



PRINCIP SPEC ltd

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Military Sales Catalogue
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«Si vis pacem, para bellum»
«If you wish for peace, prepare for war»



We are company registered in Serbia as **PRINCIP SPEC ltd** with its core business in defence field. With long experience of our senior managment more then 20 years we are operating in defence industry.

Namely, our team derives from the largest state-owned BALKAN companies, where the knowledge reffering to commercial and finance issues have been acquired. Our main trading orientation is defence equipment/ammunition and services – such as training, education, tehnology transfer and overhaul of different systems, spare parts and components.

We are also in constant development/research of new defence systems with our partners and subsdiary companies in Serbia and countries from region of Balkan.

Our orientation for suitable and cost efective solutions is our recomendation for business with all our customers.

Service providing:

PRINCIP SPEC ltd company is specialized in transport of all types of equipment with specific military application, law enforcement or government use.

Export:

We represent and export defense products & equipment of producers from complete region of Balkan market. We are also specialized defense products & equipment from Eastern producers and our main strength is to solve and deliver specific requirements. Be free to ask any specific requirements when contacting us in order to collaborate any special needs. We will work with customs, the military, our embassy and the foreign ministry of the nation of export.

Procurement:

PRINCIP SPEC Ltd understands the complexity of defense industry and procedures of each import/export contract, countries policies and the logistics of each transaction. We will support our clients with documents and correspondence, currency exchange & government regulations. As distributor for manufacturing companies from defense and security industry all over the world we have gain experience in each field of process procurement.

Defense system & consulting

With the advancement in defense systems, it can be challenging to find the right broker or supply chain professional for your specific requirements. We will support our client in finding the right solutions and we specialized in helping developing countries advance their defenses system and arsenals. We can also assist in the transfer of technologies.

Stock & Surplus

One of our strongest branch in company are surplus (stock) of articles which are left overs from Cold Wars. Our company is specialized in Soviet Era hardware, tracked & armed vehicles, small arms and short/medium range ballistic missile systems etc...

Vessels:

We can provide all types of military vehicles including land vehicles, naval vessels & aircraft and also provide spare parts and upgrade for old systems. Our company delivers ell vehicles and armaments used for combat, reconnaissance, medical evacuation, communications and others .Clients can choose a variety vehicles and tanks, bridge and transport units, mine resistant armored personnel carriers, launch vehicles, howitzers, medical units, surveillance vehicles, surface to air & air to air equipment and surplus inventory. We can supply all the necessary weaponry and upgrade packages for your hardware's specific role.





The AK-47 was designed to be a simple, reliable automatic rifle that could be manufactured. The AK-47 uses a long stroke gas system that is generally associated with great reliability in adverse conditions. The large gas piston, generous clearances between moving parts, and tapered cartridge case design allow the gun to endure large amounts of foreign matter and fouling without failing to cycle.

Locking system is designed in such a manner that the rifle cannot fire before it is fully locked, which ensures the safety of the shooter. Good solutions for the ergonomics, with excellent balance of weight and compensator provide mild recoil and easy control of fire. Fire selector has three positions: single shot, burst, safe. Iron sights with tritium tubes provide the possibility of aiming in conditions of low visibility. Handguards and stock are made of quality beech. Rifle grenade sight is an integrated part of the gas block, and rifle grenade attachment is included in the complete set of the weapon. All assault rifles in caliber 7.62 x 39 mm use the same metal magazine with the capacity of 30 rounds.

Complete set:

- Assault rifle AK-47
- 4 spare magazines
- Sling
- Blank ammunition attachment
- Rifle grenade
- Accessories
- Handling and maintenance manuals

Weight

- Without magazine: 3.47 kg
- Magazine, empty: 0.43 kg
- Length Fixed wooden stock: 880 mm

Barrel length

- Overall length: 415mm
- Rifled bore length: 369 mm
- Cartridge: 7.62x39mm
- Action Gas-operated, rotating bolt
- Rate of fire: 600 rds/min
- Muzzle velocity: 715 m/s
- Effective firing range: 350 m
- Feed system: 30-round detachable box



Assault rifle AK-74 - 5.45x39mm

The AK-74 is an adaptation of the 7.62x39mm AKM assault rifle and features several important design improvements. These improvements were primarily the result of converting the rifle to the intermediate-caliber high velocity 5.45x39mm cartridge. Compared to the preceding AKM the AK-74 has better effective range, firing accuracy and reliability. The AK-74 and AKM share an approximate 50% parts commonality (interchangeable most often are pins, springs and screws).

Relatively small sized, light weight, high velocity military service cartridges like the 5.45x39mm allow a soldier to carry more ammunition for the same weight compared to their larger and heavier predecessor cartridges and produce relatively low bolt thrust and free recoil impulse, favouring light weight arms design and automatic fire accuracy. Tests measured the free recoil energy delivered by the 5.45x39mm AK-74 rifle at 3.39 J, compared to 7.19J delivered by the 7.62x39mm in the AKM.



Weight:	3.07 kg without magazine
30-round magazine:	0.23 kg
Length:	943 mm
Barrel length	415mm
Width:	70 mm
Height:	195mm
Cartridge:	5.45x39mm
Action	Gas-operated, rotating bolt
Rate of fire	Cyclic: 650 (rd/min)
Muzzle velocity	880-900 m/s
Effective firing range	500 m
Maximum firing range	3,150m
Feed system	30-round or 45-round RPK-74 detachable box magazine

Sights Adjustable iron sights, front post and rear notch on a scaled tangent

MILITARY VEHICLES



Forged Tracks with Rubber Pads for BMP

BMP



Princip Spec ltd supplies a complete range of spare parts for the following military machinery: T-55, T-72 and BMP and is able to provide production of less available parts.

The NSV (Russian НСВ Никитина-Соколова-Волкова), also known as the Utyos, is a 12.7mm caliber heavy machine gun of Soviet origin. It was designed to replace the DShK machine gun and was adopted by the Soviet Army in 1971.

The NSV is an air-cooled gas-operated heavy machine gun chambered in the hard-hitting 12.7x108 mm cartridge. Due to this high rate of fire, it is a reasonably powerful anti-aircraft weapon when mounted on a dedicated anti-aircraft mount.

The NSV features a large muzzle break to help reduce the heavy recoil of its prodigious round. It also has quick-change



Basic technical data	
Length of gun:	1,560 mm
Elevation:	-5 ° to +70 °
Traverse:	360 °
Muzzle velocity:	845 m/s
Combat rate of fire:	80 to 100 rounds/min
Maximum range:	6,000 m
Effective range of ground targets:	2000 m
Effective range of air targets:	1,500 m
Weight of gun:	25 kg
Weight of gun mainly:	9 kg

The PK is a 7.62×54mm general-purpose machine gun designed in the Soviet Union. It remains in use as a front-line infantry and vehicle-mounted weapon with Russia's armed forces.

The PKT is a solenoid-fired coaxial version of PK to replace the SGMT Goryunov vehicle-mounted machine gun. Modifications include the removal of the stock, a longer and heavier barrel, a gas regulator and an electric solenoid trigger.

The PKB is version without stock for mounting on roofs of vehicles.

Basic technical data

Length of gun:	1,100 mm
Theoretical rate of fire:	700-800 rounds/min
Combat rate of fire:	250 rounds/min
Maximum range:	3800 m
Muzzle velocity:	830 mis
Effective range of ground targets:	1,000 m
Number of cartridges in the belt:	1,000 pcs
Weight of gun:	10.5 kg
Mainly weight:	3.2 kg



adaptation of electric motor MIU-431



VKU-330-4



gyro block



hydraulic coupling



sensor D-20



driving disc



bottle for compressed air



pump BCH-1



fan control box KUV 11-6-15



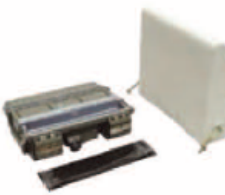
pump BCH-1



vision device TNP0-168W + device cover



bogies wheel



engine V-46.6

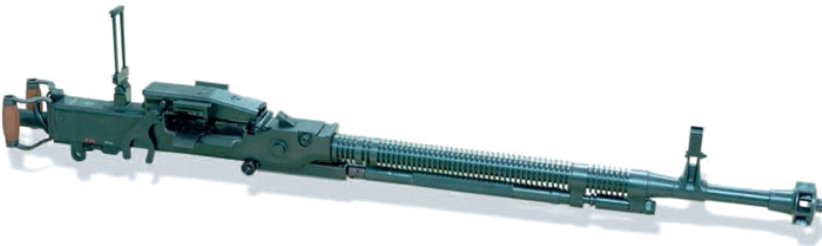
T-72



Princip Spec ltd supplies a complete range of spare parts for the following military machinery: T-55, T-72 and BMP and is able to provide production of less available parts.

The DShK is a Soviet heavy machine gun with a V-shaped "butterfly" trigger, firing the 12.7×108mm cartridge. The weapon was also used as a heavy infantry machine gun, in which case it was frequently deployed with a two-wheeled mounting and a single-sheet armour-plate shield.

Many DShKs intended for the close anti-aircraft role were fitted with a simple mechanical sighting system that helped the gunner properly account for "lead" in order to hit fast-moving targets. The system consisted of two circular disks mounted side-by-side in a common framework. On the right, in front of the gunner, was a large "spider" sight that contained a line of small metal rings running from the center to the outer edge. On the left, in front of the loader, was a smaller disk with several parallel metal wires. In some examples, the sight was installed with the loader's sight on the right.



