HOLDING CORPORATION

ABOUT US

HK „KRUŠIK" a.d. , 14000 VALJEVO, REPUBLIC of SERBIA
web site: www.krusik.rs

จัดจำหน่ายโดย

บริษัท พีอาร์ซี อะกริเม็กซ์ จำกัด
773/71 ชั้น 3 ถนนประชาราษฎร์บำเพ็ญ แขวงสามเสนนอก
เขตห้วยขวาง กรุงเทพฯ 10310
โทร.02 691 6772 แฟกซ์. 02 691 6677
Email:agrimex.prc@gmail.com

BACKGROUND

Formation of the present Company Krušik is connected to the year 1937, when the adventurous engineer Nikola Stankovic decided to build a factory of armament and ammunition in Valjevo, similar to the one that had already existed in Višegrad. The factory got its first name after the parent factory from Višegrad.

Based on the Decision of the Sarajevo Royal Bank, on February 22nd, 1939, the Trade Sector of the Ministry of Trade and Industry issued the permit (Conf. III No. 17) stating that the Company "Vistad" in Valjevo may engage in industrial production of primers. Very soon, the factory took over the monopoly of No. 8 primers production. Shortly after, the Company „Vistad" started the production of hand offensive grenades, infantry rifle ammunition and also the preparation of manufacture of small caliber (12kg) aircraft bombs began. During the Second World War, the Company „Vistad" practically had a decisive role in the supply of war-material products to the battle front.

By transition into the jurisdiction of the Ministry of National Defense on June 10th, 1945, the factory got the name Military-Technical Institute of Valjevo and on January 23rd, 1948, the Company was registered under the name of „Krušik". 75 years of existence are characterized by alternating periods of growth and stagnation in business activities and company development.

Having in mind the above said, the last decades of Krušik existence may be divided provisionally in four crucial periods:

THE FIRST PERIOD, between 1948 and 1970, is significant for the development of inherited products, but also for the introduction of new programs into the war-material items production. Reorientation of free capacities in military production to the production of civil programs was seen as an especially important activity at this period of time.

THE SECOND PERIOD, between 1975 and 1985, belongs to a decade of investments, development and business expansion of the Company. This period is called the Golden Age of Krušik.

A remarkable 80 million dollar export on annual basis has been achieved, thus enabling intensive modernization of the production programs and service capacities. In this period, Krušik was one of the biggest economic companies in Yugoslavia, with ten thousand employees and the products mostly designated for foreign markets.

Defense production, with its rocket program technologies of high quality, occupies a particular place in the entire system of Krušik, constituting the very backbone of the development function of the Company and export results.

THE THIRD PERIOD in Krušik history started in 1985, along with the occurrence of rapid recession of business dealings, being the result of global changes as well as the collapse of Yugoslavia, and followed by the introduction of sanctions against our country, wars in the region and NATO bombings. Due to interrupted business connections with the world and sudden loss of projects, all the companies within the system found themselves in a difficult position, especially the Defense production. Consequently, all the energy was put into the pursuit of a new organizing system and in 1992 the Company Krušik has been organized as a holding corporation. In the Defense production the focus was on an intensive work on restructuring the part of its capacities aiming at the production of profitable programs for new markets. Accordingly, development and production of anti-hail rockets, electric detonators, cam switches, gas meters and other products was initiated.

Krušik succeeded in implementing the Government's Social Program and the number of employees had been adjusted to the current level of production.

THE FOURTH PERIOD, ongoing to the day, is the period of widening product assortments by way of introducing new ones into the production, modernizing the existing products in accordance with the market requirements, increasing the number of customers as well as production efficiency, maintaining permanent quality which is one of the features Krušik is widely known for, continuous improvement of personnel, equipment modernization, introduction of new technologies, hiring of young staff, adjustment of production processes and products to environmental requirements, permanent investment in process automation and electronic monitoring.

Holding Corporation Krušik a.d., with its vastly experienced workforce and the name ever-present on the world market, permanently connected with quality, imposed itself as a reliable partner, open for all kinds of cooperation, both in the field of production and development.

COMPANY PROFILE

Company Name: HK „Krušik“ a.d.
Established: February 22nd, 1939
Number of Employees: 1285
Type of Company: Closed joint-stock company
Address: 59 Vladike Nikolaja,
14000 Valjevo, Serbia
General Manager: Mladen Petković
Phone: +381 14 221 593
Fax: +381 14 220 516
E-mail: krusikdirektor@ptt.rs
Web site: www.krusik.rs

Military program

- Mortar Shells of all calibers (high explosive, smoke and illuminating), guided and unguided rockets (high explosive and antitank), aircraft bombs, artillery projectiles, 40mm ammunition, 82mm cartridges, cumulative mines, hand grenades, antitank mines, fuzes and initial devices.
- Overhaul of the ammunition for all production program items
- Control-technical inspection and survey for the purpose of the rocket systems shelf life extension
- Transfer of technologies and construction of factories for all types of proper production programs

Civil program

- Krušik’s antihail system, electric detonators, containers for explosive disposal, cam switches, gun and primers for cattle stunning, technical parts made of Al and Cu alloys, technical parts made of thermosetting resins, tools manufacture, metrological laboratory services, metal processing, thermal treatment and chemical protection.

The Holding Corporation “Krušik“ a.d. is the name recognized worldwide among the users of products that the Company “Krušik“ produces. Owing to the seventy-five years of tradition and over ten million of sold items in more than 60 countries in the world, the Company „Krušik“ is ranked among the leading armament manufacturers in this part of Europe.

“Krušik” has the integrated quality management system certified as per:
ISO 9001:2008; ISO 14001:2004; OHSAS 18001:2007 and SRPS ISO 17025:2005.

Strategic goals of the Company “Krušik“ are as follows: widening the products range by way of introducing new ones into the production, modernization of the existing products in accordance with the market requirements, increasing the number of customers, boosting production efficiency; maintaining high quality which is one of the features we are internationally known for, continuous training of personnel, equipment modernization, introducing new technologies, hiring young employees, adjustment of manufacturing processes and products with the environmental protection requirements, continual investment in process automation and electronic surveillance.

The Holding Corporation “Krušik“ a.d. is one of the companies with the longest tradition of participating in national and international fairs. The beginning of the factory presentation at fairs coincided with the beginning of the first Technology Fair in 1956 in Belgrade. In the course of all these years, “Krušik“ has participated in more than 300 manifestations both in the country and

abroad. Many partnerships with great number of domestic and foreign companies have been established. Partners of strategic importance for the Company „Krušik“ are the Company Yugoimport SDPR and the Serbian Army.

„Krušik“ establishes with potential partners worldwide different forms of cooperation of mutual interest, including the following:

- delivery of completed items or item parts from its own production program;
- joint participation in the sale of products on new markets;
- independent or mutual development of products at market requests;
- manufacturing technologies transfer, by sale or exchange;
- improvement of existing items in order to enhance the characteristics as per customer’s requests.

Support which factory receives from the Serbian Government is very important for its development and business activities.

FIELD OF ACTIVITY

PRODUCTION OF ARMAMENT AND MILITARY EQUIPMENT

We produce armament and military equipment for Military Aviation and Air Defence, Ground troops, Navy and other, as well as practice devices.

OVERHAUL OF ARMAMENT AND MILITARY EQUIPMENT

We perform overhaul of armament from our production program or overhaul of similar devices from other producers.

ENGINEERING BUSINESSES

Technology transfers and erection of plants and production facilities with diverse production programs.

MARKET ORIENTED PROGRAMS

We produce products that can be applied in different branches of industry.

SERVICES

We perform the following services: metal manufacturing, heat treatment and protective coatings.

We perform the assembling and safe destruction of war devices that went out of use and the usage period of which shelf life has expired.

HOLDING CORPORATION

MILITARY PROGRAM

HK „KRUŠIK” a.d. , 14000 VALJEVO, REPUBLIC of SERBIA
Phone 381-14-223-121, 221-121, Marketing 381-14-226-822, Telefax 381-14-220-149
e-mail: krusikmarketing@eunet.rs, web site: www.krusik.rs

60 mm MORTAR AMMUNITION FAMILY

Modern solutions have been applied in developing II generation of shells. These include:

- optimised aero-dynamic shape securing improved external ballistic characteristics, accuracy and precision at all ranges;
- advanced shell body production technology which provides forming of great number of fragments, has been applied in production of the shell body; this technology, together with the TNT/RDX explosive charge provides optimal efficiency at target.

Masking of friendly troops movement as well as blinding of enemy observers, fire support artillery and anti-tank weapon crews is achieved by use of modern, low-drag and highly efficient white phosphorus-based smoke shells.

With use of illuminating mortar shells, mortars provide night battlefield illumination, as well as blinding of enemy crews and observers.

The shells are completed with fuzes which are also indigenously produced: point detonation, superquick/delay fuzes, time pyrotechnical fuzes.

The propellant charge consists of base and increment propellant charge. The base propellant charge is filled with EI powder fitted into aluminium bushing. The increment propellant charge is also filled with EI powder fitted in reinforced celluloid shells resulting in good distribution of the projectile initial velocities and good range overlapping.

MORTAR AMMUNITION FAMILY

60mm

Shell designation/type	HE M73P4	HE Mk10	HE Mk10P1	Smoke M73P2	Smoke Mk10	ILL. M67P2	ILL. M91	Practice M62
Length of shell with fuze (mm)	286	410	410	286	410	330	495	202/193
Weight of shell with fuze (kg)	1.35	2.1	2.1	1.35	2.1	1.27	2.1	1.08/ 0.235
Type of shell charge	TNT	RDX/TNT or TNT	RDX/TNT or TNT	WP	WP	ILL.	ILL.	
Shell charge weight (kg)	0.22	0.4	0.4	0.19	0.3	0.2	0.3 (illuminating candle)	
Fuze type/designation	UTM68P1	UTM88P1	UTM93 SQ/D	UTM68P1	UTM88P1	TPM67	TPM67	
Muzzle safety (m)	8	70	50	8	70			
Proppellant charge	O + 4	O + 6	O + 6	O + 4	O + 6	O + 4	O + 6	
Max. Working pressure (bar)	414	647	647	414	647	414	647	
Maximum range (m)	2550 Mortar M57 Barrel length 720 mm	5100 Mortar M90 Barrel length 1300 mm	5100 Mortar M90 Barrel length 1300 mm	2550 Mortar M57 Barrel length 720 mm	5100 Mortar M90 2700 Mortar M57	2450 Mortar M57 Barrel length 720 mm	4000 Mortar M90 2500 Mortar M57	280
Minimum range (m)	94	90	90	94	90	400 (O+1)	400 (O+1)	50
Efficiency on target	10 m (effective lethal radius penetration /m^2)	14 m (effective lethal radius penetration /m^2)	14 m (effective lethal radius penetration /m^2)			180.000 Cd for 35s candle speed ofdescent 2.5 m/s	350.000 Cd for 30s candle speed of descent 3.0 m/s	

81/82 mm MORTAR AMMUNITION FAMILY

Modern solutions have been applied in developing II generation og shells. These include: optimised aero-dynamic shape securing external ballistic characteristics, accuracy and precision at all ranges; appliance of advanced shell body manufacturing technology which provides forming of great number of fragments, has been applied in production of the shell body; this technology together with the TNT/RDX explosive charge provides optimum efficiency at target. The new generation shell weight corresponds to the heavy shell weights of the previous generation and importantly increased their range, precision and terminal efficiency.

Masking of friendly troops movement as well as blinding of enemy observers, fire support artillery and anti-tank weapon crews is achieved by use of modern, low-drag and highly efficient white phosphorus-based smoke shells. With use of illuminating mortar shells, mortars provide night battlefield illumination, as well as blinding of enemy crews and observers.

Antisabotage under water-operating HE mortar shells developed in 81/82 caliber, with special point-detonating, superquick and delay-action fuses significantly expand the tactical use of mortars – providing antisabotage underwater operation though the shock wave action against saboteurs-diving commandoes, clearing of underwater mine fields-with the purpose of initiating a particular type of mine sensor in underwater mine-field through the action of shock-wave, as well as antilanding operation-by fragmentation effect on the water-sea surface or land, with the purpose of annihilating personnel and unarmoured vehicles and equipment.

The antisabotage mortar shells characterize fuze delay time from 0,09 to 0,19 s, depth of underwater burst from 4 to 10 m and shock wave intensity in the water of 1,7 MPa at the distance of burst site of 20 m and 1 MPa at the distance of burst site of 30 m.

The shells are completed with fuzes which are also indigenously produced: point detonation, superquick/delay fuzes, time pyrotechnical fuzes.

The propellant charge consists of base and increment propellant charge. The base propellant charge is filled with EI powder fitted into a aluminium bushing. The increment propellant charge is also filled with EI powder fitted in reinforced celluloid shells resulting in good distribution of the projectile initial velocities and good range overlapping.

