defeats targets in 2.5 km range and in 2 km altitude. Projectile initial speed is 970 m/s. These features allow to defeat air targets flying in 1 800 km speed in 0.023 probability.

Sighting mechanisms mounted on the upper mount provide 360 degree traverse range with vertical inclination up to + 90 degrees. Furthermore traverse turns are made in 60-70 degrees per second and vertical - in 50 degrees.

The lower carriage mount is fitted with a bearing plate and a one-axis chassis. The wheels are turning up and in their sides each when the anti-aircraft gun changes march position to a fire preparation and the mount itself lowers to the ground using jackscrews. For the ZU-23 preparation for firing from the march position there is a normative in 30 seconds. In extreme situation it is able to fire when it is towed by an army truck.



From all of the crew members only two of them take part in firing placed in their combat seats on the upper part of the mount. One of them operates the ZAP-23 sight by inserting manually approximate target data to turn collimator sight, insert altitude and overtake angles. The other member is a gunner. He is holding collimator sight's cross on the moving target.

The ZU-23 executes fire using simple cartridges with a high-explosion fragmentation and armor-piercing tracer load. Feeding is provided

from the 50 cartridge belts each, placed in the ammunition boxes. Two more crew members are intended to replace these ammunition boxes.

There is ability to replace quickly both barrels in the battlefield as they are overheating. Replacement operation takes 15 - 20 seconds and the spare barrels their self are completed with the gun.

The ZU-23 is towed by an army truck with 4 x 4 or 6 x 6 wheel formula. Maximum road towing speed is 70 km/h and 20 km/h on cross-country.

There was developed a mobile variant of the ZU-23 placed opened on the roof of the BTR-D Armored Airborne Carrier. However there are widely used and improvised mobile anti-aircraft guns placed opened inside an ordinary truck cargo compartment.

During the last decade the ZU-23 anti-aircraft artillery gun was improved by Precocious Machine building Design Bureau. Russian improved ZU-22M variant has increased performance and maintenance characteristics. A number of other countries make the ZU-23 improvement work on their own. Finnish company Instrumentointi Oy and VAMMAS Oy jointly install a semi-automatic target tracking system, laser rangefinder, ballistic computer, engine for turning barrels in both planes, and a number of other improvements.





In Poland the ZU-23 is rebuilt to a missile-artillery system by adding two "Strela-2M2" (2K32M) shoulder launched anti-aircraft guided missiles and new optical sight with a target pointing system. This improved modification was indexed as ZUR-23-2S "JOD". With the absence of radio electronic strays the target should be defeated by the guided missiles while if the target use radio electronic countermeasures or it is not rational to use guided missiles the target should be defeated by the anti-aircraft gun. Furthermore fighting against ground forces an improved variant of the ZU-23 shows the same effectivity.

The Russian improved ZU-23M lost it's ZAP-23 sight and the operator working place and were replaced to electro mechanic turn systems, sighting control panel, binocular collimator sight with built in miniature video device and glowing glass for air and ground targets. New optical electronic system includes a laser rangefinder, television channel, optical mechanic device can be reinforced with thermo location channel and a television system for usage at night. Also automatic target lock and tracking device, ballistic computer, indication and control panel, external target pointing system (datalink).

All mentioned equipment is placed on a rotating carriage mount right side from the anti-aircraft guns. Furthermore there is ability to place two ["Igla"](#) (9K38), "Stinger" or some other shoulder launched anti-aircraft guided missiles.

The main improvement objective was to increase fire effectivity to low flying targets including the low silhouette ones with a hit probability from 0.023 to 0.3 - 0.4 depending from the target speed. The ZU-23M also defeats targets at day/night time.

Specifications

Crew	6
Entered service in	1960
Dimensions and weight	
Total weight in combat order	950 kg
Overall length	4 570 mm
Overall width	1 830 mm
Armament	
Main gun	2 x 23-mm
Barrels length	87.3 calibers
Traverse range	360 degrees
Elevation range	+ 90 degrees
Maximum rate of fire	2 000 rpm
Combat load	
Main gun	2 x 50 rounds
Projectiles weight	178 g
Projectile initial speed	970 m/s
Maximum defeat range	2.5 km
Maximum defeat altitude	2 km
Mobility	
Maximum road towing speed	70 km/h
Maximum cross-country towing speed	20 km/h

Source: <http://www.enemyforces.com>