Basic technical data

Length:	1,625 mm
Barrellength:	1,070 mm
Cartridge:	12.7 mm
Rate of fire:	600 rounds/min
Muzzlevelocity:	850 m/s (2,788 ft/s)
Feed system:	belt 50 rounds
Sights:	Iron/Optical
Weight:	34 kg (gun only) 157 kg (on wheeled mounting)

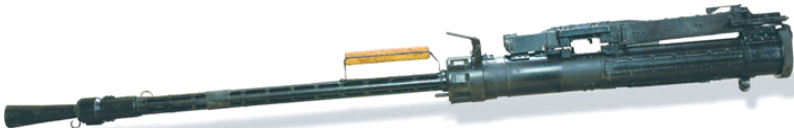
KPVT, 14.5 mm Heavy Machine Gun

The KPV-14.5 heavy machine gun is a Soviet designed 14.5×114mm-caliber heavy machine gun, which first entered service as an infantry weapon (designated PKP) in 1949. In the 1960s, the infantry version was taken out of production because it was too big and heavy.

It was later redesigned for anti-aircraft use, because it showed excellent results as an AA gun, with a range of 3,000 meters horizontally and 2,000 meters vertically against low flying planes. It was used in the ZPU series of anti-aircraft guns. Its size and power also made it a useful light anti-armour weapon on the BTR series of vehicles and the BRDM-2 scout car.

Basic technical data

Length: 2,000 mm
 Barrel length: 1,350 mm
 Feeding belt: 40 or 50 rounds
 Rate of fire: 600 rounds/min
 Weight: 49.1 kg (gun body,KPV)
 + 105 kg (wheeled infantry mount) or
 39 kg (infantry tripod)



MILITARY VEHICLES



distribution box KFR-2



control box



main clutch



lamp GST -49 K



fire detector TD-1



cap roll



azimuth indicator



electropneumatic valve EK-48



collimator K-10-T



thermometer
TUE-48-T-kit



transducers PT-200



observation instrument MK-4



driving sprockets



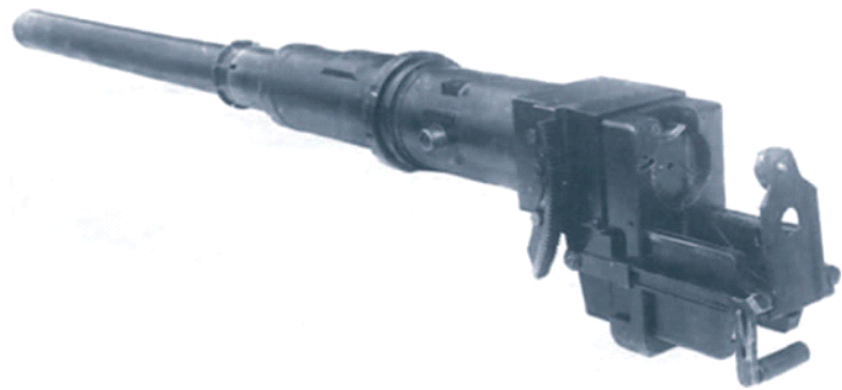
gearbox

T-55



Princip Spec ltd supplies a complete range of spare parts for the following military machinery: T-55, T-72 and BMP and is able to provide production of less available parts.

The 2A28 is the main armament of the BMP-1 and BMD-1 infantry fighting vehicles. It is a 73 mm low pressure smoothbore semi-automatic gun with a wedge breech block. Development of the 2A28 was directly linked to that of the SPG-9 recoilless gun; both fired projectiles similar to rocket-propelled grenades.

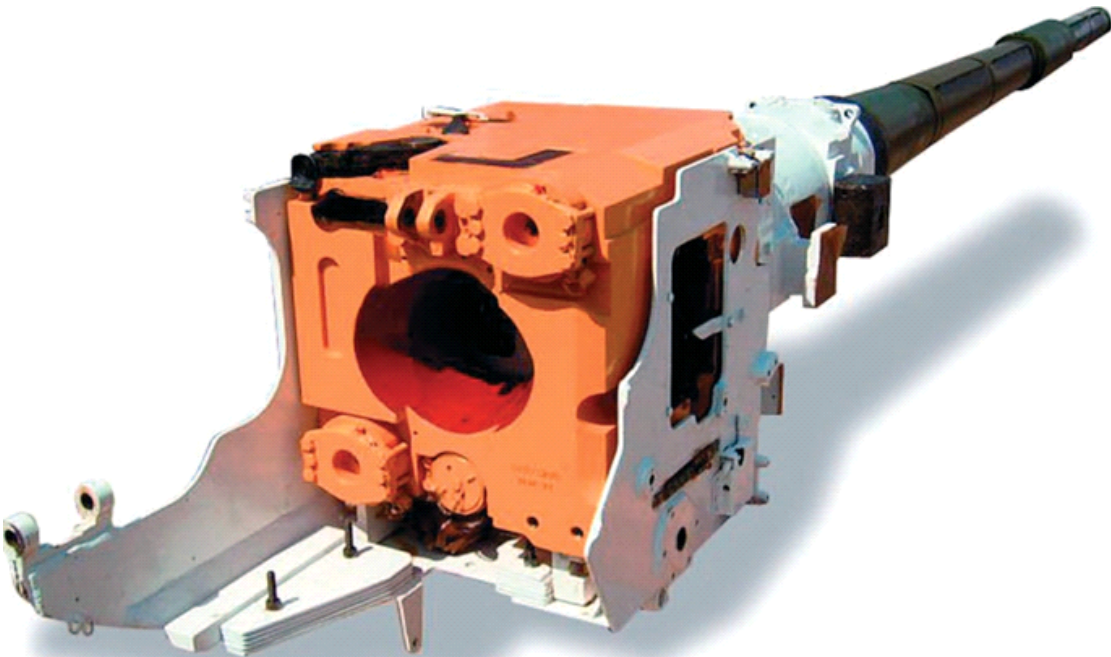


Basic technical data	
Roundtype:	PG-1SV, OG-1SV
Max aimed range of fire:	
PG-1SV shell:	1300 m
OG-1SV shell:	4400 m
Weight:	115 kg

2A46/D-81T 125 mm Main Gun

125 mm main gun (D-81T); artillery department indices 2A26 and 2A46 respectively) equip all Soviet and Russian tanks starting with the T-72, etc. They were developed by the Spetstekhnika (OKB-9) design bureau in Ekaterinburg (former Sverdlovsk), and are manufactured at the Motovilikha artillery plant in Perm.

The 2A46 can fire armour-piercing fin-stabilised discarding sabot (APFSDS), high-explosive anti-tank (HEAT) and high-explosive fragmentation (HEF) projectiles. The ammunition for the 2A46 gun is in two pieces: the projectile is loaded first, followed by a separate propellant charge.



BASIC TECHNICAL DATA

Description:	Multifuel 12-cylinder V 60 degrees Direct Injection 4 Stroke Water cooled
Rating:	456 kW/620 hp at 2.000 rpm
Used in:	T-55 AM2
Starting system:	Compressed air/electric
Weight of engine:	910 kg
Engine dimensions	- length: 1.580 mm - width: 905 mm - height: 920 mm

V-55AM2



BASIC TECHNICAL DATA

Description:	Multifuel 12-cylinder V 60 degrees Direct Injection 4 Stroke Water cooled
Rating:	573 kW/780 hp at 2.000 rpm
Used in:	T-72, T-72M, T-72M1, VT-72
Starting system:	Compressed air/electric
Weight of engine:	980 kg
Engine dimensions	- length: 1.480 mm - width: 896 mm - height: 902 mm

V 46.6



UTD-20



BASIC TECHNICAL DATA	
Descriptton:	Multifuel 12-cylinder V 60 degrees Direct Injection 4 Stroke Water cooled
Rating:	427 kW/580 hp at 2.000 rpm
Used in:	T-55, T-55A, VT-55A, JVBТ-55, MT-55A
Starting system:	Compressed air/electric
Weight of engine:	1.480 kg
Engine dimensions	- length: 1.580 mm - width: 905 mm - height: 920 mm

BASIC TECHNICAL DATA

Descriptton:	Multifuel 12-cylinder V 60 degrees Direct Injection 4 Stroke Water cooled
Rating:	427 kW/580 hp at 2.000 rpm
Used in:	T-55, T-55A, VT-55A, JVBТ-55, MT-55A
Starting system:	Compressed air/electric
Weight of engine:	1.480 kg
Engine dimensions	- length: 1.580 mm - width: 905 mm - height: 920 mm

V-55A



Cartridge designation	7N6M	7N10	7N22	7N24	7T3 (tracer)	7Kh3 (training)
Cartridge weight	10.5 g (162 gr)	10.7 g (165 gr)	10.75 g (166 gr)	11.20 g (173 gr)	10.3 g (159 gr)	6.65 g (103 gr)
Bullet weight	3.43 g (52.9 gr)	3.62 g (55.9 gr)	3.69 g (56.9 gr)	4.15 g (64.0 gr)	3.23 g (49.8gr)	0.24 g (3.7 gr)
Muzzle velocity	880 m/s	880 m/s	890 m/s	840 m/s	883 m/s	
Muzzle energy	1,328 J	1,402 J	1,461 J	1,464 J	1,259 J	

Cartridge caliber 7.62x39mm

No.	Caliber (mm)	Case	Bullet (round) type	Bullet (projectile) weight [g]	Primer type	Bullet (projectile) speed V[x] [m/s]	Chamber pressure [Mpa]
1	7.62x39	Steel	Bimetal jacket+steel core (FMJ/SC)	7,9"	"Berdan"	V25- 718	274
2	7.62x39	Steel	Bimetal jacket + lead core	7,93"	"Berdan"	V25- 718	274
3	7.62x39	Bimetal	Bimetal jacket+steel core (FMJ/SC)	7,9"	"Berdan"	V25- 718	274
4	7.62x39	Bimetal	Tracer T-45(T)	7,58"	"Berdan"	V25- 718	274
5	7.62x39	Steel	Tracer T-45(T)	7,58"	"Berdan"	V25- 718	274
6	7.62x39	Bimetal	Blank	-	"Berdan"		-
7	7.62x39	Steel	Blank	-	"Berdan"		-
8	7.62x39	Bimetal	SP/Soft Point/Bimetal jacket+lead core	9,6"	"Berdan"	V25-675	245
9	7.62x39	Bimetal	HP/Hollow Point/Bimetal jacket+lead core	9,65"	"Berdan"	V25 -620	284
10	7.62x39	Bimetal	FMJ LC/Bimetal jacket+lead core	7,93"	"Berdan" non-corrosive	V25-718	274



PACKING

Caliber (mm)	Cardboard box (pcs)	Metal box (pcs)	Case (pcs)	Case dimensions (mm)	Case gross weight (kg)	Case volume (m3)
7.62x39 ball2	0	700	1400	488x383x151	30	0.026
7.62x39 tracer2	0	700	1400	488x383x151	30	0.026
7.62x39 blank	20	740	1480	488x383x151	20	0.026

Mobile container PSYOPS

Container ISO 1C - Mobile drinking water treatment plan and its technological solution is designed for con version of raw groundwater and surface water to drinking water Water treatment means mixing in the reactor wherein the separation of the suspended solids and sludge sedimentation sand filtration and the uptake of the carbon.