MORTAR AMMUNITION FAMILY

81/82 mm

Shell designation/type	HE M72/M74	HE Mk11	HE Mk11P1	Smoke M72/M74	Smoke Mk11	ILL. M67P2	ILL. M95	Practice M68**	Practice M62*	Antisabo-tage shell M89
Lenght of shell with fuze (mm)	375	480	480	375	480	410	530	380	287/193	480
Weight of shell with fuze (kg)	3.05	4.1	4.3	3.05	4.1	2.95	4.1	2.3	2.48/ 0.23	4.1
Type of shell charge	TNT	RDX/TNT or TNT	RDX/TNT	WP	WP	ILL.	ILL.	Target-parashuter		RDX/TNT
Shell charge weight (kg)	0.68	0.85	0.75	0.55	0.63	0.4	0.65			0.85
Fuze type/designation	UTM68P1	UTM88P1	UTUM93 SQ/D	UTM68P1	UT M88P1	TPM67	TPM67			UTUM93P2 SQ/D with delay time 0.09-0.19s
Muzzle safety (m)	8	70	50	8	70					50
Proppellant charge	O + 6	O + 6	O + 6	O + 6	O + 6	O + 4	O + 6	O + 1		O + 6
Max. Working pressure (bar)	647	647	647	647	647	422	647			647
Maximum range (m)	5070 Mortar M69 B-D Barrel length 1450 mm	6500 Mortar M69 B-D Barrel length 1450 mm	6500 Mortar M69 B-D Barrel length 1450 mm	5070 Mortar M69 B-D Barrel length 1450 mm	6500 Mortar M69 B-D Barrel length 1450 mm	3400 Mortar M69 B-D Barrel length 1450 mm	5000 Mortar M69 B-D Barrel length 1450 mm	600	280	6500 Mortar M69 B-D Barrel length 1450 mm
Minimum range (m)	91	100	100	91	100	250 (O + 1)	300 (O + 1)	90	50	100
Efficiency on target	14 m (effective lethal radius- 1 penetration /m^2)	18 m (effective lethal radius- 1 penetration /m^2)	18 m (effective lethal radius- 1 penetration /m^2)			500.000 Cd for 40s candle speed of descent 2.5 m/s	750.000 Cd za 40s pri brzini propadanja osv. baklje 3.0 m/s			18m Shock-wave overpressrre in the water 20m 1.7MPa 30m 1MPa

* **The practice shell contains small projectile**

** **Target-parachuter, 350mm x 850mm, height of target 600m, target descent velocity 5-7m**

120 mm MORTAR AMMUNITION FAMILY

Modern solutions have been applied in developing II generation of shells. These include: optimised aero-dynamic
shape securing external ballistic characteristics, accuracy and precision at all ranges; appliance of advanced shell body casting technology which provides forming of great number of fragments, has been applied in production of the shell body; this technology together with the TNT/RDX explosive charge provides optimum efficiency at target. The new generation shell weight corresponds to the heavy shell weights of the previous generation and importantly increased their range, precision and terminal efficiency.
Masking of movements of friendly troops, as well as blindining of enemy observers and fire support and anti-tank weapon crews is achieved by use of modern, low-drag and highly efficient white phosphorus and HC based smoke shells.
With use of illuminating mortar shells, mortars provide night battlefield illumination, as well as blinding of enemy crews and observers.
The shells are completed with fuzes which are also indigenously produced: point detonation, superquick/delay fuzes, time pyrotechnical fuzes.
The propellant charge consists of base and increment propellant charge. The base propellant charge is filled with EI powder fitted into aluminium bushing. The increment propellant charge is also filled with EI powder fitted in reinforced celluloid shells resulting in good distribution of the projectile initial velocities and good range overlapping.

MORTAR AMMUNITION FAMILY

120 mm

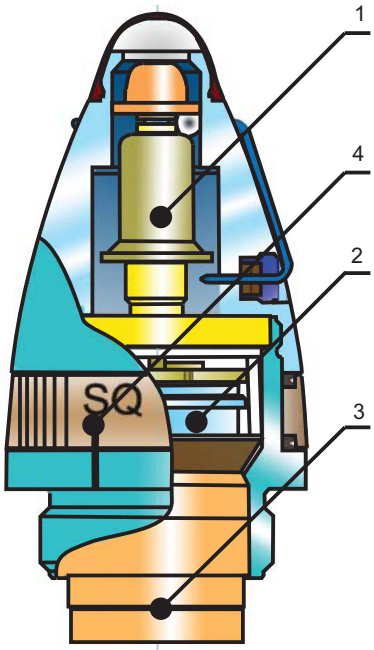






Shell designation/type	HE M62P	HE Mk12P1	HE Mk12P1-L	Smoke M64P2	High smoke M89	ILL. M87P1	ILL. M91
Length of shell with fuze (mm)	606	800	800	606	670	670	752
Weight of shell with fuze (kg)	12.6	14.8	14.8	12.6	11.25	10.7	11.5
Type of shell charge	RDX/TNT or TNT	RDX/TNT or TNT	RDX/TNT or TNT	WP	HC in ejected pot	ILL.	ILL.
Shell charge weight (kg)	2.5	2.9	2.9	2.45	1.65	1.2	1.2
Fuze type/designation	UTU M93-N	UTU M93-N	UTU M93-N	UTM68P1	TPM87 Time, pyrotechnical, circonium-based fuze, time setting from 5 to 50 sec.	TPM87 Time, pyrotechnical, circonium-based fuze, time setting from 5 to 50 sec.	TPM87 Time, pyrotechnical, circonium-based fuze, time setting from 5 to 50 sec.
Muzzle safety (m)	50	50	50	8			
Proppellant charge	O + 6	O + 8	O + 10	O + 6	O + 5	O + 5	O + 5
Max. Working pressure (bar)	922	922	1250	922	620	620	980
Maximum range (m)	6500 Mortar M75 Barrel length 1500 mm	7400 Mortar M75 Barrel length 1500 mm	9400 Mortar M95 Barrel length 1900 mm	6500 Mortar M75 Barrel length 1500 mm	6000 Mortar M75 Barrel length 1500 mm	6000 Mortar M75 Barrel length 1500 mm	6600 Mortar M75 Barrel length 1500 mm
Minimum range (m)	255	255	275	255	400 (O + 1)	400 (O+1)	400 (O+1)
Efficiency on target	20 m (effective letehal radius- 1 penetration /m^2)	24 m (effective letehal radius- 1 penetration /m^2)	24 m (effective letehal radius- 1 penetration /m^2)		On hitting the ground, the smoke pot emits a thick white smoke for the time of 4-6 minutes	1.000.000 Cd for 60s candle speed of descent 3 m/s	1.000.000 Cd for 60s candle speed of descent 3 m/s

F U Z E UTU, M93-N



Picture 1 - Fuze UTU, M93

1. TECHNICAL DESCRIPTION OF THE FUZE UTU, M93-N

1.1 Purpose

Fuze UTU, M93-N (picture 1) is a contact type, mechanical point and delay action with interrupted initial train, safety mechanism and transport safety element.
It is intended for activation of highexplosive and smoke mortar shells of all calibers.
It is safe for handling under all storing and transportation conditions, including parachuting.

1.2 Tactical-technical characteristics

- Safety ..... as per MIL - STD -1316 B
- Function acceleration ..... from 400 g to 13000 g
- Muzzle safety ..... 70 m (with increment charge)
- Reliable function within temperature range ..... from -54°C to +71°C
- Fuze..... waterproof
- Fuze diameter ..... Ø 49mm
- Fuze length . ..... 105 mm
- Fuze mass . ..... 250 g
- Environmental test ..... as per MIL - STD - 331 A

1.3 Design description

Basic functional parts of the fuze (picture 1) are:

1. Arming mechanism which:
   - keeps the safety mechanism in safe position during handling, transportation and storage;
   - releases the safety mechanism at operating acceleration and enables the fuze action on impact with the obstacle.

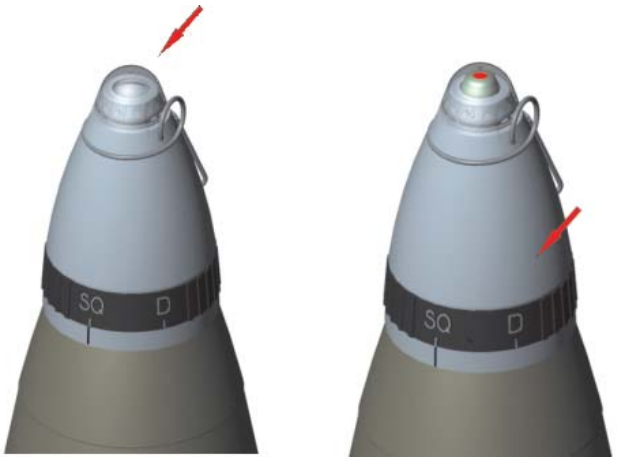
2. Safety mechanism which:
   - maintains interruption of the initial train in safe position;
   - establishes, after release, the point or delay high-explosive train.

3. Explosive charge assembly which transmits the primer energy to the shell explosive charge.

4. Action regulator which provides selection and setting of desired fuze action.

The fuze is designed to provide reliable function in all temperature ranges, and the special advantage is the possibility of easy recognition of its function i.e. is it **"not armed"** or **"armed ready for action"** (picture 2).

This is enabled by a transparent cap, made from polyethylene, so that it is possible to see the position of the firing pin before usage of the shell.
The shell **"must not"** be used if the firing pin position is above head surface of the fuze (picture 2-b).

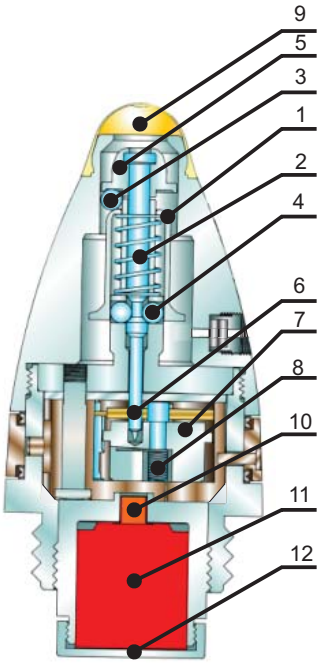


a) Fuze not armed b) Fuze armed

1.4 Operating principle

Consisting parts of the fuze are given in the picture 3.

During the shells movement in the barrel, under the force of inertia because of the transmitting acceleration the fuze cap (pos. 1) pushes the arming spring (pos. 2) and moves enough to enables the ball (pos. 3) to fall down (in free space between fuze top and fuze cap).
After the shells acceleration changes the direction, the fuze cap under the spring force moves upward, releases the balls, and pushes the firing pin head (pos. 5). Firing pin head is firmly connected to the firing pin body (pos. 6) by which movement the balls are ejected (pos.4) from their places, and under further moving, the guide (pos. 7) is released. When the firing pin head comes out of the guide, it starts to rotate under the force of the torsion spring. (pos. 8).



Picture 3

The time of full primer carrier working stroke, when the establishing point train, is minimal 1,15 sec.
At this moment, the action regulator is placed in the right position "SQ".
The time of primer carrier working stroke, when establishing the delay train is minimum 0,8 sec.
At this moment, the action regulator is placed in the left position ("D")(picture 2).
By this movement of the guide, the primer comes in the right moving direction of the firing pin. By this the arming of the fuze is done, i.e. it is ready for action.
When the mortar shell hits the obstacle, the fuze cap deflects (pos.9). through firing pin head, the cap mores the firing pin, overcomes the arming spring resistance an initiates the primer.
Primers flash is transmitted to the transmitting charge (pos.10), activates it, so that the increased flame is transmitted to the detonating charge (pos. 11). When detonating, the detonating charge destroys the bottom cap (pos. 12), the detonation is transmitted to the booster and explosive charge in the shell and by this the fuze function is performed.

BR-1-57 mm Air-to-surface rocket launcher

Aircraft Rocket BR-1-57

BR -1- 57 rocket projectile is the Rocket of high explosive effect, 57 mm caliber and assembled with impact fuze, type UTI-1. Purpose of this rocket is destruction of air targets at the altitudes up to 30.000 m it is the modern aircraft amament.
BR-1-57 rocket with the UTI-1 fuze can also be used for the ground targets destruction (aircraft, cars, warehouses and similar military objects).
BR -1 -57 rocket with the fuze UTI-1 is fired from the tube launchers (with rear part opened) , which are placed in the honeycomb launchers L-57.

Tehnical data

Caliber: 57mm
Length of the rocket with the fuze: 882mm
Mass of the assembled rocket: 3.86 ± 0.06 kg
Mass of the explosive charge: 0.285 kg

Ballistic characteristics

Maximum speed: 673 to 617 rn/s
Flying time for the distance of 1000 m: 1.89 to 2.19s
Maximum allowed pressure in the rocket chamber: 380kg/cm2

BR-1-57

INITIATION BY MEANS OF PLUG

BR-1-57 P1

INITIATION BY MEANS OF AUTOMATIC SWITCHING ON THE CIRCUIT

Aircraft Rocket BR-2-57

Rocket BR-2-57 is of the hollow charge effect. It is 57 mm caliber assembled with the impact inertial UTI-2 fuze. The rocket is used to destroy armoured ground targets,
tanks, self-propelled artillery, armoured vehicles, armoured personnel carriers etc. It serves as the rocket armament of modern jet airplanes.
Rocket BR-2-57 is launched with the UTI-2 fuze from the launcher tube (with the opened rear ends) which is assembled in honeycomb rocket package.

Tehnical data

Caliber: 57 mm
Length of the rocket with the fuze: 824 to 835 mm
Mass of completely assembled rocket: 3.64 kg
Mass of the explosive charge: 0.29 kg
Thickness of the pierced armour when the rocket strikes at the angle of 300° from the vertical: 100 to 150 mm
Rocket firing: Electric, with two electric igniters

Ballistic characteristics

Maximum velocity: 563 to 620 rn/s
Time of rocket flight up to the distance of 1000 m: 2.461 to 2.179 s
Maximum allowable pressure in the (rocket) combustion chamber: 375 kg/cm2

BR-1-57

INITIATION BY MEANS OF PLUG

BR-1-57 P1

INITIATION BY MEANS OF AUTOMATIC SWITCHING ON THE CIRCUIT

Aircraft Rocket cal.57 mm BR-20-57 P1

General

In addition to the aircraft rockets BR-1-57 mm and BR-2-57 mm manufactured to date, “Krusik” has developed the production of a new service rocket, named the Universal BR-20-57 P1, and corresponding practice rocket.
BR-20-57 P1 nun rocket is a rocket of a combined hol low-charge and fragmentation effect, so that it incorporates the application of the rocket BR-1-57 mm, which means that a single rocket type can be employed in different fighting missions. The arming so far has to be performed with a specific type of rockets (either hollow -charge or high -explosive), depending on a particular combat action, which
Is now no longer necessary , owing to the new universal-employment rocket . This practically provides multiple employment advantages.

