



NAVAL AD 20 mm, M71/08

Weapon system with FCS



Shipborne gun 20mm M71/08 is intended for close AD protection of small ships against attacks of the following aircraft: low-flying, low-speed craft and helicopters. In addition to its main purpose, this weapon can be successfully used in day and night conditions against other sea, land and aerial targets, such as: small ships, patrol boats, different facilities on land, motor vehicles, troops, parachuters etc.

AA M71/08 weapon design features

The base of the gun 20mm M71/08 design are design solutions of 20mm M55 gun which has proven itself over many years of use as a highly reliable weapon in all conditions and a weapon easy to handle and maintain.

The main technical feature that M71/08 inherited, which represents a significant advantage over some other shipborne gun solutions of the same caliber, is the static balance of its elevating mass in all elevation angles even with the change of weight when the drum is emptied during firing. This static balance of the parts moving in elevation has the following advantages:

- The gun can be elevated via the linkage (there is no need for separate equilibrators and gears) which makes the structure simple, the main parts and assemblies more reliable and reduces the maintenance costs at all levels;
- By using adjustable shoulder rests and the sling, the gunner can track a target and lay the gun in traverse and elevation with great angular speed without changing body positions, which increases significantly the gun ergonomics.

Automatic 20 mm M55 GUN

M71/08 weapon is fitted with an automatic 20 mm M55 gun fed with ammunition from easily replaceable drums with the capacity of 60 rounds.

Automatic 20 mm M55 gun has been adapted to enable installation onboard ship:

- The cannon and the ammunition feeding drum are turned (the drum is on the bottom side) and are protected with the cradle and case collector against water splashing (sea or river);
- Hydraulic shock-absorber is adapted so as to enable smooth automatic operation of the gun
- The gun is triggered by the right hand forefinger. The firing bar has a reliable effect at all elevation angles, and accidental triggering is prevented with a brake located on the weapon cradle.

The gun is fitted with a firing stop which profiles the action zone in accordance with the allowed action sectors (bearing in mind protection of the ship superstructure).

Carriage and other weapon parts

The bottom support has the shape of a bell, and is designed so that the gun can be installed on different ship platforms without much difficulty and comparatively fast.

The seagoing fastener in elevation is at the gunner's hand and it enables locking of the gun elevating mass at the angles of 0°, 30°, 60° and 90°.

The gunner can activate and release the seagoing fastener in traverse with his foot. There are 12 traverse positions (at every 30°).

One crew member is sufficient to cock the gun, replace the empty drum or the case collector.

The gun has a water-proof casing which is fitted by putting the elevating mass at the elevation angle of 90°. The sighting devices have their own waterproof casing.

The main technical data:

- Caliber 20 mm
- Barrel length 70 cal.
- Operating principle Gas-operated
- Projectile muzzle velocity 850 m/s
- Efficient range 2000m
- Maximum range
 - Horizontal 5500
 - Vertical 4000
- Feeding From the drum, capacity 60 rds
- Full drum weight 28kg
- Range of laying angles
 - In traverse 360°
 - In elevation -10° to +90°
- Weapon weight with loaded drum 485 kg
- 20 mm automatic gun weight 49kg
- Weight of full drum 28 kg
- Weight of empty drum 12,5 kg
- Firing line height 1150 mm
- Allowed number of rounds in uninterrupted fire 180 rounds
- Barrel cooling after 180 rounds in uninterrupted fire 5 to 10 min.

FIRE CONTROL SYSTEM

The Fire Control System (FCS) is a modular type system consisting of:

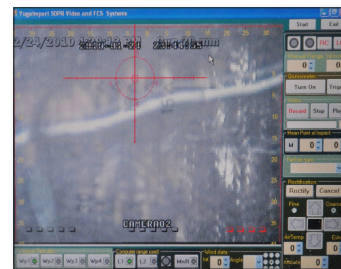
- Day sights with a CMOS camera for image display on PC monitor
- Night sights with TI camera for image display on PC monitor,
- Laser rangefinder,
- New ballistic computer with military connectors
- Collimator sight,
- Boresighting telescope 20 mm.

Characteristics of certain FCS modules:

- Daysight with CMOS camera
 - optical zoom 36x
 - field of view 63.7° (wide) to 2.3° (tele)
- Night thermal imager
 - Sensor type VOx Microbolometer
 - 640 x 512
 - Field of view : 10.4° x 8.3°
 - Spectral band: 7.5 – 13.5 μm
 - Digital zoom 2x, 4x and 6x
- Laser rangefinder
 - measurement range 30 – 2.500 m
 - wavelength 905 nm
 - beam divergence ≤ 1.5 mrad
- Collimator sight
 - magnification 1 x
 - angle value of reticle radius 1.2°, 3.6° and 6°
 - field of view
 - horizontal 180°
 - vertical 180°

• Boresighting telescope 20 mm

- magnification 3,6 x
- field of view 5°



Use of the FCS in day and night conditions against various types of targets:

Measure the distance to target with the laser rangefinder, which positions the electronic reticle in the position that allows the exact elevation angle for shooting at the target. The image of the acquired target, the distance measured and the electronic reticle are displayed on PC monitor. For the low speed targets and day conditions, the system is equipped with a reflexive collimator sight with illumination, which is especially suitable for shooting at airborne targets. This sight also serves as a backup in case of power failure.

The boresighting telescope is used to align the lines of sights with the gun barrel axis.

Gunner's protection

Gunner's ballistic protection from the front is secured by the automatic gun and its cradle which are installed on the upper carriage, and he is protected from the side by an additional shield made of armoured steel plates connected to the upper carriage. This solution provides for gunner's ballistic protection level IV (protection against small arms and infantry weapons, calibers 5.56mm to 12.7 mm).