The occurrence of heavy metals leads to their elimination combination of precipitation reac tions and absorbing. Raw water is pumped pumping by submersi ble pump with flotation device and is fed by hose (l.25 m) to enter the process.Feed line is dispensed by 40% FeCl3 coagulant by dosing pump.

Water flow is guiding according to the level of the mixed water pump speed converter of raw water.

Water-treatment of raw water is removed from the solid matter iron manganese aggressive Co2 a -activity and radon.



BASIC TECHNICAL DATA

Dimensions - LxWxH (mm): max. 8200x2600x3500 (without beaconsand air conditioning)
Gross weight: max 19.000 kg
Axle: 4x4
Number of persons carried: 4
Range: min. 600 km
Electric set - generator: 9.6 kVA, 400/230 V
Max. speed: 90 km/h
Engine, output: diesel, min 230 kW

Decontamination vehicle DEKVOZ

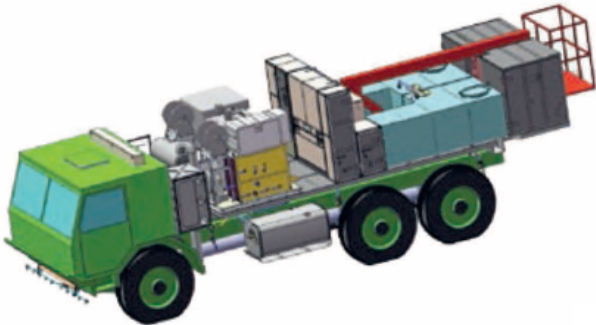
Decontamination vehicle is assigned for performing the entire decontamination of outside and inside surfaces of military techniques, armament and material, incl. oversized techniques, decontamination of terrain, building objects and creating the high water curtain for stoppage of ground cloud of dangerous chemical substances. Vehicle is able to meet the requirements individually, and also by the way of establishing of decontamination workplaces or within link for decontamination techniques.

Vehicle is able to transport over unpaved roads and in the middle challenging terrain in every season, weather and day and night. It is tailored to transport by rail, by ship or by air. Squad of vehicle consists of 3 members.



DETERMINATION OF DECONTAMINATION DEVICE:

- 1. Meeting the tasks of military character
 - Decontamination of outside and inside area of military techniques;
 - Decontamination of material;
 - Decontamination of outside and inside area of building objects;
 - Decontamination of terrain;
 - Firefighting.
- 2. Meeting the tasks of unmilitary character
 - Liquidation of after-effects industrial or ecological disasters;
 - Removal of acts of God after-effects;
 - Removal of dangerous chemical substances leakage from devices of industrial infrastructure.



Cartridge caliber 5.56x45mm



No.	Caliber (mm)	Case	Bullet (round) type	Bullet (projectile) weight [g]	Primer type	Bullet (projectile) speed V[x] [m/s]	Chamber pressure [MPa]	Name
1	5.56x45	Brass	Bimetal jacket+lead core-M193(FMJ/LC)	3,6"	"Boxer"	V25-965	358	5.56mm Cartridge M193 with Lead Slug Bullet
2	5.56x45	Brass	Bimetal jacket+steel core-SS109(FMJ/SC)	4"	"Boxer"	V25-914	380	5.56mm Cartridge SS109 with Steel core Bullet
3	5.56x45	Brass	Tracer(T)4		"Boxer"	V25-910	380	5.56mm Cartridge with tracer
4	5.56x45	Brass	Blank		"Boxer"			5.56mm Blank

PACKING

Caliber (mm)	Cardboard box (pcs)	Metal box (pcs)	Case (pcs)	Case dimensions (mm)	Case gross weight (kg)	Case volume (m3)
5.56x45 ball3	0	810	1620	488x353x151	27	0.026
5.56x45 tracer	30	810	1620	488x353x151	27	0.026
5.56x45 blank	30	810	1620	488x353x151	17	0.026

60 mm Mortar EM-60

The 60 mm EM-60 Mortar is a powerful fire weapon designed for small units and intended for destruction of the enemy manpower and fire emplacements located in open hasty shelters or behind barriers. The Mortar ensures delivery of effective fire. It is a reliable armament for the infantry and successful in guerilla operations. The possibility of taking the weapon apart makes it easy portable and allows its deployment and taking up a position in difficult areas. It is equipped with an MPM -44M that ensures aiming in horizontal and vertical plane. Special lighting is provided for night time and similar conditions.

THE COMPLETE SET INCLUDES

MPM-44M sight, carries for the mortar parts and the mortar bombs, set of spare parts and accessories. For long distance transportation and continuous storage the mortar set is placed in a special wooden case.



TACTICAL AND TECHNICAL CHARACTERISTICS	
Caliber (mm):	60
Body length (mm):	1000
Range (m):	
- maximum:	3250
- minimum:	150
Rate of fire (rounds/min)	up to 25
Elevation angle deg.:	from 45 up to 85
Traversing angle, deg.:	
- without shifting the bipod	±5
- with bipod shifted	to 360
Operation temperature range	from 223 to 323 K C°(-50° - +50°)
Weight (kg):	
- of the mortar in firing position:	20,9
- of the body:	7
- of the carriage - bipod	8.5
- of the support plate	4.5

PACKING	
Wooden case dimensions (mm):	1340x600x460
Gross weight (kg):	65
Volume (m³):	0,370

Mobile ISO Containers Production

Container ISO 1C - Mobile drinking water treatment plan and its technological solution is designed for conversion of raw groundwater and surface water to drinking water. Water treatment means mixing in the reactor wherein the separation of the suspended solids and sludge sedimentation sand filtration and the uptake of the carbon.

The occurrence of heavy metals leads to their elimination combination of precipitation reactions and absorbing. Raw water is pumped by submersible pump with flotation device and is fed by hose (1.25 m) to enter the process. Feed line is dispensed by 40% FeCl3 coagulant by dosing pump.

Water flow is guiding according to the level of the mixed water pump speed converter of raw water.

Water-treatment of raw water is removed from the solid matter iron manganese aggressive CO2 activity and radon.



Container Workshop

Mechanical container workrooms are intended to provide service as well as more extensive hardware repairs in the area of their usage. Loaded on the carrier, they can serve for providing technical help in any place of defect or hardware damage. Standard equipment allows to conduct basic locksmithery and assembly works including flame welding and electric arc welding.

The selected types of wheeled or tracked hardware can be equipped by suites of special products,for example a suite of universal products for tracked hardware repairs JEKUP. They can be completed by machining container workrooms for providing repairs connected with the production or renovation of individual components.



60 mm Mortar ANTOS-LR / 60 mm Ultralight Commando Mortar ANTOS

The 60 mm Mortar ANTOS-LR designed to reinforce fire power of the paratroops, recco and special units. It serves as a supporting artillery weapon of military units at squad or platoon level. ANTOS mortar is an extremely light weapon designed for paratroops and special units.



Mortar ANTOS-LR



Mortar ANTOS

Basic technical data	ANTOS	ANTOS-LR
Calibre:	60.7 mm	60.77 mm
Barrel length:	650 mm	1000 mm
Weight of weapon incl. storage package and accessories:	21 kg ± 10%	<15.6 kg
Elevation:	45÷85°	45÷85°
Minimum range (+21°C, 85°C):	(primary charge 0) 80 m	(primary charge 0) 120 m
Maximum range (+21°C, 45°C):	(full charge 1) 1230 m	(full charge 3) 2930 m
Maximum operating pressure:	in the barrel 18 MPa	54 Mpa
Range of operating temperature:	(-30÷+60) °C	(-30÷+60) °C
Firing mode:	gravity trigger on the handgrip	gravity -

82 mm Mortar EM-82

The EM-82 Mortar is a powerful weapon for small battle units, intended for destroying the manpower and fire arms of the enemy, located in the open in hasty shelters and behind barriers. The mortar contributes to the higher effectiveness of firing, it is a reliable means for accompanying the infantry, and is successfully used in guerilla operations. The possibility of dismantling the mortar makes it easily portable by the crew, as well as allows its deployment and taking up a position in difficult terrains. It is equipped with an MPM-44M optical sight, that provides aiming in both horizontal and vertical planes. A special lighting facility is used in the nighttime or in case of poor visibility.

THE COMPLETE SET INCLUDES

MUM or MPM -44M sight, set of spare parts and accessories. For long distance transportation and continuous storage the mortar set is placed in a special wooden case.