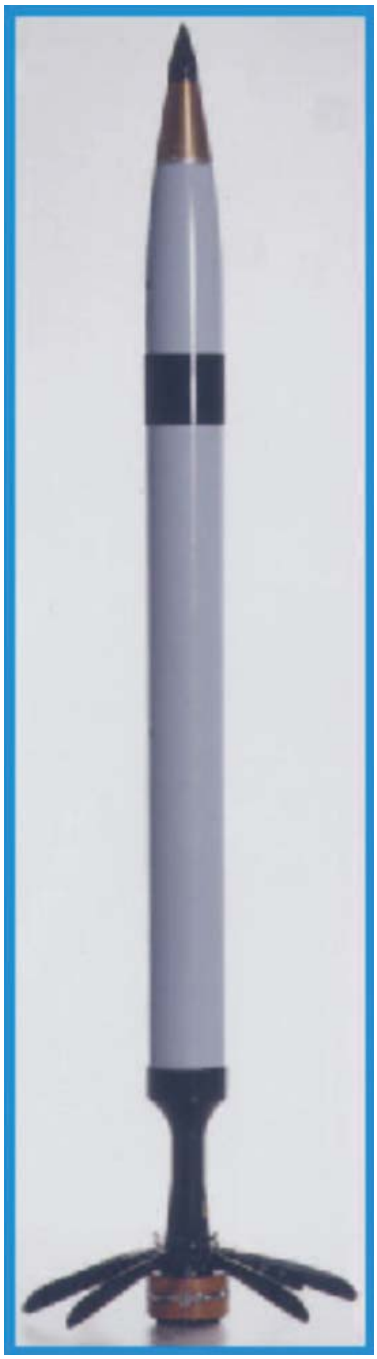
Technical characteristics

The aircraft rocket of a hollow -charge and fragmentation effect BR-20-57 P1 is a system of Cal.57 mm unguided air-to-ground and air- to-air rockets and is used for mass arming of aircrafts . The rocket includes a warhead with hollow charge and fragmentation effect and impact type UTI-2 fuze and superquick - inertial action . The rockets are used to annihilate air targets at altitudes of up to 30.000 m , for assault actions against mobile and stationary armoured targets such as tanks , armoured vehicles , carriers , light weapon and vehicles , aircrafts on the ground and personnel around the stated combat means.

Tehnical data

Rocket mass: 4.5 kg
Explosive charge mass: 0.32 kg
Propellant mass: 1.13 kg
Penetration: 160-200 m
Quantity of fragments on burst: 200 pcs
Killing range: 18-20 m (40 m circle)
Muzzle safety: 110
Packing of 8 rockets per wooden case
Special air-tight packaging for the fuze
Warranty period: 5 years

BR-1-57 V, BR-2-57 V and BR-20-57 V Practice Rockets



The Practice rockets BR-1-57 V, BR-2-57 V and BR-20-57 V are used for training of pilots when firing 57 mm caliber rockets.
The warhead and the fuze are inert (made of metal). Its mass, centre of gravity and shape are matched to live rockets, so that its ballistic trajectories are identical to those of the service rockets.
Packing of 12 rockets per wooden case with the total mass of packing amounting to 67 kg.
Warranty period is 5 years.

PROGRAMMABLE GUIDED ROCKET - 200 (PRM-200)

PRM - 200 is a programmable guided rocket with self-contained guidance system , used as a target for:
-Live firing by medium - range AD missiles with radar or IR guidance;
-Live firing by air-to-air missiles with radar or IR homing systems;
-Live firing by light AA artillery systems equipped with radar FCS.

PRM-200 is fitted with two optical and two IR or smoke flares for increase of IR contrast. The flares are adjustable to ignite from 10 to 80 seconds upon launching and then burn for 35 seconds.
PRM-200 radar signature is provided by Luneberg lens (passive radar reflector) built in the forward and aft sections of the rocket target.
PRM-200 can be launched from the advanced trainer/combat G-4 “Super Galeb” or similar aircraft provided with additional relevant equipment and target carrying and launching kit.
PRM-200 is launched-and-forgotten by the pilot at aircraft speeds of Mach 0.5 to 0.8. If the target is not hit , the programmer unit activates the target self-destructing device.
The guidance system is self-contained , programmable and comprises a barometric altimeter and two free gyroscopes. Its guidance is programmed before fixing PRM-200 on the launcher along the aircraft platform.

Performances:

Operating altitude range	300(±10%) to 7.000 m(±10%)
Preprogrammed number of pitchings	2
Preprogrammed number of yawings	2
Yaw angle	± 30° (± 30)
Pitch angle	± 27° (± 30)
Target range:	
-launched at the altitude of 300 m	22km (± 0.5 km)
-launched at the altitude of 7.000 m	48 km (± 2km)

Contrast characteristics:

Target radar head-on signature:

For X range (l= 3cm)	6.53 m2
For G range (l= 5cm)	2.35 m2
For S range (l= 10cm)	0.58m2
IR radiation level	mm. 2 x 2.000 Cd

QUICK ATS 128 mm

Quick air target simulator is non-quided rocket-target. Operators of army air defense systems use it for practicing the use of short range air defense rocket system.
Shooting practicing is done with incoming (type A) and departing (type B) unguided rocket on ballistic trajectory.

TYPE - A

TYPE - B

Technical data:

-Caliber ---------- 128 mm
-Stabilizer range ---------- 270 mm
-Length of rocket with tracer ---------- 1256 mm
-Rocket mass, type - **A** ---------- 33,6 kg
-Rocket mass, type - **B** ---------- 35 kg
-Mass of ingnition charge ---------- 9,7 kg
-El. resistance of the ingnition circuit ---------- 1,25 W do 2,25 W
-No. of tracers :
type "A" ---------- 6 pcs.
type "B" ---------- 4 pcs.
-No. of modified IC-5 decoys ---------- 4 pcs.
-Temperature range ---------- -30° do +50°C

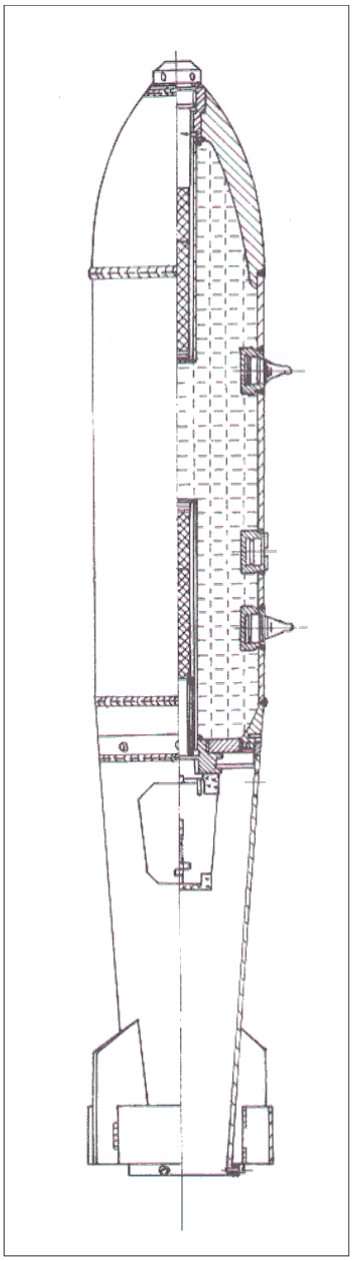
FAB-100 M80 HE FREE-FALL BOMB

FAB-100 M80 HE bomb is intended for attack against targets of low and medium fortification level, such as: industrial facilities, railroad junctions, roads, storehouses manpower, army assets and the like.

It is suitable for all current and projected aircrafts capable to carry bombs of such weight and where bomb racks with free-fall weapon release units having 250mm or 355.6mm (standard NATO 14-inch) hook spacing.

The bomb may be released safe or armed at speeds up to 1000 km/h.

FAB-100 M80
Characteristics



Bomb type.....FAB-100 M80

Diameter.....230mm

Length.....1490 mm

Hook spacing
(adaptable to A/C bomb rack).....250 and 355.6 mm

Weights
-Without fuses.....117 kg
-Main explosive charge (TNT).....39 kg

Fuses
-Type AUV-E.....1 off
-Type AUFK.....1 off

Packing:
-Bomb (3 off).....In one crate
-Fins (12 off).....In one crate

FAB-100 M80 HE Retarded Bomb with UKB-100 M80 Retarder System

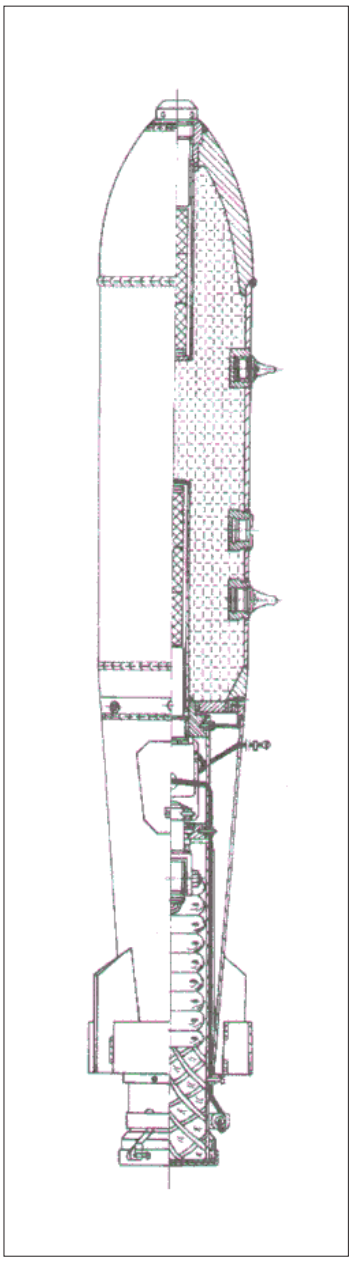
FAB-100 M80 HE bomb is designed for safe and effective bombing in the low-level strike role. It is suitable for all current and projected aircraft capable to carry bombs of such weight and where bomb racks with free-fall weapon release units having 250 mm or 355.6 mm (standard NATO 14-inch) hook spacing.

The bomb may be released safe or armed with speeds from 700 to 900 km/h and altitudes over 55 m.

The bomb is intended for attack against defended target areas of low and medium fortification level, such as: industrial facilities, railroad junctions, roads, storehouses, manpower, army assets and the like.

Bomb retardation reduces high risk of fragment damage to the aircraft by ensuring a safe separation distance of 500 m approximately between aircraft and bomb detonation site.

FAB-100 M80 HE Retarded Bomb with UKB-100 M80 Retarder System Characteristics



Bomb type.....FAB-100 M80 with UKB-100 M80

Diameter.....230mm

Weight of bomb without fuse.....128 kg

Length.(without fuse) .....1617 mm

Hook spacing
(adaptable to A/C bomb rack).....250 and 355.6 mm

Weights
- -With UKB-100 and fuses.....132 kg
- -With UKB-100 without fuses.....128 kg
- -Main explosive charge (TNT).....39 kg

Fuse
- -Type AUFK.....2 off

Packing:
- -Bomb (3 off).....In one crate
- -Fins (12 off).....In one crate
- -UKB-100 (2 off).....In one wooden box

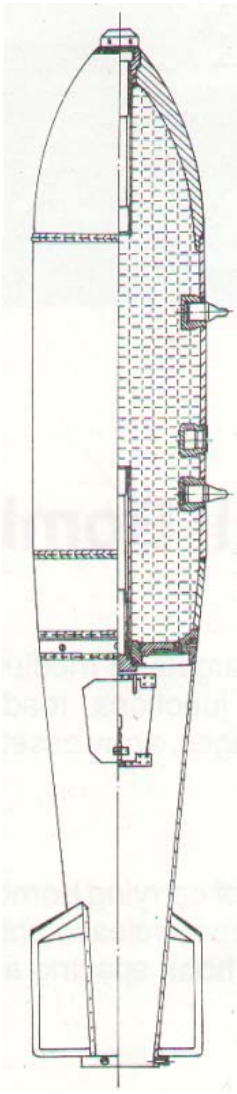
FAB-250 M79 HE Free-Fall Bomb

FAB-250 M79 HE bomb is intended for attack against targets of medium fortification level, such us: industrial facilities, railroad junctions, roads, storehouses, command posts, air base installations, bridges, army assets, naval vessels and the like.

It is suitable for all current and projected aircraft capable to carry bombs of such weight and where bomb racks with free-fall weapon release units having 250mm or 355.6mm (standard NATO 14-inch) hook spacing.

The bomb may be released safe or armed at speeds up to 1000 km/h

FAB -250 M79
Characteristics



Bomb type.....FAB-250 M79

Diameter.....325 mm

Length.....2015 mm

Hook spacing
(adaptable to A/C bomb rack).....250 and 355.6 mm

Weights
-Without fuses.....240 kg
-Main explosive charge (TNT).....105 kg

Fuses
-Type AUV-E.....1 off
-Type AUFK.....1 off

Packing:
-Bomb .....Inside protective rings
-Fins (9 off).....In one crate

FAB-250 M79 HE Retarded Bomb with UKB-250 M80 Retarder System

FAB-250 M79 HE bomb is designed for safe and effective bombing in the low-level strike role. It is sultable for all currentvand projected aircraft capable to carry bombs of such weight and where bomb racks with free-fall weapon release units having 250 mm or 355,6 mm (standard NATO 14-inch) hook spacing.

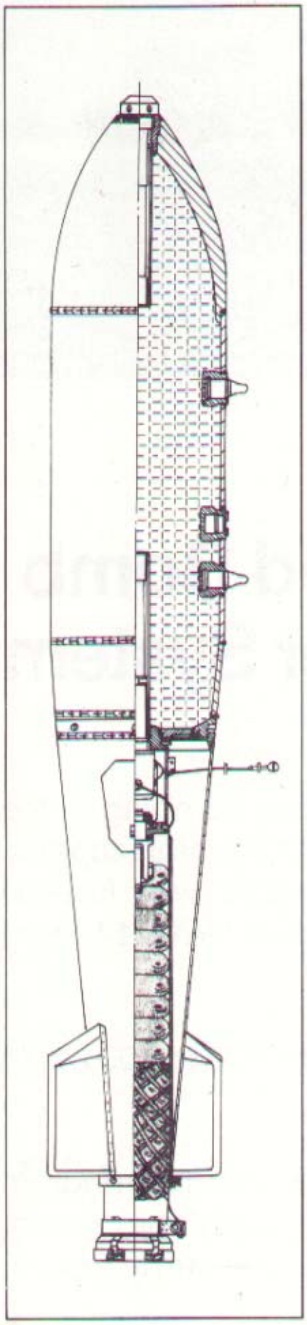
The bomb may be released safe or armed at speeds from 700 to 900 km/h and altitudes over 55 m.

The bomb is intended for attack against defended target areas of medium fortification level, such as: industrial facilities, railroad junctions, roads, storehouses, command posts, air base installations, bridges, army assets, naval vessels and the like.

Bomb retardation reduces high risk of fragment damage to the aircraft by ensuring safe separation distance of 500 m approximately betwen aircraft and bomb detonation site.

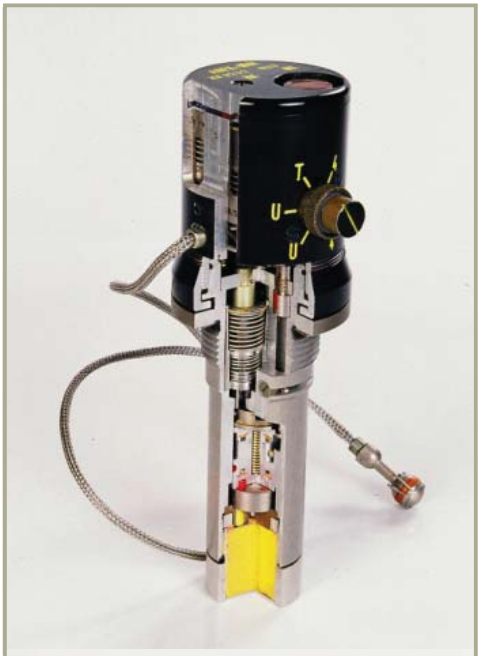
FAB-250 M79 HE Retarded Bomb with UKB-250 M80 Retarder System

Characteristics



Bomb type	FAB-250 M79 with UKB-250 M80
Diameter	325 mm
Length (without fuze)	2200 mm
Hook spacing (adaptable to A/C bomb rack)	250 and 355.6 mm
Air-brake retarder canopy area	4 m^2
Weights	
- With UKB-250 and fuzes	259.5 kg
- With UKB-250 but without fuzes	255.5 kg
- Main explosive charge (TNT)	105 kg
Type AUFK fuze	2 off
Packing:	
- Bomb	Inside protective rings
- Fins (9 off)	In one crate
- UKB-250 (2 off)	In one wooden box

AUFK-M91 FUZE



AUFK M-91 FUZE is impact , inertia-type of an electronic-mechanical fuze for aircraft bombs with super-quick (T) and delay action (U) adjustable by mode selector.

A) PURPOSE

The fuze is intended for high-explosive aircraft bomb with or without drag chute

B) TECHNICAL DATA

- Front and rear inertia action
- Completely secured
- Arming time for aircraft bomb without drag chute depends on action mode as follows:
  1. 2,5 sec for delayed action
  2. 3,6 sec for delayed action
  3. 3,6 sec for super-quick action
- Arming time for aircraft bomb equipped with drag chute is 2,5 sec where successful braking results in impact action, while unsuccessful braking results in delayed action
- Delayed action time is 22±4 sec
- Electrical arming
- Equipped with a status indicator (armed,unarmed super-quick or delay)
- The fuze is waterproof
- Mode selection is manual without accessories
- Fuze mass.....1650 g
- Fuze length.....258 mm
- Max diameter.....90 mm
- Fuze connecting thread.....M52 x 3
- Fuze length entering the bomb.....136 mm

C) FUNCTIONAL DATA

- Super-quick and delayed action
- Temperature range of use is -40° C to 60° C
- Fuze in its packaging is safe in any storing conditions
- Fuze life is 10 years min. under prescribed keeping and storing conditions.

RAB-250 M91 Air Bomb

FUZE UPB M91

This Air Bomb is intended for annihilation and disabling of live force and technical devices such as: light armor combat and non-combat vehicles, artillery, rocket, radar devices and installations, landed aircraft etc.
Air Bomb can have free or impulse release from aircraft equipped with bomb carriers of required carrying capacity and with 250mm or 355.6mm (standard NATO 14-inch) distance of "bomb locks" for hanging.

TECHNICAL DATA

- Mass of Air Bomb ..... 252 kg
- Mass of bomb body ..... 231 kg
- Tail Unit mass ..... 14,5 kg
- Type of explosive charge ..... TNT
- Mass of the explosive charge ..... 70 kg
- Number of steel balls Ø12 mm 15000
- Diameter of the body ..... 320 mm
- Length of Air Bomb ..... 2085 mm
- Distance between fins in the Tail Unit ..... 462 mm
- Distance between suspension lugs ..... 355,6 and 250 mm
- Fuze type ..... UPB M91, 1 off *

* NOTE: RAB-250 Air Bomb can be completed with ditferent types of fuzes.

M63/94 SELF-PROPELLED MULTI-TUBE MISSILE LAUNCHER 128 mm - PLAMEN C

"Plamen C" is self-propelled multi-tube missile launcher intended for impact, sudden and quick fire assaults against personnel and non-armoured vehicles. It appeared as a result of merging of the launching device and towing vehicle for the M63 LRSV 128 mm system by adding some newly designed assemblies.
"Plamen C" fires two types of missiles: PLAMEN-A, M63 and PLAMEN-D, M87 with extended range.
The launcher is carried on the vehicle TAM 150 T11 BV 6x6.
It is possible to mount it on other vehicles of the similar characteristics (for example FAP 1417).
The system is of a modular concept in such a way as to permit mounting of the "OGANJ" launching device with 24 or 32 tubes on the multi-purpose upper carriage instead of PLAMEN launching device.
The design of the launcher meets all ergonomic requirements providing easy and safe handling.
Manual mechanism drive can be changed into semi-automatic on user's request.
Deployment time is 30 seconds. The time needed for leaving of firing position is 30 seconds.
Mass distribution provides proper center of gravity during transportation with FULL-EMPTY combination in the way that launching device is turned for 1600 in respect to the basic position.

Technical data of the system	"PLAMEN-A", M63	"PLAMEN-D"
Maximum range	8.600 m	12.625 m
Firing rate	5; 2.5; 1.66 missiles/s	5; 2.5; 1.66 missiles/s
Temperature range of use	-30o to + 50oC	-30o to + 50oC
Transportation	TAM 150 T11 BV 6 x 6	TAM 150 T11 BV 6 x 6
Total mass of the system	9.600 kg	9.600 kg
Technical data of the missile		
Missile diameter	128 mm	128 mm
Warhead caliber	128 mm	128 mm
Missile length	837 mm	971 mm
Missile mass	23.1 kg	25.5 kg
Mass of (warhead) exsplosive charge	2.6 kg	3.3 kg
Technical data of the launching tube		
Internal diameter	128 mm	128 mm
Tube length	1030 mm	1030 mm
Mass of the tubes (with mechanism)	15 kg	15 kg

M77 SELF-PROPELLED MULTI-TUBE MISSILE LAUNCHER 128mm OGANJ C

OGANJ C is self-propelled multi-tube missile launcher intended for impact, sudden and quick fire assaults on surface targets in the depth of the enemy. It is efficient against all types of the targets: personnel, unshielded and armored vehicles.
OGANJ C, for firing from multi-tube missile launcher, uses point-detonating-demolition missile M77 (OGANJ M77). The launcher is loaded on the vehicle TAM 150 T11 BV 6 x 6.

It is possible to mount it on other vehicles of similar characteristics (FAP 1417, for example). The system is modularly designed in such a way as to permit mounting of the "PLAMEN" launching device with 32 tubes, put on the universal upper carriage. The launcher design meets all the ergonomic requirements providing comfortable and safe work. Mechanism drive is manual. On the user's request, it can be modified to semi-automatic operation. The launcher deployment time is 30 seconds. Time, needed for firing position leave, is 30 seconds. Masses distribution provides proper center of gravity position during transportation with FULL -EMPTY combination while the launching device has been turned over to the original position by 180°.

THE SYSTEM FEATURES

Maximum range	21500 m
Firing rate	2 missiles / sec
Number of tubes	24 or 32
Combat kit	64 missiles
Number of operators	2 + 4
System total mass	22000 kg
Temperature range of use	-30° to +40° C

TECHNICAL DATA for THE ROCKET OGANJ M77

Missile diameter	128 mm
Warhead caliber	128 mm
Length	2600 mm
Missile mass	67 kg
Warhead mass	19,5 kg
Field of action by direction	180°
Field of action by elevation	0 - 50°
Radius of warhead efficient action	40 m
Surface of point detonating demolition warhead effects	0,36 ha
Fuze	UTU, M77

TECHNICAL DATA for THE LAUNCHING TUBE

Internal diameter	128 mm
Length	2800 mm
Mass of tube with the tube mechanism	40 kg
Packing	one missile in a wooden case

PRACTICE SYSTEMS INTENDED FOR SHOOTING SHORT DISTANCE TARGETS

VBR 128 mm M63; LRSV 128 mm M63/94 and LRSV 128

Armament of Army of Serbia includes multiple barrel rocket launchers:
VBR 128 mm M63 PLAMEN
LRSV 128 mm M63/94 PLAMEN S
LRSV 128 mm M77 OGANJ

Crew training is important factor in conducting successful and quick performance of combat systems. This practice system allows complete training to be held in existing testing fields with significant cost reduction, by avoiding the use of combat rockets. The practice system is intended for shooting short distance targets up to 3.500 m for common training of all trainees in one army division.
This system contains the following elements:
128 mm practice rocket
57 mm practice rocket with signal head (GO)
The practice system is used for training of:
Charging and controlling of the firing range
Rocket firing.

57mm practice rocket with signal head (GO)

This rocket contains rocket engine and signal head with UTI-2P3 fuses. 57 mm practice rocket with signal head (GO) is of 57 mm caliber and 3.7 kg mass.
Stabilization of the rocket in its trajectory is achieved aerodynamically with 8 fins.
The signaling compound total mass 0.2 kg, is basically the mixture of photoflash compound (0.15 kg) and black powder No.8 (0.05) kg.

128 mm practice PLAMEN rocket

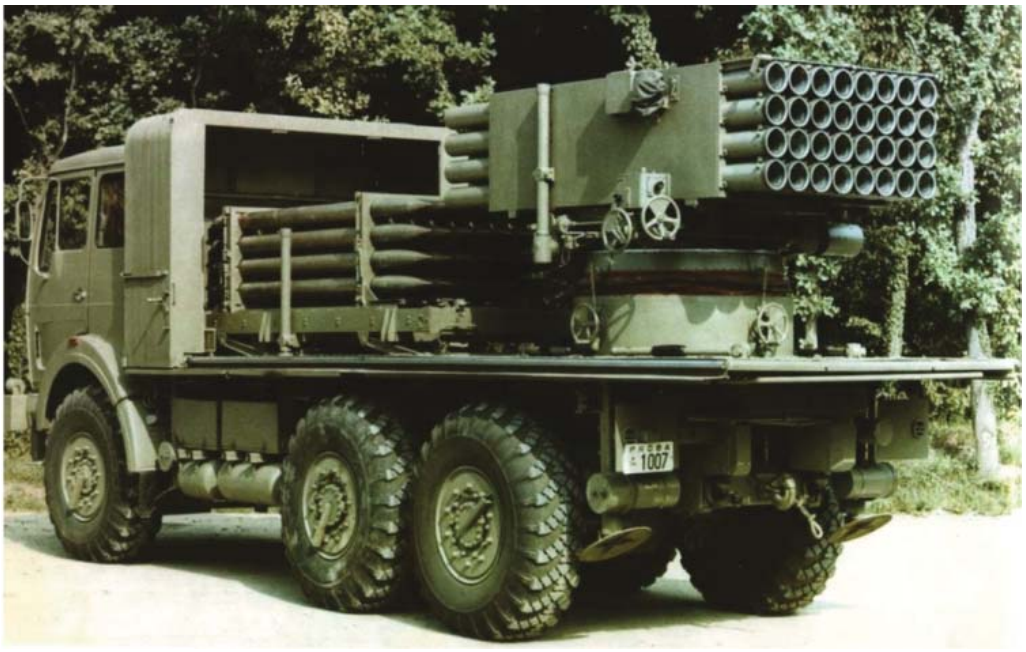
The outer design of 128 mm practice PLAMEN rocket is fully in accordance with the design of the original PLAMEN rocket. Practice rocket contains an inserted barrel that is used for launching 57 mm rockets.
-The design of the rocket provides the locking of 57 mm rockets with GO inside 128 mm PLAMEN rocket.