TACTICAL AND TECHNICAL CHARACTERISTICS	
Caliber (mm):	82
Body length (mm):	1220
Range (m):	
- maximum:	3040
- maximum with long range mortar shell:	4020
- minimum:	85
Rate of fire (rounds/min)	up to 24
Elevation angle deg.:	from 45 up to 85
Traversing angle, deg.:	
- without shifting the bipod	±3
- with bipod shifted	±30
Operation temperature range	from 223 to 323 K C°(-50° - +50°)
Weight (kg):	
- of the mortar in firing position:	59,7
- of the barrel:	17,8

PACKING	
Wooden case dimensions (mm):	1650x750x460
Gross weight (kg):	132

RM-70 Multiple Rocket Launcher

The RM-70 multiple rocket launcher is a Czechoslovak Army's version and the heavier variant of the BM-21 Grad multiple rocket launcher, providing enhanced performance over its parent artillery system that was introduced in 1972.

It is designed to be used against manpower, firing devices, motorized infantry arrangements, tanks and other combat vehicles.

The rocket launcher with loading device is placed on a special T-813 chassis. Sighting by dependent PG aiming rule sight, motor powered or manual guidance to target. Electrical switch-on. Firing in batches and/or individually.



BASIC TECHNICAL DATA	
Weight incl. 80 shells and crew:	24.000 kg
Bullet shells mass JROF:	66.35 kg
Maximum range:	20.380 m
Total area impacted by volley of shells (40 shots):	to 70 ha
Time of volley of bullet shells firing (40 shoots):	2-30s
Rocket launcher crew:	4 men
Top cruising speed of loaded rocket launcher:	
- on asphalt roads:	85 km/h
- on dirt roads:	35 km/h
- in terrain:	25 km/h
Rocket launcher length:	8.650 mm
Rate of ammunition supply:	40+40 bullet shells

Possible modification also on different chassis.



RM-70 M1 Multiple Rocket Launcher

The RM-70 M1 multiple rocket launcher is an new, modified generation of the original Czechoslovak Army's version RM-70 and the heavier variant of the BM-21 Grad multiple rocket launcher, providing enhanced perfor mance over its parent artillery system.

It is designed to be used against manpower, firing devices, motorized infantry arrangements, tanks and other combat vehicles. The rocket launcher with loading device is based on a T-815VPR9 chassis (or on the chassis to the customer's requirement). Sighting by dependent PG-1M aiming rule sight, motor powered or manual guidance to target. Electrical switch-on. Firing in batches and/or individually.



BASIC TECHNICAL DATA

Weight incl. 80 shells and crew:	25.000 kg
Bullet shells mass JROF:	66.35 kg
Maximum range:	20.380 m
Total area impacted by volley of shells (40 shots):	to 70 ha
Time of volley of bullet shells firing (40 shoots):	2-30s
Rocket launcher crew:	4 men
Top cruising speed of loaded rocket launcher:	
- on asphalt roads:	85 km/h
- on dirt roads:	35 km/h
- in terrain:	25 km/h
Rocket launcher length:	9.100 mm
Rate of ammunition supply:	40+40 bullet shells

120 mm Mortar EM-120

The 120 mm Mortar features a powerful antipersonnel weapon for the engagement of troops in the open or under light cover. The mortar can fire mounted on the base vehicle or from a fixed ground position.

TACTICAL AND TECHNICAL CHARACTERISTICS

A MPM-44M Sight is fitted to provide aiming in elevation and traverse. For operations atnight or limited visibility conditions a lighting system is supplied.



TACTICAL AND TECHNICAL CHARACTERISTICS

Caliber (mm):	120
Body length (mm):	1500
Range (m):	
- maximum:	7100
- minimum:	480
Rate of fire (rounds/min)	up to 15
Elevation angle deg.:	from 45 up to 80
Traversing angle, deg.:	
- without shifting the bipod	±5
- with bipod shifted	±26
Operation temperature range	from 223 to 323 K C°(-50° - +50°)
Weight (kg):	
- of the mortar in firing position:	210
- of the barrel:	72.6
- of the carriage - bipod	54.7
- of the support plate	78

9M113 Konkurs tube-launched SACLOS wire-guided anti-tank missile system

The missile is designed to be fired from vehicles, although it can also be fired from the later models of 9M 111 launchers. It is an integral part of the BMP-2, BMD-2 and BRDM-2 vehicles. The missile is stored and carried in a fiberglass container/launch tube.

The system uses a gas generator to push the missile out of the launch tube. The gas also exits from the rear of the launch tube in a similar manner to a recoilless rifle. The missile leaves the launch tube at 80 meters per second, and is quickly accelerated to 200 meters per second by its solid fuel motor. This initial high speed reduces the missile's deadzone, since it can be launched directly at the target, rather than in an upward arc. In flight, the missile spins at between five to seven revolutions per second.



SPECIFICATIONS	
Weight:	14.6 kg
Length:	1,150 mm 875 mm without gas generator
Diameter:	135 mm
Warhead:	2.7 kg 9N131 HEAT
Wingspan:	468 mm
Operational range:	70 m to 4 km
Speed:	200 m/s
Guidance system:	Wire-guided SACLOS
Steering system:	Two control surfaces
Launch platform:	Individual, vehicle



122 mm separated loaded ammunition for D30 howitzer

Shells are designed for general fire support missions against enemy troops, light fortifications and unarmoured and lightly armoured vehicles. As a result of complete aerodynamical optimization (optimization of projectile shape and installment of base bleed unit) and newly designed powder charge, maximum range is increased from 15300 m to 21500 m.



TECHNICAL CHARACTERISTICS				
NATO DESIGNATION:	HE Shell TF-462A1	HE Shell TF-462A1	HE BB	HE ER-HB
projectile (kg):	21.76	21.76	21.7	20
explosive (kg):	3.6	3.6	3.9	3.9
propelling charge (kg):	2.6	3.8	3.78	3.78
	(reduced charge)	(full charge)		
cartridge case (kg):	3.66	3.66	3.80 (full charge)	3.80 (full charge)
explosive type:	TNT	TNT	2.94	2.94
LENGTH (mm)				
projectile:	561	561	657	657
cartridge case:	447	447	447	447
MUZZLE VELOCITY (m/s):	565	690	715	750
MAXIMUM RANGE (m):	12800	15200	21500	18600
Fuze action:	impact, super quick, delay		(SQ and Delay action), BTM12 (Proximity)	
Fuze type:	UTIU, M72 B1		UTIU, Mo2	

T-72 Main Battle Tank

The T-72 Tank is a medium weight combat vehicle equipped with a 125 mm main gun, a coaxial PKMT, and a 12.7 mm machine gun for anti-aircraft defence. It also has a 7.62 mm machine gun.



BASIC TECHNICAL DATA

Weight:	43.000 kg
Engine type:	V46.6, Water cooled V-12
Engine output:	573 kW
Maximum firing speed:	60 km/h
Main gun, type 2A46 calibre:	125 mm
Auto loader:	8 rounds/min

KORNET 9M133

The 9M133 Kornet is a modern Russian man-portable anti-tank guided missile (ATGM) intended for use against main battle tanks. It was first introduced into service with the Russian Army in 1998.

The Kornet is among the most capable Russian ATGMs. It is not intended to fully replace previous systems, due to its high cost. The Kornet comes in variants with thermobaric warheads for use against soft targets. It was further developed into the 9M133 Kornet-EM, which has increased range, fire-and-forget capability, and an improved warhead.



SPECIFICATIONS (9M133)

Weight:	27 kg (29 kg with launch tube)
Length:	1200 mm
Diameter:	152 mm
Warhead:	1000-1200 (9K135), 1200 (E), 1300 (D) mm RHA[1] penetration after ERA with Tandem HEAT, Thermobaric
Warhead weight:	7 kg HEAT, 10kg TNT equivalent Thermobaric
Detonation mechanism:	Impact fuze
Wingspan:	460 mm
Propellant:	Solid-fuel rocket
Operational range:	Kornet 100 - 5500m Kornet-EM 8000 m (anti-tank) 10000 m (thermobaric)
Guidance system:	SACLOS laser beam riding
Steering system:	Two control surfaces
Accuracy:	<5m
Launch platform:	Individual, vehicle

SPG-9

The SPG-9 Kopye (Spear) is a Russian tripod-mounted man-portable, 73 millimetre calibre recoilless gun developed by the Soviet Union. It fires fin-stabilised, rocket-assisted HE and HEAT projectiles similar to those fired by the 73 mm 2A28 Grom low pressure gun of the BMP-1 armored vehicle. It was accepted into service in 1962, replacing the B-10 recoilless rifle.



SPECIFICATIONS

Weight:	47.5 kg (105 lb) 59.5 kg (131 lb) with the tripod
Length:	2.11 m (6 ft 11 in)
Width:	99 cm (3 ft 3 in) allowing for full weapon traverse
Height:	80 cm (2 ft 7 in)
Crew:	2 (1 gunner, 1 loader)
Caliber:	73 mm (2.87 in) smoothbore
Breech:	Interrupted screw
Recoil:	None
Carriage:	Tripod
Elevation:	+7°/-3°
Traverse:	30° total
Rate of fire:	5-6 rounds per minute
Muzzle velocity:	250 to 435 m/s (800 to 1,427 ft/s)
Effective firing range:	800 m (875 yds)
Maximum firing range:	1200 m to 6500 m (1300 to 7100 yds)
Feed system:	Manually breech loaded
Sights:	PGO-9 optical 4x sight or PGN-9 IR and passive night sight

T-55A/T-55AM2

The T-55A tank is a medium weight tracked combat vehicle equipped with a 100 mm gun,an anti-aircraft machine gun of 12.7 mm caliber and two light machine guns of 7.62 mm caliber. The T-55M is equipped with a few modernized means, i.e. a laser sight with 5 km range,the KLADIVO firing control system, and an infrared rangefinder.



BASIC TECHNICAL DATA

Weight:	41.500 kg
Engine type:	V55 AM2, 12 cylinders in "V" system
Engine output:	456 kW
Maximum firing speed:	50 km/h
Main gun, type D 10-T2S calibre:	100 mm
Firing maximal speed:	7 rounds/min

A rather cramped interior remained but the number of troops carried was reduced to seven. Vehicle commander was relocated from a po sition behind the driver to the turret. Normally commander dismounts with the troops. Each soldier has its own firing port and associated vi sion block.

This infantry fighting vehicle is powered by a UTD-2051turbocharged diesel engine, develop ing 300 hp.It is an improved version of the BM P- 1 engine. Transmission and running gear is al most identical to that of its predecessor. Engine and transmission can be easily removed and replaced in field conditions. Vehicle is fully am phibious. On water it is propelled by its tracks.

There are a number of variants of the BMP-2. Czechoslovakia and India developed their own variants, including armored ambulance, ar mored engineering vehicle, bridging reconnais sance vehicle and many other.

Main specifications	
Crew:	3 (+7 passengers)
Length:	6.72 metres (22 ft 1 in)
Width:	3.15 metres (10 ft 4 in)
Height:	2.45 metres (8 ft 0 in)
Armor:	23-33 mm
Main armament:	30 mm automatic cannon 2A42
Secondary armament:	7.62 mm machine gun (PKTM) 9M113 Konkurs ATGM
Engine:	diesel UTD-20S1 300 hp (225 kW)
Suspension:	torsion bar
Operational range:	600 km (370 mi)
Speed:	65 km/h (40 mph) (road) 45 km/h (28 mph) (off-road) 7 km/h (4.3 mph) (water)



82mm Mortar Smoke Cartridge D-832DU used with 82mm mortar provides obscuration smoke screening against the enemy. The projectile is loaded with white phosphorus and provides incendiary effect as well.



TACTICAL AND TECHNICAL CHARACTERISTICS	
Calibre (mm):	82
Weight mortar bomb (kg):	3.1
Bursting charge:	TNT
Weight of bursting charge (kg):	0.068
Smoke screening substance:	WP
Weight of smoke screening substance (kg):	0.338
Maximum firing range (m):	3040
Muzzle velocity at 3th charge (m/s):	277
Body material:	cast iron
Charge:	changeable propellant (0+3)
Fuse:	M5, M6
Fuses Packing	
- Number of fuses in four air-tight sealed metal boxes packed in a wooden case:	120
- Case dimensions (mm):	510x470x180
- Gross weight (kg):	23
- Volume (m³):	0.0431
Rounds Packing	
10pcs in a wooden case	
Case dimensions (mm):	538x538x282
Gross weight (kg):	45
Volume (m³):	0.0812

120 mm SMOKE MORTAR BOMB D-EM 843B

The 120mm Mortar Smoke Cartridge D-843B used with 120mm mortar provides obscuration smoke screening against the enemy. The projectile is loaded with white phosphorus and provides incendiary effect as well.



TACTICAL AND TECHNICAL CHARACTERISTICS	
Calibre (mm):	120
Weight mortar bomb (kg):	16.50
Bursting charge:	TNT
Weight of bursting charge (kg):	0.073
Smoke screening substance:	WP
Weight of smoke screening substance (kg):	1.97
Maximum firing range (m):	5700
Muzzle velocity at 6th charge (m/s):	272
Max. pressure (Pa):	1030.105
Body material:	cast iron
Charge:	changeable propellant (0+6)
Fuse:	M12
Fuses Packing	
- Number of fuses in four air-tight metal:	48
- Boxes (each one containing 12 fuses), packed in wooden case	
- Wooden case dimensions (mm):	520x490x160
- Wooden case weight (kg):	40
- Wooden case volume (m³):	0.0407
Rounds Packing	
2pcs in a wooden case	
Case dimensions (mm):	945x360x240
Gross weight (kg):	45
Volume (m³):	0.0816

BM P-2

The BMP-2 was fitted with a new two-man turret. The most obvious improvement being the replace ment of the BMP-1's non-stabilized 73 mm low velocity gun by a more versatile and effective ful ly-stabilized dual-fed 30-mm cannon.The previous gun had a maximum range of only 1300 m.Also it could not be used against air targets. The 30-mm cannon proved to be successful.

Later it was used on a number of Soviet/Russian armored vehicles, as well as attack helicopters. This cannon fires HE-FRAG, HE and armor-piercing rounds.It can engage armored targets at a range of 1500 m, ground targets at a range of 4000 m and helicopters at a range of upto 2 500 m. There is also a coaxial 7.62-mm machine gun.Some BMP-2 IFVs are additionally fitted with a 40 mm automatic grenade launcher. A (AT-4 Spigot) or Konkurs (AT-5 Spandrel) ATGW launcher may be mounted over the turret. These missiles have a range of up to 2500 m and 4000 m respectively. Also a portable anti-tank launcher is often carried inside the vehicle.



Welded steel armor of the BMP-2 provides all-round protection against 12.7 mm rounds.Front arc of this IFV offers partial protection against 20 mm ammunition.Vehicle is also fitted with NBC protection and automatic fire suppression systems.

BMP-1 Recovery Vehicle

The recovery vehicle is an amphibious tracked armoured unit mounted on the modified chassis of the BMP carrier. It features high maneuverability and good travelling qualities in heavy terrain.

After mounting a blade used as a support, it is used for the recovery of pieces of armoured and mechanised units up to a weight of 15,000 kg with follow-up towing to the repair site. It can also clear vehicle-blocked roads. The crew of three is capable of providing basic and simple repairs in the field with the use of the vehicle's multifunctional equipment. For protection, the vehicle is equipped with a 7.62 mm machine gun.

BASIC TECHNICAL DATA	
Weight:	14,300 kg
Engine type:	UTD-20.6 cylinders in "V" system
Main dimensions	
(length x width x height):	7,130 x 2,949 x 2,350 mm
Winch (towing force (in direct pulling)):	125 kN
Ploughshare (max. anchoring force):	up to 345 kN (depends on the soil density)
Crane (max. loading capacity):	6500 kg
Main armament (caliber, type, name):	7.62 mm, machinegun, PKT



82 mm MORTAR BOMB O-EM 832DU

The 82 mm High-Explosive Mortar Bomb O-EM 832DU is intended to engage troops, shelters and light-armoured targets. The ammunition is intended for use with 82 mm smooth-bore mortars including the following: Mod 1937; 1941; 1943 2B9 "VASILEK" 2B14 "PODNOS" M82.

TACTICAL AND TECHNICAL CHARACTERISTICS	
Calibre (mm):	82
Weight mortar bomb (kg):	3.1
Weight of explosive charge (kg):	0.4
Maximum range (m)	
- 1220mm barrel, full variable charge:	3040
Muzzle velocity at 3th charge (m/s):	211
Body material:	cast iron
Charge:	changeable propellant (0+3)
Fuse:	M5, M6
Fuses Packing	
- Number of fuses in four air-tight sealed metal boxes packed in a wooden case:	120
- Case dimensions (mm):	510x470x180
- Gross weight (kg):	23
- Volume (m3):	0.0431
Rounds Packing	
10pcs in a wooden case	
Case dimensions (mm):	538x538x282
Gross weight (kg):	45
Volume (m³):	0.0812



120 mm MORTAR BOMB OF-EM 843B

The 120 mm High-Explosive Mortar Bomb OF-EM 843B is intended for effective engagement of troops, shelters and lightly armoured targets. The ammunition is designed for use with 120 mm smoothbore mortars including the following: Mod. 1938; Mod. 1943; 2B11 “Sani”; 2S12 “Sani”; V-24.

TACTICAL AND TECHNICAL CHARACTERISTICS	
Calibre (mm):	120
Weight mortar bomb (kg):	3.1
Weight of explosive filling (kg):	1.4
Fuse:	0.46
Lenght (mm)	
- overall:	655
- unfuzed:	600
Max. gas pressure (crusher)	
Mpa kgf/cm²:	101 (1030)
Maximum firing range (m):	5700
Muzzle velocity at 6th charge (m/s):	272
Body material:	cast iron
Charge:	changeable propellant (0+6)
Fuse:	M12
Fuses Packing	
- Number of fuses in four	
air-tight metal:	48
- Boxes (each one containing 12 fuses), packed in wooden case	
- Wooden case dimensions (mm):	520x490x160
- Wooden case weight (kg):	40
- Wooden case volume (m³):	0.0407
Rounds Packing	
2pcs in a wooden case	
Case dimensions (mm):	945x360x240
Gross weight (kg):	45
Volume (m³):	0.0816



BMP -1 Infantry Fighting Vehicle

The BMP-1 armoured personnel carrier is amphibious waterproof tracked vehicle featuring good armour protec tion and maneuvering abilities.The BMP-1 is equipped with a heavy 73 mmgun and a coupled 7.62 mm machine gun.The BMP-1 is designed to transport a motorized combat infantry unit of 8 members. The armoured person nel carrier is equipped with a manually loaded launching device.



BASIC TECHNICAL DATA	
Weight:	13.250 kg
Engine type:	UTD-20.6 cylinders in "V" system
Engine output:	220 kW
Main dimensions	
(length x width x height):	6.735 x 2.949 x 2.070 mm
Maximum speed:	65 km/h
Seaworthiness maximal speed:	6 km/h
73 mm gun:	2A28
Coupled 7.62 mm machine gun - type:	PKT

122 mm round with D-4 smoke projectile and reduced variable charge for D-30 howitzer

The 122 mm VPVM-ZR1 B-EM and VPVM-ZR2B-EM rounds with PVM-ZRB-EM target projectile for M-30, 0-30 and 251 are intended for firing and training the man-portable air-defense systems (MANPAOS) personnel and the anti-aircraft artillery gunners WITH COMBAT LAUNCH. The VPVM-ZR1 B-EM is fired from 122 mm M-30 howitzer, 1938model, and VPVM-ZR2B-EM is fired from 0-30 and 251 howitzers.The target, in its flight along the trajectory, is simulating a low-flying target and is sending sound, light and thermal signals.