128 mm practice OGANJ rocket for LRSV 128 mm M77

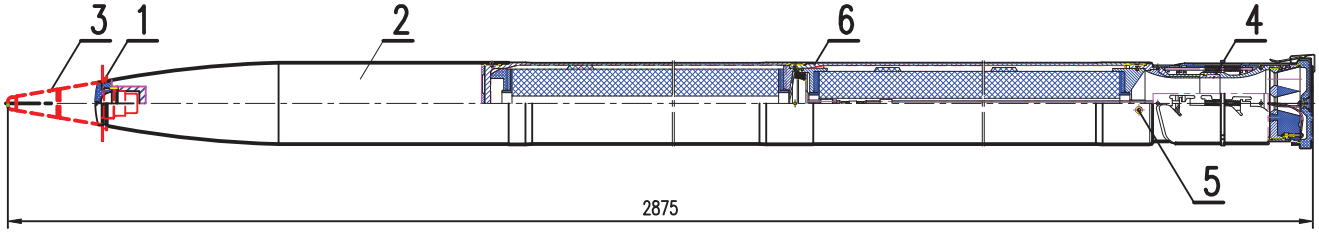
The outer design of 128 mm practice OGANJ rocket is fully in accordance with the design of the original OGANJ rocket. Practice rocket contains an inserted barrel that is used for launching 57 mm rockets with GO.
The design of the rocket provides the locking of 57 mm rockets with GO inside 128 mm OGANJ rocket.

SELF-PROPELLED MULTI-TUBE MISSILE LAUNCHER 122 mm – "GRAD"

"GRAD" is self-propelled multi-tube missile launcher intended for impact, sudden and quick fire assaults on the surface targets in the depth of the enemy. It is efficient against all types of targets: personnel, non-armoured and armoured vehicles.
System "GRAD" fires three types of missiles: GRAD, GRAD M and GRAD 2000.
The launcher is carried on the vehicle TAM 150 T11 BV 6x6.
It is possible to mount it on other vehicles of the similar characteristics
(for example FAP 1417).



Rocket GRAD cal. 122 mm



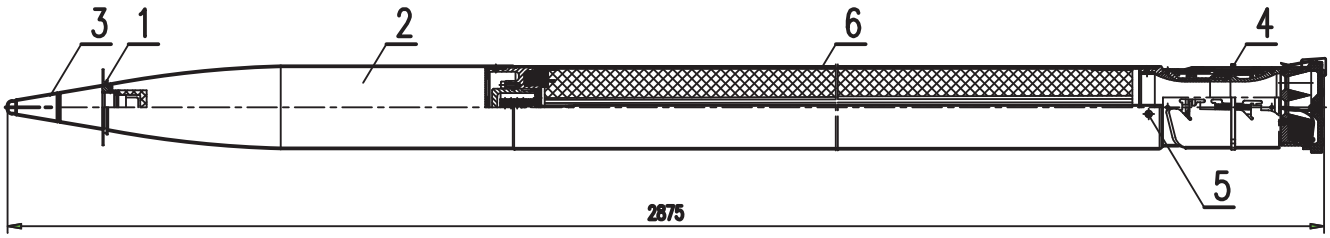
PERFORMANCE

Caliber ..... 122 mm
Length ..... 2875 mm
Total mass ..... 66 kg
Warhead mass with fuse ..... 19,1 kg
Propellant mass ..... 20,45 kg
Motor total impulse ..... 39700 Ns
Motor specific impulse ..... 1940 Ns
Temperature range ..... -30° to +50°C
Elevation ..... 48.48°
Range ..... 20.1 km

MAJOR PARTS

1. Aerodynamic ring for drag increasing
2. Warhead
3. Fuse
4. Nozzle assembly with fins and contact cover
5. Rocket driver
6. Twin combustion chamber and twin grain motor

GRAD M-rocket cal. 122 mm



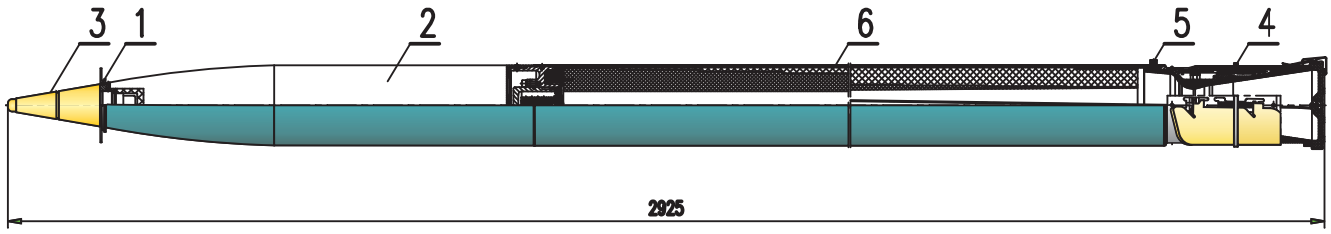
PERFORMANCE

Caliber ..... 122 mm
Length ..... 2875 mm
Total mass ..... 69.3 kg
Warhead mass with fuse ..... 19.1 kg
Propellant mass ..... 25.6 kg
Motor total impulse ..... 51400 Ns
Motor specific impulse ..... 2010 Ns
Temperature range ..... -30° to +50°C
Elevation ..... 48.48°
Range ..... 27.8 km

MAJOR PARTS

1. Aerodynamic ring for drag increasing
2. Warhead
3. Fuse
4. Nozzle assembly with fins and contact cover
5. Rocket driver
6. Single combustion chamber and single star shaped grain motor

GRAD 2000-rocket cal. 122 mm



PERFORMANCE

Caliber ..... 122 mm
Length ..... 2925 mm
Total mass ..... 68.3 kg
Warhead mass with fuse ..... 19.1 kg
Propellant mass ..... 27.3 kg
Motor total impulse ..... 62250 Ns
Motor specific impulse ..... 2280 Ns
Temperature range ..... -30° to +50°C
Range (elevation 50°)..... 38.4 km
* Optimal angle of elevation ..... 55°
* Range ..... 40 km

MAJOR PARTS

1. Aerodynamic ring for drag increasing
2. Warhead
3. Fuse
4. Single nozzle assembly with fins and contact cover
5. Rocket driver
6. Single combustion chamber and single cylindrical grain motor

107 mm M06 artillery rocket

Unguided extended range 107 mm rocket (107 mm M06)

Unguided extended range 107 mm artillery rocket (with designation 107 mm M06) With UTI fuse makes a part of the 107 mm sef-propelled multi-launcher rocket system and standard 107 mm rocket launchers

Unguided extended range 107 mm rocket is designed to:

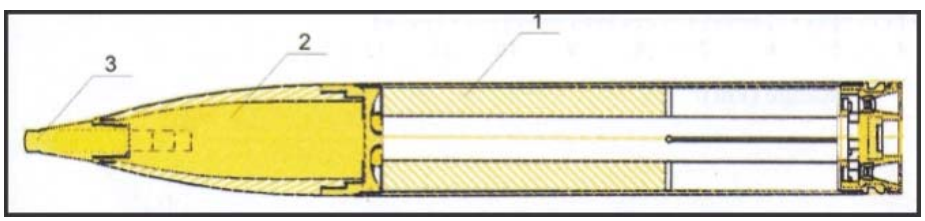
- incapacitate enemy troops and equipment,
- incapacitate or destroy enemy forces at meeting places,
- incapacitate or block enemy convoys,
- prevent assaults by parachute troops and invasions from the sea
- neutralize or destroy enemy command posts and communication centers inside range area

The rocket head has the HE warhead

Technical characteristics

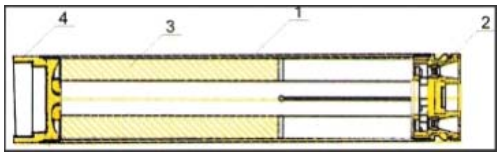
- rocket caliber.....107 mm
- rocket length with UTI M84 fuse.....825,0 mm
- rocket weight.....17,6 kg
- UTI M84 fuse weight.....0,35 kg
- warhead explosive weight.....1,250 kg
- maximum range.....11,5 km
- total motor impulse.....9500 Ns
- operating temperature range.....-32˚C to +60˚C
- set weight (2 rockets in a wooden case.....49 kg
- set weight (24 rockets in a composite pod, with 24 launching barrels in a woden case.....650 to 700 kg
- the rocket can be transported by all transportation means

Extended range 107 mm rocket consists of a rocket motor (1), warhead (2) and fuse (3).

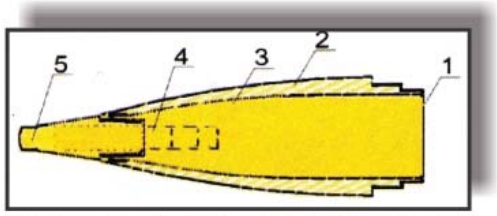


Main parts of extended range 107 mm rockets

Rocket motor consists of:
- rocket motor chamber (1),
- nozzle assembly (2),
- rocket propellant (3)
- front base with ignition subassembly (4).



Main parts of 107 mm rocket motor



Warhead of 107 mm rocket motor

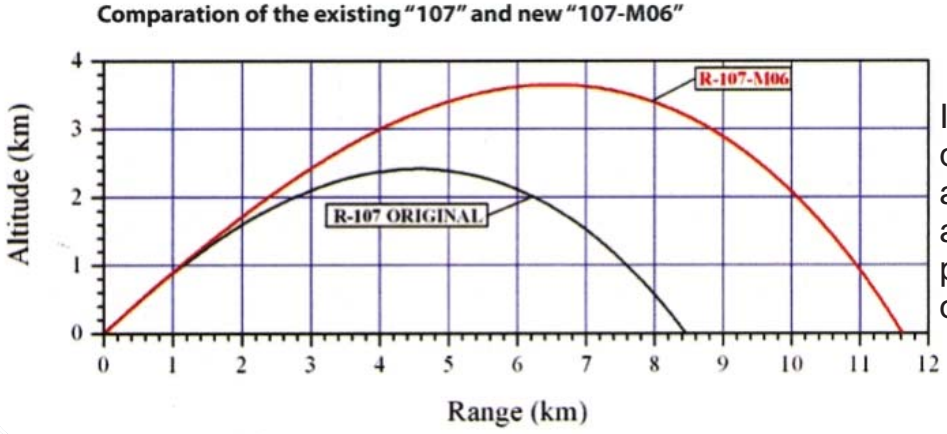
Rocket propellant is the modern thermoplastic composite propellant made according to the original technology.

Warhead consists of steel implant (1), shell body (2) explosive charge (3).Detonation cups (4) are mounted behind the fuse (5).

Shell body (2) is ogivally shaped. It is forged and made of steel. Thickness is not uniformed across the body and that allows maximum fragmentary efficiency against the target.

Packing of extended range 107 mm rocket
(107mm M06) with fuse UTI M84
2 rounds in a wooden case
W/C dimension: 1081 x 360 x203 (kg)
Case gross mass with two rounds: 49 kg


Package-Bottom and corners are hardened



In order to prove the quality of our rockets and accentuation of their advantages we are ready to perform flight tests on your or our flight-test facilities

ARTILLERY SHELLS, FUZES AND GUN

Krusik produces different caliber shells: 100, 105, 125, 130, 152 and 155mm used for completion of artillery missiles, as well as fuses and gun primers.
We perform completion of artillery missiles. We are equipped for all types of acceptance control tests done prior to including the device into the armament of an army.

MISSILE 9M14P1 and 9M14PB1

"MALJUTKA"

Antitank guided missile 9M14P1 and 9M14P1B1 with nose probe extended

Wire guided antitank missile with semiautomatic guidance system (SACLOS) 9M14P1 (and improved 9M14PB1with nose probe extended) is effective antitank combat weapon at ranges up to 3000 m with high hit probability and high armour penetrating capability up to 460 mm (9M14P1), i.e. 580 mm (9M14PB1) thickness.

System Characteristics:

Maximum range	3000 m
Maximum effective firing range	500 m
Maximum range flight time	25 s
Firing rate (missile/min)	2
Functional efficiency	97 %
Armour penetrating capability	
- missile 9M14P1	460 mm
- missile 9M14P1B1	580 mm
Operating temperature range	-40° to +50°C

Missile Data:

Guidance:	wire-guided command optical tracking by sighting line
Propulsion:	solid-propellant motor, 2-stage
Warhead:	hollow charge
Missile diameter	120 mm
Warhead caliber	120 mm
Length, (9M14P1)	865 mm
(9M14P1B1)	890 mm
Fin span	460 mm
Launch weight	11 kg

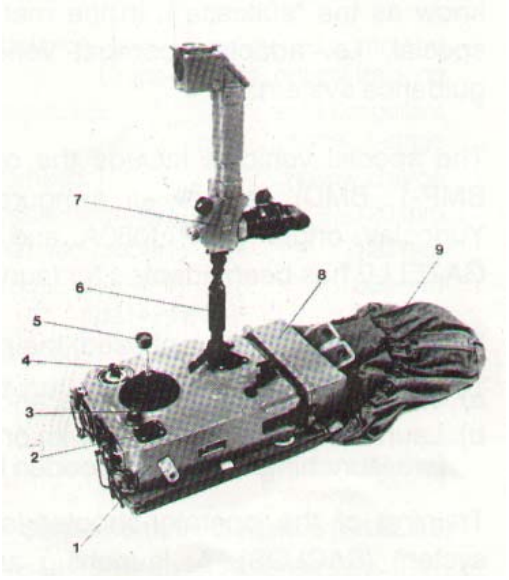
Missile PM14P1 (or improved 9M14P1B1) is a part of the system comprising the following:

a) Manual guidance (MCLOS)
- Portable manual guidance unit PO41LV
- Portable launching box 9P111B1, and
- Missile 9M14P1 or 9M14P1B1

b) Semiautomatic guidance (SACLOS)
- Launcher installed on the vehicle
- Guidance system in the vehicle
- Missile 9M14P1 or 9M14P1B1

The missile can be launched from the portable launching box 9P111B1 (also known as the "suitcase") in the manual guidance system (MCLOS), or from special, i.e. adapted combat vehicles, in the semi-automatic or manual guidance system
The special vehicles include the one of Russian origin (BRDM-1, BRDM-2, BMP-1, BMD) as well as armored personnel carrier (APC and IFV) of Yugoslav origin (BVP M80A and BVP M80P0).
The French helicopter GAZELLE has been adapted for launching of the missile.
Depending on the variant used, the packing may be in the form of:
a) Wooden box with one missile, and
b) Launching case 9P111B1, with one missile and two launching cases per wooden box.
Training of the operator-shooter is easier in the semiautomatic guidance system(SACLOS).
At launching and during flight the operator tracks the target movement through his reticle and the missile is automatically guided by sighting line.

GUIDING DESK 9S415
1. Control panel body
2. Launching knob
3. Control lamp
4. Switch
5. Joystick
6. Telescopic sight holder
7. Optical sight
8. Battery
9. Carrying bag



MALYUTKA 2

ADVANCED ANTI ARMOUR MISSILE SYSTEM

Intended for antitank fight by neutralizing or destroying armoured vehicles with or without ERA (MALYUTKA 2M and MALYUTKA 2T) and fortified objects and manpower (MALYUTKA 2F).

Three versions of missiles are developed so far:
-Malyutka 2M with HEAT warhead and enhanced penetration capability,
-Malyutka 2T with tandem warhead and
-Malyutka 2F with thermobaric warhead.

Basic characteristics:	MALYUTKA 2M	MALYUTKA 2T	MALYUTKA 2F
Penetration(mm)	800	800+ERA	8kg TNT*
Range(m)	2.800	2.800	2.800
Caliber(mm)	120	120	90
Missile length(mm)	1.097	1.264	968
Weight(kg)	13,4	13,8	13,5
Average flight speed(m/s)	110	110	110

* TNT equivalent for thermobaric warhead

44 mm Hand Launcher M80

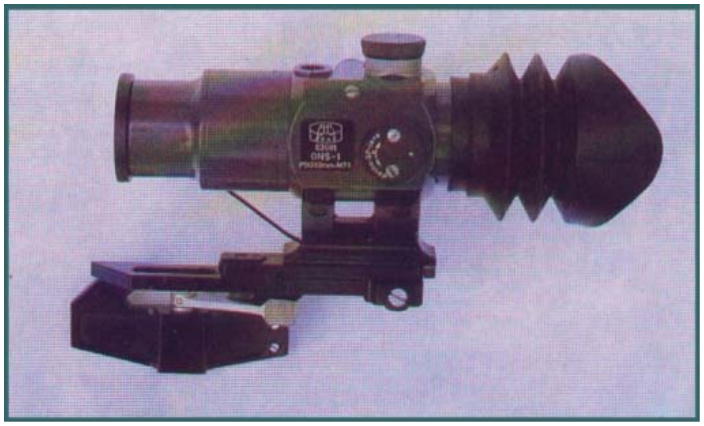
It is a light manual antitank arm, of light weight, reliable function and very safe in use; very convenient for handling and maintenance with the excellent sighting system and complete set for maintenance.

Characteristics

Caliber	44 mm
Launcher mass	6.6 kg
Optical system mass	0.83 kg
Launcher length	1.040 m
The launcher uses the same shells as the hand launcher M57	

44 mm M 80

Optical
Sighting
Device
ON-M80



HEAT shell M80

The shell has the tail unit of the M57 shell and the propellent charge is also identic. The warhead is of improved design, with the point detonating SQ fuze, activated by a special in the fuze point. When hitting the target, the primer point deforms, activates the initial charge and consequently the entire initiation train of the fuze and shell. The detonator is of safe type with interrupted initiation train.

Characteristics

Caliber ..... 85 mm

Mass ..... 2. 45 kg

Grazing range ..... 200 m

Penetration ..... 400 mm (4.7klb)

The optical sighting device ON-M80 is used for aiming mobile and stationary targets at firing of the hand launcher RB-44 mm M 80, as well as for detecting the sources of infrared radiation. Tritium illuminated reticle enables night sighting.

CARTRIDGE 82 mm WITH REACTIVE-CUMULATIVE SHELL M72 FOR THE RECOILLESS GUN 82 mm, M60

Cartridge 82 mm with reactive-cumulative shell M72 is intended for destroying tanks, self-propelled weapons and other armoured and combat vehicles. It can be used as well for the annihilation of live force and the fire-arms of the enemy, that are in pillboxes or blockhouses (fortifed buildings) far up to 1000 meters.

A. TECHNICAL DATA

- Calibre ..... 82 mm
- Weight ..... 7,800 kg
- Explosive sharge (TNT + RDX) ..... 0,710 kg
- Super quick fuze UT, M731
- Muzzle safety ..... 2,0 m
- Propellant charge NC ..... 1,360 kg
- Propellant charge NC ..... 1,360 kg
- Rocket sharge NGR ..... 0,900 kg
- Electric primer

B. BALLISTIC DATA

- Muzzle velocity ..... 390 m/s
- Maximum pressure ..... 750 bara
- Angular penetration of an armoured stell plate (Hb 340) ..... 400 mm
- Range ..... 1000 m
- Ordinate ..... 2 m

C. PACKING

1 complete round in a cardboard box
3 cardboard boxes in a wooden case

- case dimensions (cm) 110x34x13
- case volume (m^3) 0,047

40mm Bullet with Blasting Projectile

Designed to be used against live force, in both open and sheltered space. It is fired from grenade launcher GP-25 mounted under the barrel of the Kalashnikov machinegun (AK-74, AKS-74, AKM, AK-101) as well as new M21 rifles produced by “Zastava” Kragujevac. This bullet can be fired directly (holding the device on the shoulder) to the range 50 to 400m, and indirectly (curved trajectory) to the range 200 to 350m.

- Caliber ..... 40 mm
- Round mass .....260 g
- Round length ....105 mm
- Explosive charge FH-5.....49 g
- Muzzle velocity .....76,5 m/s
- Powder charge weight .....0,6 g
- Max pressure of powder gases..... 900 bar.
- Vertical target accuracy at 150 m
  - per height Vv < 0,5 m
  - per direction Vp < 0,5 m
- Max. range .....400 m
- Accuracy at max range
  - per distance Vdt <14m
  - per direction Vpt < 7m
- Casualty radius ..... min. 9 m
- Fuse .....UT, M02 SP
- Muzzle safety .....min. 15 m
- Burning time of self-destruction device.....15^{+5}s
- The fuse has interrupted initial chain
- Bullet and fuse are waterproof
- Temperature range .....- 53° C to +71° C
- Suitable for all kinds of transportation

PACKING

- The bullet is packed in hermetically sealed plastic container
- 40 containers are packed in wooden boxes
- Box dimensions ..... 59,6 x 36,6 x 19,6 cm
- Total mass ..... 23,5 kg
- Total volume ..... 0,043 m^3

40mm Bullet with Blasting Bounding Projectile, M07

Designed to be used against live force, in both open and sheltered space.
It is fired from grenade launcher GP-25 and GP-30 mounted under the barrel of the Kalashnikov machinegun (AK-74, AKS-74, AKM, AK-101) as well as new M21 rifles produced by “Zastava” Kragujevac.
This bullet can be fired directly (holding the device on the shoulder) to the range 50 to 400m, and indirectly (curved trajectory) to the range 200 to 350m.

- Caliber ..... 40 mm
- Round mass .....300 g
- Round length ....125 mm
- Explosive charge FH-5.....40 g
- Muzzle velocity .....75 m/s
- Powder charge weight .....0,6 g
- Vertical target accuracy at 150 m
  - per height Vv < 0,5 m
  - per direction Vp < 0,5 m
- Max. range .....400 m
- Accuracy at max range
  - per distance Vdt <14m
  - per direction Vpt < 7m
- Casualty radius ..... min. 6 m
- Fuse .....UT, M07
- Muzzle safety .....min. 15 m
- Burning time of self-destruction device.....15^{+5} s
- The fuse has interrupted initial chain
- Bullet and fuse are waterproof
- Temperature range .....- 53° C to +71° C
- Suitable for all kinds of transportation

40mm Bullet with Cumulative Projectile

Intended for use against light armour combat and non -combat vehicles at distances up to 150m. Beside this primary cumulative effect, there is also the secondary effect on enemy live force.
The bullet is fired from under-barrel grenade launcher 40mm GP-25, mounted under the barrel of Kalashnikov machinegun (AK-74, AKS-74, AKM, AK -101), as well as new M21 rifles produced by “Zastava”Kragujevac.

- Caliber ..... 40 mm
- Round mass..... 260 g
- Round length.....108 mm
- Explosive charge..... 32 g
- Muzzle velocity..... 76,5 m/s
- Mass of the powder charge..... 0,6 g
- Max. pressure of powder gases..... 900 bar
- Penetration through steel plate
  under the angle of 90°..... min.50 mm
- Vertical target accuracy at 150 m
  - per height Vvt < 0,5 m
  - per direction Vpt < 0,5 m
- Max. range.....400 m
- Accuracy at max. range
  - per distance Vdt < 14m
  - per direction Vpt < 7m
- Fuse..... UT,M02 SP
- Casualty radius.....min. 3 m
- Muzzle safety..... ..... min. 15 m
- Safe activation distance..... 50 m
- Burning time of self-destructing device..... 15^{+5}s
- The fuse has interrupted initial chain
- Bullet and fuse are waterproof
- Temperature range..... -53° C to +71° C
- The bullet is packed in hermetically sealed plastic container, 40 containers are packed in wooden box
- Suitable for all kinds of transportation

40mm Bullet with Incendiary Projectile

Intended for incending easily inflammable materials as well as wounding enemy live force. The fragments of incediary mixture can wound or inflame easily inflammable materials at distance up to 5m. The bullet is fired from under-barrel grenade launcher 40mm GP-25, mounted under the barrel of Kalashnikov machinegun (AK-74, AKS-74, AKM, AK -101), as well as new M21 rifles produced by “Zastava”Kragujevac. This bulet can be fired directly (holding the device on shoulder), to the range 50 to 400m, and indirectly (curved trajectory), to the ranges 200 to 350m.

- Caliber ..... 40 mm
- Round mass..... 260 g
- Round length.....105 mm
- Mass of smoke mixture..... 80 g
- Muzzle velocity..... 76,5 m/s
- Mass of the powder charge..... 0,6 g
- Max. Pressure of powder gases..... 900 bar
- Vertical target accuracy at 150 m
  - per height Vvt < 0,5 m
  - per direction Vpt < 0,5 m
- Max. range.....400 m
- Accuracy at max range
  - per distance Vdt < 14m
  - per direction Vpt < 7m
- Fuse..... UT,M02 SP
- Muzzle safety..... ..... min. 15 m
- Safe activation distance..... 50^{+5} m
- Burning time of self-destructing device..... 15 s
- The fuse has interrupted initial chain
- Bullet and fuse are waterproof
- Temperature range..... -53°C to +71°C
- The bullet is packed in hermetically sealed plastic container, 40 containers are packed in wooden box
- Suitable for all kinds of transportation

40mm Bullet with Smoke Projectile

Intended for marking ground targets as well as blinding enemy live force. The cloud made after the smoke mixture is incended is compact, with diameter of min. 3m. The smoke cloud can last 15 to 30s, and in normal weather conditions is visible at 2-3 km distance. The bullet is fired from under-barrel grenade launcher 40mm GP-25, mounted under the barrel of Kalashnikov machinegun (AK-74,AKS-74,AKM, AK -101), as well as new M21 rifles produced by “Zastava” Kragujevac. This bullet can be fired directly (holding the device on shoulder), to the range 50 to 400m, and indirectly (curved trajectory), to the ranges 200 to 350m.

- Caliber ..... 40 mm
- Round mass..... 260 g
- Round length.....108 mm
- Mass of smoke mixture.....100 g
- Muzzle velocity..... 76,5 m/s
- Mass of the powder charge..... 0,6 g
- Max. Pressure of powder gases..... 900 bar
- Vertical target accuracy at 150 m
  - per height Vvt < 0,5 m
  - per direction Vpt < 0,5 m
- Max. range.....400 m
- Accuracy at max range
  - per distance Vdt < 14m
  - per direction Vpt < 7m
- Fuse..... UT,M02 SP
- Muzzle safety..... min. 15 m
- Safe activation distance..... 50 m
- Burning time of self-destructing device..... 15^{+5}s
- The fuse has interrupted initial chain
- Bullet and fuse are waterproof
- Temperature range..... -53°C to +71°C
- The bullet is packed in hermetically sealed plastic container, 40 containers are packed in wooden box
- Suitable for all kinds of tranportation

40mm Bullet with Practice Projectile

Intended for training of soldiers for all tactical actions carrying out with live projectile. The smoke mixture markes the spot where the projectile has fallen, and the released gases can be seen from the distance of 500m. The bullet is fired from under -barrel grenade launcher 40mm GP-25, mounted under the barrel of Kalashnikov mashinegun (AK-74, AKS-74, AKM, AK -101), as well as new M21 rifles produced by "Zastava" Kragujevac. This bullet can be fired directly (holding the device on sholder) to the range 50 to 400m, and indirectly (curved trajectory), to the range 200 to 350m.