TECHNICAL CHARACTERISTICS

Weight of the round (kg):	25.73	27.40
Weight of the targetp rojectile (kg):	21.76	21.76
Weight of the propellant charge in the cartridge case (kg):	3.97	4.70
Muzzle velocity of the target projectile (m/s):	269	275
Height of trajectory (m):	1500	1560
Tracer illumination time (s):	424	2
Range (m):	5350	5550
Temperature operating range (°C):	from -40° to +50°	



Ammunition 30mm x 165 anti-aircraft gun 30mm 2A 72, 2A42 and 2A38M

TECHNICAL CHARACTERISTICS

NATO DESIGNATION:	HE	HEI	HE-T	HEI-T	AP	AP-T	TP-T	TP
WEIGHT:								
projectile (g):	389	389	386	386	400	400	385	389
propellant (g):	121	121	121	121	126	126	121	121
explosive (g):	49	49	11.5	11.5	none	none	none	none
complete round (g):	833	833	832	832	853	853	835	839
EXPLOSIVE TYPE:	RDX	RDX+AL	RDX	RDX+AL	none	none	none	none
LENGTH (mm) complete:	291	291	291	291	292	292	292	292
MUZZLE VELOCITY (m/s):	890	890	890	890	890	870	890	890
SELF-DESTRUCTION TIME (s):	13-19	13-19	13-19	13-19	none	none	none	none
TRACER BURNING TIME (s):	none	none	10	10	none	3.5	10	none



PACKING:	15 rounds are packed in a tin box, 2 boxes are packed in a wooden case and 30 cases are packed on a pallet
DIMENSION (mm):	576 x 338 x 218
VOLUME (m³):	0.042
GROSS MASS (kg):	37
IMO COD:	10.2F

23x115 mm Rounds with API-TM (Armour-piercing incendiary tracer)

The Rounds are compatible with 23 mm GSh-23, GSh-23L, GSh-6-23M and AM-23 Automatic guns installed on Su-24, MiG-31, Su-15, MiG-21, MiG-23, Tu-22M, Tu-95s and llyushin II-76 aircraft and Mi-24VP, W-3WA helicopters, and others; intended to defeat unarmored and light armored ground and air targets, and manpower.



BALLISTIC CHARACTERISTICS

Caliber (mm):	23x115
Length of round (mm):	197.86 to 200.66
Weight of round (kg):	0.347
Weight of projectile (kg):	0.190
Average muzzle velocity (m/s):	690
Average max pressure at 15°C (Mpa):	294.2
Type of propellant:	4/7 Cgr
Case material:	brass

PACKING

- 44 Rounds in one air-tight metal box	
- three metal boxes	(132 pcs.)
- in a wooden case with dimensions (mm):	875 x 398 x 206
- Grossweight (kg):	63
- Volume (m³):	0.072
Length of cartridge case with charge (mm):	447

122mm round with D-4 smoke projectile and reduced variable charge for D-30 howitzer

FUNCTIONAL PURPOSE:
The 122 mm rounds with D-4 smoke projectiles and reduced variable charges are special ammunition designed for screening the enemy observation and command posts, firing positions of batteries and fire emplacements. The ammunition may be used for many other tactical tasks, such as target designation, signaling, adjustment fire and wind direction and speed determination in the target area.

COMPLETING UNITS OF THE ROUND:
D-4 smoke projectile reduced variable charge in cartridge case RGM-2 fuze. Packages for rounds and fuzes

TECHNICAL CHARACTERISTICS

Weight of complete round:	29.5 kg
Length of complete round:	1019mm
Length of projectile (With/without fuze):	572/500 mm
Weight of projectile with fuze:	22.16kg
Weight of projectile without fuze:	21.76 kg
Material of projectile:	steel
Length of cartridge case:	447 nun
Weight of reduced variable charge:	2.54 kg
Maximum firing distance with reduced variable charge:	12870 m
RGM-2 (nose impact fuze):	0.438kg
Bursting charge TNT-o.120kg Tetryl-:	0.040 kg

PACKING

- 2 rounds in a wooden case	
- Case dimensions (mm):	1190 x 430 x 250
- Volume (m³):	0.125
- Gross weight (kg):	80



Round with 105mm ILLUMINATION M314 A4

TECHNICAL CHARACTERISTICS

NATO DESIGNATION:	HE	HE
	ER-BB (M56)	ER-BB (M56/33 M2A1)
projectile (kg):	14.070	14
explosive (kg):	2.15	2.2
propelling charge (kg):	2.2	2
cartridge case (kg):	2.68	2.68
explosive type:	TNT	TNT
LENGTH (mm)		
projectile with fuze:	565	560
cartridge case:	372	372
MUZZLE VELOCITY (m/s):	670	685
MAXIMUM RANGE (m):	17000	18000



PACKING: 2 rounds in wooden case

DIMENSION (mm):	950 x 310 x 200
VOLUME (m³):	0.086
GROSS MASS (kg):	50



23x115 mm Rounds with HEI (high-explosive incendiary)

Purpose to defeat ground unarmored and light armored vehicles, personnel and air targets Weapon systems 23 mm GSh-23L, 23 mm AM-23 and 23 mm GSh-6-23M aircraft guns.



BALLISTIC CHARACTERISTICS

Caliber (mm):	23x115
Length of round (mm):	797.9 to 200.53
Weight of round (kg):	0.329
Weight of projectile (kg):	0.774
Explosive filling type:	A-IX-2
Fuze type:	Af23
Arming distance (m)	2.5 to 100
Average muzzle velocity (m/s):	775
Average max Pressure at 15°C:	294
Type of propellant:	4/7 Cgr
Case material:	brass
Operational temperature (°C):	-50 to +50

PACKING

- 44 Rounds in one air-tight metal box	
- three metal boxes	(132 pcs.)
- in a wooden case with dimensions (mm):	875 x 398 x 206
- Grossweight (kg):	63
- Volume (m³):	0.072
Length of cartridge case with charge (mm):	447

23 mm Naval anti-aircraft gun and missile system ZU-23-2MR

The ZU-23-2MR system is equipped with electro-hydraulic drives in traverse and elevation, hydraulic reloading system, two water-cooled 23mm cannons. The cannons are fed from ammunition boxes which contain 200 belted cartridges each. It is possible to fire with sub-calibre ammunition; the system crew consists of one seaman.

The ZU-23-2MR system is designed to arm the various types of vessels and to fight low-flying air targets such as: aircraft, helicopters, winged rockets, unmanned flying objects, landing troops and unarmoured and lightly armoured ground and sea targets.

- Main characteristics:
- good technical and tactical features allow to fire the targets (which appear unexpectedly and move in different directions) with great efficiency,
 - reduced number of seamen required to system handling,
 - high reliability of working,
 - user-friendly system,
 - low system weight.

TECHNICAL DATA

Weapon

2 x 23 mm cannons

Firing angles

Horizontal 360 deg.
Vertical from -10 to +90 deg.
up to 400 rds/min. for one gun

Practical rate of fire

1500/2500/2000 m for API
and HEI

Cannon range:
maximal vertical/total/
maximal effective for
ground targets

2000/3000/2500 m for APDS
and FAPDS



125 mm 3VOF36 round with 30F26 high explosive projectile

The product is intended to be fired from 125mm 2A-46 tank gun for destroying enemy manpower and fire arms in the open and in field-type shelters, also for fighting artillery, mortars, missile launchers and vehicles and light armoured vehicles and equipment. Inert training rounds are produced.

- Length of projectile (mm): 677
- Weight of cartridge case with charge (kg): 9.5
- Length of cartridge case with charge (mm): 408

- Packing of the fuze:
- 64 fuzes (16 fuzes in 4 hermetically sealed metal boxes) in a wooden case.
 - Case dimensions (mm): 517x487x187
 - Gross weight of the case (kg): 41
 - Volume of the case (m3): 0.047

BASIC CHARACTERISTICS				
	Element	Material indication	Weight (kg)	Length (mm)
Projectile	Fuze	V-429E	0.435	106
	Body	Steel	19.4	615
	Driving band	Copper		
	Charge	A-IX-2	3.15	
Charge - powder		Pyroxylin cloth	3.840	378
Primer sleeve		GUV-7	0.09	24
Combat load		Powder	5.885	



BALLISTIC CHARACTERISTICS	
Muzzle velocity:	850 m/s
Maximum pressure:	3500.10 ⁵ Pa
Maximum range: height of the target 2.7m:	10000 m

PACKING	
- 1 round in a wooden case	
- Case dimensions (mm):	820 x 540 x 290
- Gross weight of the case (kg):	60
- Volume of the case (m ³):	0.128
- Weight of round (kg):	33

Round 130mm, separate loaded for gun 130mm M46

TECHNICAL CHARACTERISTICS			
NATO DESIGNATION:	HE	HE	ILLUMINATION
	Shell M79	Shell M79	SP-46
projectile (kg):	33.40	33.40	25.8
explosive (kg):	3.64	3.64	0.050
propelling charge (kg):	13.50 full charge M46	6.75 reduced charge M46	
cartridge case (kg):	11.35	11.35	11.35
explosive type:	TNT	TNT	WP
LENGTH (mm)			
projectile:	671	671	442
cartridge case:	846	846	846
MUZZLE VELOCITY (m/s):	930	705	687
MAXIMUM RANGE (m):	27490	19310	14350



PACKING DESCRIPTION:	
DIMENSION (mm):	996 x 490 x 268
VOLUME (m³):	0.13
GROSS MASS (kg):	82



23 mm anti-aircraft mobile gun and missile system ZUR-23-2KG

The ZUR-23-2-KG system is equipped with 23mm cannons, GROM missiles, traverse and elevation electric drives. It can work in external FCS, it is equipped with programmable sight CP-1 (with night and day track, LRF, two ballistics) or collimator sight CKE-2. The system can fight the targets by means of 23mm sub-calibre ammunition type API (BZD, HEI-T (OFZT), APDS-T and FAPDS-T. The ZUR-23-2-KG system is designed to fight (using 23mm cannons and GROM missiles) low-flying air targets such as: aircraft, helicopters, winged rockets, unmanned flying objects, landing troops and unarmoured and lightly armoured ground targets.

- Main characteristics:
- high reliability,
 - good technical and tactical features allow to fire the targets (which appear unexpectedly and move in different directions) with great efficiency,
 - the collimator sight CKE-2 or programmable sight CP-1 generates automatically (during target tracking) the proper leading angles for every action on the battlefield,
 - firing from different places in different weather and time conditions,
 - adaptation to the use of new, sub-calibre ammunition and GROM missiles and adaptation to work in external FCS.



TECHNICAL DATA	
Weapon:	2x23 mm cannon 2xGROM missile launchers
Firing angles:	Horizontal 360 deg. Vertical from -5/-3 to +75 deg.
Practical rate of fire:	up to 400 rds./min. for one gun
Cannon range:	
maximal vertical/total/	1500/2500/2000 m for API and HEI
maximal effective for	
ground targets	2000/3000/2500 m for APDS and FAPDS
Maximal range of	
GROM missiles:	5500m
Height of the target flight	
minimal/maximal for	
GROM missiles:	10/3500 m
Welding apparatus:	Horizontal 360 deg. Vertical from 0 to +70 deg.

23 mm anti-aircraft mobile gun and missile system ZU-23-2

The TR-23-2 is a mobile training device adapted for towing, which represents very accurately the real ZUR -23-2KG system. It is equipped with instructor and operator stand and wireless network. The computer simulation of combat task is displayed on a monitor mounted in place of the sight. The operator's stand enable to perform simultaneous training on 4 simulators. The simulator TR-23-2 is designed for training the crew of 23mm ZUR-23-2KG systems. It allows for drill in close to battlefield conditions regarding operation, cinematic, dynamics and military action procedures.

- Main characteristics :The simulator enables:
- reduction of training costs for crews of ZU R-23-2KG systems,
 - training connected with system handling and verifying its proper working,
 - detection, identification and tracking of air, ground and sea targets on simulated battlefield,
 - selection of work mode and type of action-artillery or missiles, depending on the tactical situation,
 - training in different weather and time conditions,
 - realization of combat missions in relations to air, ground and sea targets, which can move in different directions and with defined speeds,
 - observation and efficiency evaluation of realized combat missions.



125mm 3VBK-10 high-explosive anti-tank round

The product is intended for direct fire against tanks, armoured personnel carriers, self-propelled guns and other armoured targets. In case of need, the round may also successfully be used for firing against vertical walls of heavy fortifications.

- COMPLETING UNITS OF THE ROUND:
- BK-14M Projectile
 - 4J-40 Main propellant charge
 - V-15 Fuze



TECHNICAL CHARACTERISTICS

Weight of the projectile (kg):	19
Length of the projectile (mm):	680
Weight of explosive in the charge (kg):	1.624 -1.760
Weight of the main propellant charge (4J40) (kg):	10
Weight of the powder in the main charge (kg):	5
Pressure in the charge chamber (MPa):	300
Muzzle velocity (m/s):	905
Tailplane span (mm):	343
Armour penetration (mm):	450 at angle 0°
Cone:	copper
Explosive:	ocfol
Standard penetration at 2000 m at 0°/60° (mm):	310/120
Average penetration at 2000 m at 0° (mm):	340

PACKING

- The round components are packed in hermetically sealed metal cylindrical cases.
- Wooden case dimensions (mm): 820 x 540 x 290
 - Grossweight (kg): 60
 - Volume (m³): 0.128



130 mm high-explosive round with full / reduced charge for M-46

It is designed for destroying the enemy manpower in the open or in field shelters, for demolishing long-term shelters and log fire emplacements, for fighting the ar tillery and destroying armoured vehicles. It can also be used for making passages in mine fields and defence wirings.

SYSTEM M-46 gun
Fuze V-429

BALLISTIC CHARACTERISTICS		
Type of charge:	full	reduced
Muzzle velocity (m/s):	930	705
Loading:	separate	
Max. range (m):	27490	19130

PACKING	
- 2 rounds in a wooden case	
- Case dimensions (mm):	956 x 495 x 285
- Volume (m³):	0.149
- Weight (kg):	85/78



57mm EM-S-5MO aviation unguided rocket

The S-5 is a 55 mm (2.2 in) calibre unguided rocket fired from a 57 mm calibre tube. It is used by fighter bombers and helicopters. It consists of a steel body containing a solid fuel rocket, and a high explosive warhead with a mechanical impact fuse. At the rear of the rocket is an elongated exhaust nozzle, attached to which are eight forward folding fins. The fins fold around the rocket when it is stowed in its launch tube, springing back as soon as it leaves the launch tube. In flight the fins provide stabilizing spin to the rocket, spinning it at approxi mately 750 rpm. The solid rocket motor burns for just 1.1 seconds, during which time it covers about 300 meters.

The rocket has a high-explosive effect. It is designed for destroying ground light armoured targets, field shelters, as well as the enemy personnel.

BALLISTIC CHARACTERISTICS
- Max. velocity (m/s) 580

SYSTEM
UB-16-57UM launcher pods (16 pcs.each) or U B-32 (32 pcs. each) with open rear part or mod ified launcher pods of the same type carried on aircrafts and helicopters

COMPLETING UNITS
- Fuze V-5K



PACKING	
8 rockets in a wooden case	
- Dimensions (mm):	1138x408x250
- Volume (m3):	0.113
- Weight (kg):	55



57mm EM-S-5KO aviation unguided rocket

The S-5 is a 55 mm (2.2 in) calibre unguided rocket fired from a 57 mm calibre tube. It is used by fighter bombers and helicopters. It consists of a steel body containing a solid fuel rocket, and a high explosive warhead with a mechanical impact fuse. At the rear of the rocket is an elongated exhaust nozzle, attached to which are eight forward folding fins. The fins fold around the rocket when it is stowed in its launch tube, springing back as soon as it leaves the launch tube. In flight the fins provide stabilizing spin to the rocket, spinning it at approxi mately 750 rpm.The solid rocket motor burns for just 1.1 seconds, during which time it covers about 300 meters. The rocket has a high-explosive effect. It is designed for destroying ground light armoured targets, field shelters, as well as the enemy personnel.

BALLISTIC CHARACTERISTICS

- Armour penetration (mm) 176
- Max. velocity (m/s) 580

SYSTEM

UB-16-57UM launcher pods (16 pcs.each) or U B-32 (32 pcs. each) with open rear part or mod ified launcher pods of the same type carried on aircrafts and helicopters

COMPLETING UNITS

- Fuze V-5K



152mm round with high-explosive long-range projectile and full variable charge for D-20/253 gun howitzers

It is designed for demolition of artillery and mortar batteries, air defence facilities, tactical missile launchers, armoured firing equipment of motorized infantry and tank units, field shelters and other fortifications, as well as for destruction of the enemy manpower.

COMPLETING UNITS OF THE ROUND:

- 152 mm HE long-range projectile
- full variable charge in cartridge case
- RGM-2EM fuze
- packages for rounds and fuzes



BALLISTIC CHARACTERISTICS

Weight of round:	58.96 kg
Weight of projectile:	43.56 kg
Weight of bursting charge:	8.10 kg
Bursting charge:	TNT, comp B
Maximum range:	20270 m
Muzzle velocity:	695 m/s

PACKING

- 1 round in a wooden case
- Case dimensions (mm): 970 x 475 x 260
- Volume (m³): 0.12
- Weight (kg): 86



125 mm round, 3VBM-7 armor-piercing fin-stabilized discarding sabot tracer

BALLISTIC CHARACTERISTICS

Muzzle Velocity:	1785 m/s
Maximum Pressure:	5015.10³ Pa
Direct fire range	
Height of the target 2m:	2120 m
Height of the target 2.7m:	12410 m

TECHNICAL CHARACTERISTICS

Material of the body of the active part of the projectile:	martensitic steel
Material of the core:	tungsten carbide
Material of the driving unit:	steel
Powder of the additional charge:	15/1 tubular
Weight of the round (kg):	20
Weight of the active part of the projectile with the driving unit (kg):	5.9
Weight of the active part of the projectile without the driving unit (kg):	3.9
Weight of the driving unit (kg):	2.02
Length of the active part of the projectile (mm):	548
Length of the core (mm):	77
Diameter of the core (mm):	20
Standard penetration at 2000 m at 0°/60° (mm):	310/120
Average penetration at 2000 m at 0° (mm):	340

PACKING

The round components are packed in hermetically sealed metal cylindrical cases.	
- Wooden case dimensions (mm):	820 x 540 x 290
- Gross weight (kg):	54
- Volume (m³):	0.128

COMPLETING UNITS OF THE ROUND:

BM-15 Projectile
BM-18 Projectile with additional charge,
assembly 4J-40 Main propellant charge.



57mm EM-S-5KP aviation unguided rocket

The S-5 is a 55 mm (2.2 in) calibre unguided rocket fired from a 57 mm calibre tube. It is used by fighter bombers and helicopters. It consists of a steel body containing a solid fuel rocket, and a high explosive warhead with a mechanical impact fuse. At the rear of the rocket is an elongated exhaust nozzle, attached to which are eight forward folding fins. The fins fold around the rocket when it is stowed in its launch tube, springing back as soon as it leaves the launch tube. In flight the fins provide stabilizing spin to the rocket, spinning it at approxi mately 750 rpm. The solid rocket motor burns for just 1.1 seconds, during which time it covers about 300 meters. The rocket has a high-explosive effect. It is designed for destroying ground light armoured targets, field shelters, as well as the enemy personnel.