- Caliber..... 40 mm
- Round mass..... 260 g
- Round length.....105 mm
- Mass of incendiary mixture..... 10 g
- Muzzle velocity ..... 76,5 m/s
- Mass of the powder charge..... 0,6 g
- Max. pressure of powder gases..... 900 bar
- Vertical target accuracy at 150 m
  - per height Vvt < 0,5 m
  - per direction Vpt < 0,5 m
- Max. range.....400 m
- Accuracy at max range
  - per distance Vdt < 14 m
  - per direction Vpt < 7 m
- Fuse..... UT,M02 SP
- Muzzle safety..... ..... min. 15 m
- Safe activation distance..... 50 m
- Burning time of self-destructing device..... 15 s^{+5}
- The fuse has interrupted initial chain
- Bullet and fuse are waterproof
- Temperature range..... -53°C do + 71°C
- The bullet is placed in hermetically sealed plastic container, 40 containers are packed in wooden boxes
- Suitable for all kinds of transportation.

40mm x 46 Bullet with HE Projectile

Intended for use against live enemy force, in both opened and sheltered space. The bullet is fired from under-barrel grenade launcher 40mm M203, M79, HK 69A1. It can be used for firing at targets at the distance from 30 to 400m.

- Caliber..... 40 mm
- Round mass.... ..... 190 g
- Round length..... .....103 mm
- Explosive charge..... ..... RDX/TNT
- Number of fragments..... 425
- Muzzle velocity ..... 78,5 m/s
- Vertical target accuracy at 150 m
  - per height Vvt < 0,5 m
  - per direction Vpt < 0,5 m
- Max. range.....400 m
- Casualty radius..... min. 5 m
- Fuse UT,M04
- Muzzle safety..... 8 m
- Safe activation distance..... 30 m
- Burning time of self-destructing device..... 9 s

40mm x 46 Inert Grenade mod. M99

Intended for training of soldiers for all tactical actions carrying out with live projectile. The Grenade is fired from under-barrel grenade launcher 40 mm M203, M79, HK 69A1 and similar launchers. It can be used for firing at the targets at distance to 400m.

- Caliber..... 40 mm
- Round mass..... 235 g
- Round length..... 91 mm
- Explosive charge..... not
- Number of fragments..... not
- Muzzle velocity ..... 76,5 ±2 m/s
- Vertical target accuracy at 100 m
  - per height Vvt < 0,5 m
  - per direction Vpt < 0,5 m
- Max. range.....400 m
- Casualty radius..... Not applicable
- Fuse ..... not
- Muzzle safety..... Not applicable
- Safe activation distance..... Not applicable
- Burning time of self-destructing device..... Not applicable
- Operational temperature range..... -30° to +50°C
- Shelf life..... 2 years

PACKING:
3 grenades in a plastic bag, 63 plastic bags/189 psc grenades/ in a wooden case.
Weight of the case..... 49 kg
Dimensions..... 1055 x 335 x 203 mm
Volume..... 0,072 m³

Bomba ručna M-84
Hand grenade M-84

- težina/mass.....480 g

- dimenzije/dimensions.....ø 60x115

- eksplozivno punjenje - plastični eksploziv
  explosive charge - plastic explosive.....95 g

- telo bombe - plastično sa čeličnim kuglicama
  grenade body - plastic with steel balls.....ø 2-2,3 mm

- sila izvlačenja osigurača/pulling force of safety element.....110 N

- sigurnosni ugao otklona kašike/
  /safety angle of declination of fuze lever.....min 50°

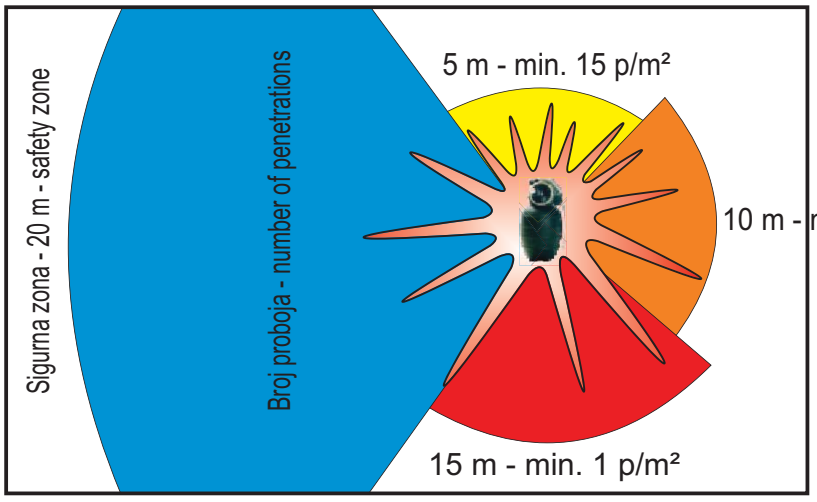
- vreme usporenja/ fuze:mechanic with delay of.....3,0 to 5,7 s

- sposobna za funkciju u temperaturnom intervalu/
  / use in temperature range of..... -30°C to + 60°C

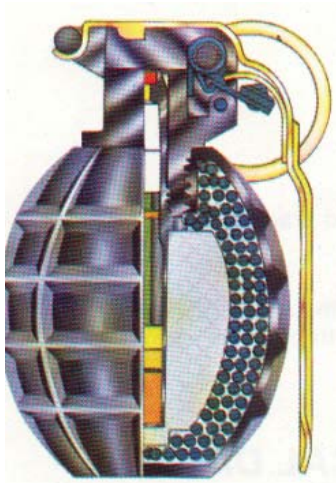
- sposobna za sve vrste transporta/
  capable for any kind of transportation

PACKING

- 1 complete grenade per plastic box
- 24 psc per wooden case
- Wooden case dimensions (cm) ..... 50 x 35 x 23
- Case gross weight (kg) 23.5
- Case volume (m³) 0.040



Bomba ručna M-75
Hand grenade M-75



- težina/ mass.....355 g

- dimenzije/dimensions.....Ø 57x89 mm

- eksplozivno punjenje - plastični eksploziv
/explosive charge - plastic explosive.....36 g

- telo bombe - plastično sa čeličnim kuglicama
/grenade body - plastic with steel balls.....Ø 2.5-2.9 mm

- sila izvlačenja osigurača
/ pulling force of safety element.....7-18 kg

- sigurnosni ugao otklona kašike
/safety angle of declination of fuze lever.....min 35°

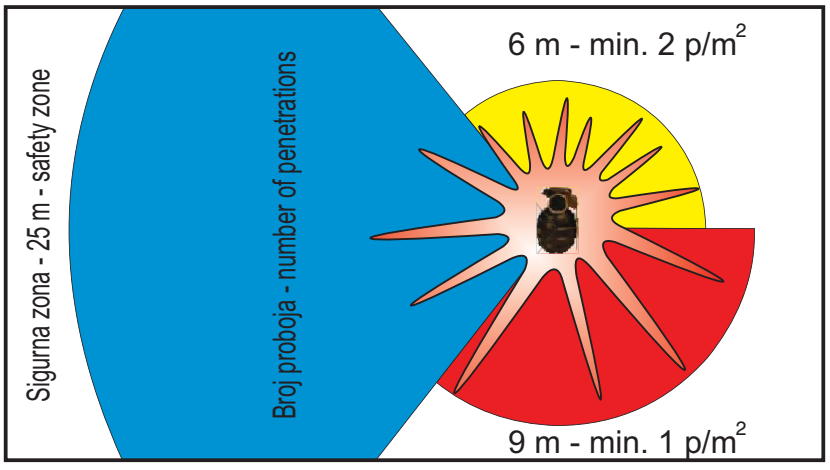
- vreme usporenja / fuze: mechanic with delay of.....3 - 4,4 s

- sposobna za funkciju u temperaturnom intervalu
/use in temperature range.....-30°C to + 50°C

- sposobna za sve vrste transporta/
/ capable for any kind of transportation

PACKING

- 1 complete grenade per plastic box
36 pcs. per wooden case
- Wooden case dimensions (cm) ..... 54 x 44 x 15
- Case gross weight (kg) 23
- Case volume (m^3) 0.038



CHAPED-CHARGE HAND GRENADE (BRK)

INTENDED USE

The chaped-charge hand grenade BRK, hereinafter referred to as the BRK, is intended to be used for disablement and annihilation of tanks and other stationary or moving armour.
It belongs to the group of grenades thrown by hand-without any additional equipment such as tube, launcher, etc.
On impact with the armour, the task of BRK is to defeat it with the shaped-charge jet and to disable or annihilate the armour interior with the remaining hot gases from the jet.

TECHNICAL DATA

- Length ..... 399 mm
- Warhead diameter ..... 74,5 mm
- Mass 1kg
- Explosive mass ..... 0,34 kg
- Steel plate penetration ..... 280 mm
- Service temperature range ..... -30°C to +50°C

PACKING

The BRK grenades are packed into the wooden box suitable for mountain transportation, as follows:

- 12 pieces of warheads;
- rectangular sheet - metal container with 12 pieces of separately paper-wrapped handles;
- round sheet-metal container with 12 pieces of ignition systems-firing devices, each packed in styrofoam bearing.

Hand shock bomb

One of the new products in Krušik is "shock" bomb used by special police forces.
"Shock" bomb has been developed for special purposes, i.e. when it is necessary to attack kidnappers or assassins, who hold hostages, in both open and closed space without causing injuries.
The bomb has no particles but can disable with its sound and light effect. It is suitable for use in the means of public transport.
It is possible to gain double or triple sound/light effect, when needed.

Main characteristics:

Fuse delay time:	1,5 s
Time interval between the sound effects:	0,7 s
Sound effect intensity:	130db to 15 m
Mass of the initial charge:	0,454 kg
Mass of the increment charge:	0,150 kg
Temperature range:	- 30°C do + 55°C
Shelf life:	5 years

Packing:

- 10 complete bombs per carton
- Carton dimensions 585 x 340 x 75 mm
- Total mass 7,5 kg

ANTI-TANK DESTRUCTIVE PIERCING MINE - 6

TMRP - 6

ANTI-TANK DESTRUCTIVE PIERCING MINE - 6 (TMRP-6)

PURPOSE: FOR DISABLEMENT AND DESTRUCTION OF TANKS AND OTHER FIGHTING AND NON-FIGHTING VEHICLES BY DESTRUCTIVE PIERCING ACTIVITY

1. Item dimensions ..... Ø 290 x 132 mm
2. Item mass ..... 7.2 kg
3. Explosive charge type ..... Cast TNT
4. Explosive charge mass ..... 5.1 kg
5. Way of initiation ..... Through the fuze
6. Fuze arming (time) ..... 1 or 4 minutes
7. Way of fuze activation ..... - Through a lever
   - By stepping on a mine plate
8. Activation force (daN) ..... - Through a lever 1.3 - 1.7
   - By stepping 150 -350
9. Stepping on area ..... 214 cm²
10. Resistance to air impact wave ..... To 3 daN/cm²
11. Functions in temperature range ..... - 30° C to + 60° C
12. Airtightness (waterproof) ..... To 0.2 bar
13. Way of setting ..... By hand
    Minelaying PMR-3b
14. Way of transport ..... Capable for any type of transportation
15. Stability in mine field ..... 6 months in the most unfavourable conditions
16. Way of packing ..... In a box, 4 (four) mines complete
17. Package dimensions ..... 330 x 650 x 330 mm
18. Gross weight ..... 43 kg
19. Storage time ..... 15 years
20. Piecing action ..... Penetrates 40 mm stell plate from the distance of 800 mm

ANTIMAGNETIC ANTITANK MINE - 4

TMA - 4

ANTIMAGNETIC ANTITANK MINE - 4 (TMA-4)

PURPOSE: FOR DESTRUCTION OF TANKS AND OTHER FIGHTING AND TRANSPORT VEHICLES

1. Activation force ..... 100 - 200 daN
2. Stepping-on area ..... Ø 200 mm (314 cm²)
3. Explosive charge type ..... Cast TNT
4. Explosive charge mass ..... 5.5 kg
5. Functions in temperature range ..... - 30°C to - 60°C
6. Safety in transport and packing ..... Capable for any type of transportation
7. Resistance to air impact wave ..... To 3 bars
8. Airtightness .....To 0.2 bars
9. Way of initiation ..... Through a fuze
10. Way of setting ..... - Manually
    - By mine-layer
11. Stability in mine field ..... 6 months in the most unfavourable conditions
12. Item dimensions ..... Ø 285 x 110 mm
13. Item mass ..... 6.3 kg
14. Kind of packing ..... Barel
15. Number of pieces in a packing set 4
16. Package dimensions ..... Ø 330 x 370 mm (0.032 m³)
17. Gross weight .....28 kg
18. Storage time ..... 20 years

EXPLOSIVE CUMULATIVE CHARGE - 1 (PEK - 1)

Use

Explosive Cumulative Charge-1 (PEK-1) is used for quick mining of roads, landing tracks and fields.

Main tactical characteristics

PEK-1 is activated by a detonator primer that can be initiated electrically or by means of fuse. PEK-1 explosion in roads, landing tracks and fields creates a mine hole, depth 1.5 to 2 m and average diameter of 110mm.
PEK-l use temperature range is -30 to +50oC.

Characteristics

Diameter 112 mm
Height 195 mm
Height with tripod 550 mm
Mass 2.4 kg
Mass of the explosive 1.78 kg
Diameter of the penetration opening in the steel plate 360 mm

Functioning

In order to create the mine hole, PEK-1 ought to be assembled with tripod and placed in the desired spot. Detonator primer is placed in its bearing and initiated. It activates the booster which activates the cumulative explosive charge.
The detonation creates a hole in the ground that can be used directly, without any additional works.

Packing

10 pieces of PEK-1 are packed into one wooden case.
The mass of the packed case is 30 kg.

RAFAL BOMB FOR AEL MINE CATCHER (RBAEL)

By series of underwater explosions this bomb creates the sound that lasts for several seconds, and imitates the sound of a moving boat or ship, only stronger then the engine signal itself (20-30 db). Such created signal activates the acustic signal of the floating mine in the distance where it can not dammage the ship.