BALLISTIC CHARACTERISTICS

- Armour penetration (mm) 250
- Max. velocity (m/s) 500

SYSTEM

UB-16-57UM launcher pods (16 pcs.each) or U B-32 (32 pcs. each) with open rear part or mod ified launcher pods of the same type carried on aircrafts and helicopters

COMPLETING UNITS

- Fuze V-5K



PACKING

8 rockets in a wooden case	
- Dimensions (mm):	1138x408x250
- Volume (m³):	0.113
- Weight (kg):	55



80mm EM-S-8KOM aviation unguided rocket

The EM-S-8KOM rocket has a shaped fragmentation effect. It is designed for destruction of ground armoured targets and enemy personnel.

SYSTEM Launcher pods of B-8M1 and B8V20 types (20 pcs. each)

COMPLETION
V-5KP1 fuze (piezoelectric, contact)

BALLISTIC CHARACTERISTICS	
Caliber:	50mm
Length:	max 1570mm (1535mm)
Fin extension:	max 384mm (253mm)
Fin angle:	60°
Weight of the rocket:	11300 kg
Weight of the warhead with fuze:	3.6 kg
Explosive:	1kg
Rocket propellant:	3.1kg
Muzzle velocity:	55-57 m/sec
Maximum speed:	610m/sec
Deviation error probability with horizontal firing:	
From aircraft:	3 thousandth
From helicopter:	8 thousandth
Penetration:	400 mm
Number of fragments:	> 400

PACKING	
- 4 rockets in a case	
- Case dimensions (mm):	1795 x 330 x 350
- Volume (m³):	0.207
- Weight (kg):	68



HE M107 round 155mm for howitzers

TECHNICAL CHARACTERISTICS	
Calibre:	155 mm
Total weight without fuze:	43.1kg
Projectile with Fuze - length:	681 mm
Projectile length without fuze:	~605 mm
Fuze:	Point detonating
Explosive charge - TNT/ROX mass:	6.7 kg
45 calibre:	~655 (Zone 7) ~680 (Zone 8)
52 calibre:	~565 (Zone 7) ~690 (Zone 8)
Maximum Range	
45 calibre:	~17000 m
52 calibre:	~18400 m
Powder Type:	NCO27 (Zone 7) NCO26 (Zone 8)
Powder mass (kg):	~6.3 (Zone 7) ~8.3 (Zone 8)
Primer:	TKM82P2
Temperature range:	- 40°C to 63°C

PACKING	
8 projectiles on a pallet	
- Dimensions (mm):	350 x 690 x 810
- Volume (m³):	0.2
- Gross weight (kg):	353



Round with 155mm ERFB smoke (WP) Mo9



TECHNICAL CHARACTERISTICS

Calibre (mm):	155
Projectile designation:	ERFB SMOKE (WP) Mo9
Projectile mass (kg):	≈45.5
Explosive charge mass (kg):	≈8.7(white phosphorus)
Propellant mass (kg):	≈8.5 (zone 8), ≈12.9 (zone 9), ≈15.2 (zone 10)
Projectile length, with fuze (mm):	≈938
Propelling charge:	MC zone 8, MC zone 9, MC zone 10
Propellant type:	NCD-26 (zone8), NCD-191 (zone 9), NCD-19 (zone 10)
Primer:	TK M82 P2
Muzzle velocity (m/s):	≈680 (zone 8), ≈820 (zone 9), ≈900 (zone 10)
Maximum range (m):	≈20600 (zone8), ≈26600 (zone 9), ≈32200 (zone 10)
Mean max pressure of powder gases for group of rounds (bar):	≈1700 (zone 8), ≈2600 (zone 9), ≈3250 (zone 10)
Fuze type:	UTIU, Mo2

PACKING DESCRIPTION

- 8 projectiles on a pallet
- charge and a primer M82 P2 in a plastic container
- 12 plastic containers on a palette
- 8 fuzes in a metal box
- 80 metal boxes on a palette

122mm ROCKET projectiles "GRAD" for BM-21/RM-70

It is designed for destroying the enemy manpower in the open or in field shelters, for fighting the artillery and for destroying armored vehicles. It can also be used for making passages through mine field and defence warnings.

SYSTEM

- Combat vehicle BM-21 "GRAD" or RM-70

COMPLETING UNITS

- Fuze MRVU
- Distance ballistic rings small and big



BALLISTIC CHARACTERISTICS

Calibre (mm):	122
Maximum velocity (m/s):	690 to 699
Maximum range (m):	20127

PACKING

1 rocket in a wooden case	
- Dimensions (mm):	2954x298x271
- Volume (m³):	0.236
- Weight (kg):	92



Round 105mm, semi fixed for howitzers 105mm, M56 HE ER Mo2

TECHNICAL CHARACTERISTICS

NATO DESIGNATION:	HE ER (M56)	HE ER (M56/33 M2A1)
projectile (kg):	13	13
explosive (kg):	2.15	2.15
propelling charge (kg):	2	2
cartridge case (kg):	2.68	2.68
explosive type:	TNT	TNT
LENGTH (mm)		
projectile with fuze:	565	565
cartridge case:	372	372
MUZZLE VELOCITY (m/s):	675	675
MAXIMUM RANGE (m):	14000	15000

PACKING:	2 rounds in wooden case
DIMENSION (mm):	950 x 310 x 200
VOLUME (m³):	0.086
GROSS MASS (kg):	50



Round with 155mm HE ERFB Mo3

TECHNICAL CHARACTERISTICS

Calibre (mm):	155
Projectile designation:	ERFB SMOKE (WP) Mo9
Projectile mass (kg):	≈45.5
Explosive charge mass (kg):	≈8.7 (TNT)
Propellant mass (kg):	≈8.5 (zone 8), ≈12.9 (zone 9), ≈15.2 (zone 10)
Projectile length, with fuze (mm):	≈938
Propelling charge:	MC zone 8, MC zone 9, MC zone 10
Propellant type:	NCD-26 (zone8), NCD-191 (zone 9), NCD-19 (zone 10)
Primer:	TK M82 P2
Muzzle velocity (m/s):	≈680 (zone 8), ≈820 (zone 9), ≈900 (zone 10)
Maximum range (m):	≈20600 (zone8), ≈26600 (zone 9), ≈32200 (zone 10)
Mean max pressure of powder gases for group of rounds (bar):	≈1700 (zone 8), ≈2600 (zone 9), ≈3250 (zone 10)
Fuze type:	UTIU, Mo2

PACKING DESCRIPTION

- 8 projectiles on a pallet
- charge and a primer M82 P2 in a plastic container
- 12 plastic containers on a palette
- 8 fuzes in a metal box
- 80 metal boxes on a palette



100mm fixed round for T55 100mm gun

TECHNICAL CHARACTERISTICS

NATO DESIGNATION:	HE Shell M63P2
projectile (kg):	15.6
propellant (kg):	5.5
explosive (kg):	1.58
complete round (kg):	30
EXPLOSIVE TYPE:	RDX+AI
LENGTH (mm)	
complete round:	1095
projectile:	492
cartridge case:	695
MUZZLE VELOCITY (m/s):	900
MAXIMUM RANGE (m):	2061
PENETRATION (mm):	none
TRACER BURNINGTIME (s):	none
FUZE: impact, superquick and delay action:	UTIU, M72 B1 UTIU, Mo2 UTIU, Mo3



PACKING DESCRIPTION:

DIMENSION (mm):	1180 x 430 x 260
VOLUME (m³):	0.132
GROSS MASS (kg):	82



23 mm anti-aircraft mobile gun and missile system ZU-23-2



GENERAL CHARACTERISTICS

Overall dimensions in firing position	
Length:	4.57 m (15 ft)
Width:	2.88 m (9.44 ft)
Height:	1.22 m (4 ft)
Weight:	0.95 tonnes (2094 lbs)
Armament:	two 2A14 Afanasyev-Yakushev 23x152mm (.90 in) autocannons
Barrel length:	2 m (6.5 ft)/ 87.3 calibers
Muzzle velocity:	970 m/s (3182 ft/s)
Projectile weight:	186 g (6.27 oz)
Rate of fire	
Cyclic:	2000 rounds per minute
Practical:	400 rounds per minute
Effective range:	2-2.5 km (1.24-1.55 mi)
Effective altitude:	1500-2000 m (4921-6562 ft)
Crew:	6



TECHNICAL CHARACTERISTICS		
NATO DESIGNATION:	HE ER-BB (M56)	HE ER-BB (M56/33 M2A1)
projectile (kg):	14.070	14
explosive (kg):	2.15	2.2
propelling charge (kg):	2.2	2
cartridge case (kg):	2.68	2.68
explosive type:	TNT	TNT
LENGTH (mm)		
projectile with fuze:	565	560
cartridge case:	372	372
MUZZLE VELOCITY (m/s):	670	685
MAXIMUM RANGE (m):	17000	18000



PACKING:	2 rounds in wooden case
DIMENSION (mm):	950 x 310 x 200
VOLUME (m³):	0.086
GROSS MASS (kg):	50



TECHNICAL CHARACTERISTICS			
NATO DESIGNATION:	HE Shell M1A1	SMOKE Shell M60	HE Mo2
projectile (kg):	14.9	15.2	13.5
explosive (kg):	1.80	1.85	2.2
propelling charge (kg):	1.31	1.31	2.0
cartridge case (kg):	2.68	2.68	2.68
explosive type:	TNT	WP	TNT
LENGTH (mm)			
projectile with fuze:	496	496	560
cartridge case:	372	372	372
MUZZLE VELOCITY (m/s):	491	491, 472	685
MAXIMUM RANGE (m):	11620	11620, 11275	15000

PACKING:	2 rounds in wooden case
DIMENSION (mm):	950 x 310 x 200
VOLUME (m³):	0.086
GROSS MASS (kg):	50



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