Use of this bomb provides safe movement of boats and ships in water possibly containing floating mines.

FUZES

"Krusik" is actively employed in research, development and production of classic military program as well as complex rockets systems. We also produce fuzes and initial devices that are assembled in our products.

"KRUSIK" PRODUCES FUZES THAT ARE ASSEMBLED IN THE FOLLOWING:

Mortar shells (HE, Smoke, Illuminating) in calibers: 60, 81/82 and 120 mm

Artillery projectiles for:

-Gun calibers: 76 mm, 85mm, 90mm, 100mm, 122mm and 130 mm.
-Tank gun, calibers: 115 mm and 125 mm
-Anti-tank gun, calibers: 82 mm, 100 mm and 105 mm
-Howitzer calibers: 105 mm, 122 mm and 152 mm

Airbombs weight 100 and 250 kg

Ait to air and air to ground rockets:

-57 mm HE rocket (BR-1)
-57 mm cumulative rocket (BR-2)
-57 mm cumulative-fragmentation type (BR-20)
-128 mm HE and cumulative (“MUNJA“)

Ground to ground rockets:

-128 mm HE rocket ("PLAMEN" M63)
-128 mm HE rocket ("OGANJ" M77)

Anti-armour devices:

-120 mm semiautomatic guided rocket ("MALJUTKA")
-Heat shells M79; M88; M72 i M91used with recoilless guns 82 mm M79 and M60A
-Cumulative shells 82 mm M80 for manual launchers 44 mm.

Mine-explosive devices

INITIAL DEVICES

INITIAL DEVICES INCLUDE:

Initials primer intended for shooting ammunition and gun primers

Primers (detonator, duplex, initial, electric) used with artillery, mortar and rocket fuzes and explosive devices.

Different types of delays, boosters and transmittors.

OVERVIEW OF THE ASSORTMENT

The overview of the assortment can be shown through several elements, such as:

a) Used initial explosives and types of mixtures;
b) Type of primer and higher assembly;
c) Function;
d) Special requirements

a) The following initial explosives are used for production of mixtures: Mercury Fulminate, Lead-Azide (several types), Tetrazene, Tricinate, and with other components (fuels, oxidants, sensitizers,..), the listed
mixtures and primers can be classified as:

- fulminate type
- non-corrosive type.

b) Classified by type of primer and higher assembly, they include:
- berdan (for shooting ammunition)
- gevellot (for mortar ammo propellant charges and shotgun ammunition)
- boxer (for shooting ammunition and special type of ammo - we are currently involved in intensive development);

c) Classified by function, the existing assortment includes:
- initial (puncturing, firing, striking,…);
- duplex (double effect primers);
- detonator (with a range of initial and high explosives);
- electric and electric inflammatory (depending on use and type of higher assembly)
- delay, transmitting, boosting (depending on use).

d) This group includes:
- delays and delay elements for different types of hand grenade fuzes with different types of mixtures used (adjustment of delay times optional);
- initial trains for booby traps and combinations of initial elements, as per request of the customer;
- all types of initial, pyrotechnic, delay, smoke, flash and other types of mixtures,…
- all types of electric detonators, No and per special request;

It is important to emphasize that all the requirements regarding the serial production of the above listed products have been met, as follows:

- serial production authorizations issued by relevant authorities;
- the products are controlled and verified according to valid national and military standards (JUS, SNO, PKP);
- all control-inspection procedures have strictly prescribed testing methods that include control gauges and measuring devices;
- required certificates, licenses, export and transportation documents can easily be obtained from the competent authorities;
- all products are manufactured and tested according to the procedures prescribed by the following standards: JUS, ISO 9000 and SNO 9000.

When developing a new product with a customer, verification programs are made, including non-standard
methods required for proving the desired quality.

Engineering and technical staff of FIS & ED are trained and capable to provide technical assistance in engineering businesses, preparation of Design and Technical Documentation, as well as documentation Required for construction and projecting the production facilities that fall under their domain of work.

CONTAINERS FOR STORAGE OF EXPLOSIVE MATERIALS - 500 (KSEM - 500)

KSM-500 container is designed for storing of 500 kg of explosive.

Characteristics of the container:

-height.....1 800 mm
-width.....1 300 mm
-length.....1 800 mm
-mass of empty container.....1 480 kg

The container consists of two chambers. The basic one is made of minimum 7 mm thick steel plate, while the 300 mm high 500 mm wide and 500mm, long initial devices chamber is made of minimum 10 mm thick steel plate, so that no detonation of any accidentally or intentionally provoked explosion would be transmitted to the explosive storing chamber.

The inside of the container is covered with 57 mm thick wooden coat that doesn't absorb humidity.

The container possesses a "sled"and holes for cables that serve to drag the container from one place to another. An anchor can be attached to the bottom of the container thus avoiding any smaller vehicle to drag it.

The container has two grounding cross connections that leave no need for building of any high lightning rod installation.The grounding must be done in accordance with the current JUS regulations and must be less than 10 Ω.
On the container's door, there is a rubber that ensures its tightness.

The container's door locks with three padlocks.

The door on the initial devices chamber locks with two padlocks.

Self-extinguish paint represents container's final protection.

Appropriate warning signs, that are in accordance with the UN symbols for class 1 of danger materials, are put on the container.

HOLDING CORPORATION

PRODUCTION TECHNOLOGIES

HK „KRUŠIK” a.d. , 14000 VALJEVO, REPUBLIC of SERBIA
Phone 381-14-223-121, 221-121, Marketing 381-14-226-822, Telefax 381-14-220-149
e-mail: krusikmarketing@eunet.rs, web site: www.krusik.rs

PRODUCTION TECHNOLOGIES

I Machining of rotary parts

- Turning of parts with dia. up to Ø400 mm and length L= 2000 mm.
- Machining on CNC Lathe of parts with dia. up to Ø 350 mm and length L= 1000 mm.
- Machining on six spindle automatic machine parts of dia. up to Ø 67 mm.
- Machining on six spindle semi automatic machine parts of dia. up to Ø 160 mm.
- Deep hole drilling of parts with hole dia. up to Ø 120 mm and length from L=700mm.

II Machining of prismatic parts

- Machining on Machining Centers
  Horizontal Machining Centers parts with dimensions up to 500 x 400 x 400 mm.
  Vertical Machining Centers- parts with dimensions up to 500 x 400 x 350 mm.
- Machining on Flat-surface Grinding Machines.

III Heat treatment

- Heat treatment of steel parts with dia. up to Ø 400 mm, length up to L=1250 mm and weight up to 300 kg.
- Heat treatment of non ferrous metals.

IV Manufacturing of plastic parts

- Pressing of thermosetting plastics in hydraulics presses, pressing force from 600 kN to 6000 kN.
- Injection of thermoplastic.

V Chemical and electrochemical plating

- Electroplating (Zinc plating, Cadmium plating, Tinning plating, Nickel plating and Silver) with dia. up to ~ 400 mm and length L=600 mm.
- Chromium plating up to L= 200 mm.
  Oxidation (normal, hard and chrome acid) up to L=600 mm.
- Nickel chemical plating.
- Chrome plating of aluminum, copper and their alloys, up to L=400mm.
- Phosphatization of parts with L=1600 mm.

Varnishing of parts with L=1000 mm

VI Production of die forging

- Pressure castings
  Casting of non-ferrous metals (Al and Zn alloys). weight up to 2 kg
  Sand casting and metal coquilles up to 50 kg.

VII Cold formation technology

- Cutting of tin, thickness s=4 mm and L=2500 mm.
- Flattening and cutting tin stripes.
- Cutting and punching of elements in eccentric presses from 120 kN to 2500 kN.
- Manufacturing of complex parts in CNC presses.
- All types of extrusions, thicknes s= 6 mm and height H=350 mm.
- Manufacturing by method of injection.
- Folding of metal parts
  Flat, L=2500 mm, thickness s=4mm
  Rotary, L=2500 mm, thickness s=1.6 mm.
- Welding

VIII Explosive charge technologies

- Initial explosives
- Pressing of explosives
- Explosive casting
- Production and pressing of delay and increment compounds.

IX Metrological laboratory

X Test ground

HOLDING CORPORATION

QUALITY IN KRUŠIK

HK „KRUŠIK” a.d. , 14000 VALJEVO, REPUBLIC of SERBIA
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e-mail: krusikmarketing@eunet.rs, web site: www.krusik.rs

POLICY OF INTEGRATED MANAGEMENT SYSTEMS

HK "Krušik" mission is primary related to production of armament and military equipment.

- Organizational vision reflects on aim to become a leader in the domain of the region and wider.
- Basic activity directs towards fulfilling the vision by: designing and development of new AME (Armour and Military Equipment), continuation of successful production and further improvement of production programme.
- Business priority of HK "Krušik" a.d. regards to satisfying Client and other interested parties.

- Orientation of the Krušik, an employer and its employees is as follows:
  - Establishment and maintenance of integrated manager systems with engagement in continious enhancement;
  - Delivery of the products that completely satisfy requirements and expectations of interested parties, including legal regulations and standards.
  - Testings, measurements and calibrations accomplished within regulations and agreed standards;
  - Active protection and occupational safety and health of employees from hazardous risks, occured during the working process.

- Procedural approach to activities.

- The decision are made according to authorizations and objective facts, therefore, without possible improvisations.

- Satisfied clients, certain complaints, objections and suggestions are accepted as possiblity for improvement.

- Stimulation and motivation of employees directly relates to the work quality.

- According to generally accepted notion, only satisfied employees may provide maximum in participating working process.

- Стимулисање и мотивисање запослених директно је везано за квалитет обављеног посла.

Interim Chief Executive Officer

- Према опште прихваћеном опредељењу, само задовољни запослени могу пружити максимум у процесима у којима учествују.

Valjevo, March 2014

Mladen Petković, B. Sc.

QUALITY IN KRUŠIK

Quality in „Krušik“ is cerefully controlled.
Quality management had been implemented in accordance with the Standard JUS ISO 9001/2001.
The first certification was realized in 2003. and was followed by another certification in 2006. The recertification, performed according to the regulations of certificate validity process after the year of 2009 , we provided certificate for integrated managment system, which, apart from the Standard 9001, also includes Environment Protection Standard (SRPS 14001), Health and Worker Protection Standard (OHSAS 18001) and Standard SRPS 17025.



Metrology takes an important place in this system.
Metrological laboratory has been conducting assessments and evaluation for „Krušik“ and for other parties for years now.
The Factory has a laboratory for material evaluation where chemical and mechanical characteristics of all marerials are defined.






In accordance with the demand, product tests are being done in the premises of the Factory.

Krusik has been awarded two certificates for the Qualit Managment System:
SRPS ISO 9001:2008; ISO 9001:2008; SORS 9000/05,
ISO 14001:2004, OHSAS 18001:2007 and SRPS ISO/ IEC 17025:2006.

FQCE

FOND ZA KULTURU KVALITETA I IZVRSNOST
FUND FOR QUALITY CULTURE AND EXCELLENCE

NACIONALNA NAGRADA ZA POSLOVNU IZVRSNOST SRBIJE

OSKAR KVALITETA

Kategorija velikih organizacija

Krušik
HOLDING KORPORACIJA

APSOLUTNI POBEDNIK
AWARD WINNER

Predsednik
ŽIRIJA NAGRADE
Mr Mladan Dinkić

FQCE

Predsednik FQCE
Fond za kulturu kvaliteta i izvrsnost
Vladimir Trajković

U Beogradu, 11. novembra 2010.

Krušik
REPUBLIKA SRBIJA - VALJEVO

HOLDING KORPORACIJA "KRUŠIK" a.d. Ul. VLADIKE NIKOLAJA 59, 14000 VALJEVO

Mat. br. 07096364 PIB 101493890 Reg. br. 17701/2005 Tekući računi: 295-1230393-74 i 105-58296-32

Tel: Centrala +381 14 221-121; 223-121
Generalni direktor + 381 14 221-593
Fax: Generalni dir. + 381 14 220-516
e-mail: krusikdirektor@ptt.rs; Web site: www.krusik.rs

OUR REF.: 20/01-817
DATE: October 21st, 2015

POWER OF ATTORNEY

Holding Corporation "Krušik" a.d. Valjevo, Vladike Nikolaja 59, 14000 Valjevo, Republic of Serbia, Registration number 07096364, Tax Identification Number 101493890, Bank account 295-1230393-74 with "Srpska Banka" a.d., Beograd, represented by the General Manager, Mr. Mladen Petković, Personal Identification Number 0608978850047, hereby AUTHORIZES company

"PRC AGRIMEX Co., Ltd.", 773/71 3rd fl. Pracharatbumpen Road, Samsennok, Huaykwang, Bangkok Thailand 10310, Registration No. 0105551092444, represented by the Managing Director, Mr. Pachara Laoaraya, Passport No. Y960814 issued on November 17th, 2011 in Thailand, Personal No. 3549900105010,

that, for the purpose of selling the goods under the production program of Holding Corporation "Krušik" a.d. Valjevo, may **establish relations** with all concerned parties at the territory of Thailand **in order to organize the future negotiations, give the offers and conclude the agreements for delivery of goods.**

All the actions taken by the authorized person are in the name and on behalf of the Principal.

The authorized person will access the negotiating, giving the offers and concluding the agreements with *particular* third persons **only with special consent** of the Principal, granted before taking the actions.

This Power of Attorney can not be transferred, partially or in a whole, to third parties.
This Power of Attorney shall be valid for one year upon its issuance.

In Valjevo, on October 21st, 2015.

GENERAL MANAGER

Mladen Petković, B.Sc. in Econ.

พีอาร์ซี
บริษัท พีอาร์ซี อะกริมิกซ์ จำกัด

IB - 216293901

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