



### **Technical data:**

**Maximum range of long-distance communication:**5 - 20 km - depending
on terrain conditions

Maximum range of short-distance communication: 100 - 300 m - depending on terrain conditions

Anti-handling device:

Effectors (BZE "BELMA" S.A.): Ant-tank, anti-personnel, camouflage, deterring

**Sensors (Mindmade Sp. zo.o.):** Acoustic-Seismic, infrared, miniradar

**Mode of operation:** Controlled (MITL - Man In The Loop))

Maximum standby time: 30 days to 2 years (varying across different components)

The Controlled Area **Protection System** provides an effective means of protecting and safeguarding critical areas by virtue of remote detection and neutralisation of threats posed by potential enemies or other unauthorised persons while not putting own personnel at risk. Detection of enemies by sensors is communicated on the operator's panel. By confirming the danger level, the operator remotely activates effectors adequate for a given tactical situation and effective against enemy personnel or land military technology. The system is characterised by high autonomy (highest autonomy within the limits provided for by law) and easy (without the use of heavy equipment) implementation in the field.

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## CK-125 TRAINING FUZE

CK-125 training fuzes are used for arming 125 mm 3BK14M high-explosive anti-tank projectiles used during training in shooting from D-81 cannons over a distance of up to 2000 m.





### **Technical data:**

**Weight:** 175 g

**Length:** 82 mm

**Diameter:** 42 mm

**Connecting socket:** M42 x 1,5 L

**Time of installation in a projectile:** 5 minutes

Self-destruction: Yes

The fuze has been designed to facilitate training in shooting 3BK14M projectiles from tanks armed with D-81 cannons. The fuze can be used by screwing out the standard 3W15 fuze with a lead washer from the 3BK14M projectile and screwing in the CK-125, additionally replacing the sealing washer. The fuze is equipped with an arming and securing system, and a self-destructor.

It ensures that projectiles do not explode after hitting the target during shooting but instead its self-destructor actuates self-destruction after the set time. The process of arming the fuze is initiated automatically and instantaneously after the shot. The lead sealing washer (stored in a separate package) is provided with the fuze as additional equipment.

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## EZK-100 ELECTRONIC CAPACITOR ◀ EXPLODER

The EZK-100 exploder is designed for remote initiation of ignition in igniting units of ERG electrical detonators or mining electrical units connected into an electrical firing circuit.





### **Technical data:**

Weight: 0,55 kg

**Size:** 102/155/36 mm

Power supply voltage:

Accumulated energy:

Output voltage:

in a series circuit

Min. 1250 V (depending on the operating temperature)

Max. time to full combat readiness:

Max.<sub>RLS max</sub> resistance of the series firing circuit: 500 Ω for 100 detonators (0.2 A) connected

Continuity of the firing line is indicated after the exploder is connected to the electrical circuit. Upon pressing the "Ł" (charging) button, energy required for actuation of the detonators begins to accumulate. Maximum time needed for the exploder to become ready for detonation is 8 seconds. The detonators are launched by pressing the "W" button. Operating temperatures of the exploder are in the -30°C to 50°C range.

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### **Technical data:**

Weight of one thrower (unloaded/loaded):

360/880 ka

Weight of one cluster (loaded): 26 kg

> Size of the thrower: 142/90/130 cm

> > Throwing range: 30-90 m

Number of clusters in one thrower: 20 pcs

Number of mines in one cluster: 5 pcs

> Mine type: MN-123 with an EFP two-directional charge

> > **RHA** penetration:

**Self-destruction:** Programmable

**Self-neutralisation:** Yes

> compliance: Is self-destructible, self-neutralisable. detectable

**CCW** convention

The system includes a carrier vehicle. throwers with mine clusters, and a controller installed in the driver's cab, among other components. The thrower can be mounted on both wheeled and tracked vehicles: recommended number of throwers mounted on one vehicle is 4 to 6. With 6 throwers mounted, the ISMN is capable of throwing 600 mines in less than 3 minutes, creating a vast minefield 180 m wide and 1000 m long. The mines are actuated after detection of a vehicle outline moving above them. They are activated by magnetic fuzes. It is possible to program the mines to self-destruct after a set time before scattering them. MN-123 mines can inflict extensive damage on the vehicle even

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if it is not penetrated. The mines are also available as training

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mines - MN-123/C and mock-ups - MN-123/O.





# MINE CLUSTER WITH MN-123 ANTI-TANK ◀ SCATTERABLE MINES

The mine clusters with MN-123 mines are designed for creating anti-tank minefields by scattering mines as part of the Engineering Mine Scattering System.





### **Technical data:**

**Weight:** 26 kg

**Diameter:** 188/218 mm

**Length:** 66,4 cm

**Number of mines:** 5 pcs

Throwing range: 30 ÷ 90 m

The mine clusters contain 5 anti-tank mines with propelling charges and electrical systems that allow programming self-destruction times and throwing of individual mines. The mine cluster facilitates mine throwing from a TME or MZK-E multi-barrel thrower mounted on a carrier vehicle. As the mines are packed into clusters, loading the thrower is fast and smooth – the time needed to load 400 mines into 4 throwers does not exceed 80 minutes.

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## MN-123 ANTI-TANK MINE

MN-123 anti-tank mines are designed for creating minefields using the Engineering Mine Scattering System.





### **Technical data:**

**Weightv:** 3,7 kg

**Size (diameter/height):** 180/90 mm

Charge type:

Shaped charge (EFP), two-directional

**RHA penetration:** 60 mm

**Fuze type:** 

Magnetic, delayed or instantaneous

**Self-destruction:** 

Programmable

Self-neutralisation:

CCW convention compliance:

Is self-destructible, self-neutralisable, detectable

The MN-123 mine is armed with a twodirectional shaped charge and fitted with a self-destruction and a selfneutralisation system. The mine is actuated after detection of a vehicle outline moving above it or after a set self-destruction time has passed. The mine has a two-level safety system. There are three models of the MN-123 mine available: MN-123 - the combat model, MN-123/C - a training model, and MN-123/O - a mock-up model. The training models are intended for training crews of the mine scattering vehicle or carrier and sapper squads in creating scattered minefields. The mines are packed in mine clusters in groups of five.

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## MPB-ZK OFF-ROUTE ANTI-TANK MINE WITH A CONTACT FUZE

The MPB-ZK mine is designed for eliminating combat vehicles and military means of transport from the battlefield by hitting their sides.





#### **Technical data:**

Weight: 45 kg

**Length/height/width:**\_\_\_\_\_\_45/39/70 cm

**RHA penetration:** 100 - at a distance of up to 50 metres

**Power supply:**Battery

Anti-handling device:

**Self-destruction:** Programmable

**Durability:** Near explosion of another mine, strong electromagnetic fields

The mine is designed to supplement and increase the effectiveness of various engineered fortifications, particularly in places where using other mines is difficult or where they are useless (forest roads, hard-surfaced urban areas). When tracks or wheels of a vehicle roll onto one of the 10 pressure sensors. the contact fuze actuates mine detonation. If no target is detected, the mine automatically destructs itself after the set time has passed. There are also two models of the MPB-ZK intended for training sapper subunits - the MPB-ZK/Sz, an educational model, and the MPB-ZK/C - a training model.

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## MPB-ZN OFF-ROUTE ANTI-TANK MINE WITH AN INFLUENCE FUZE

The MPB-ZN mine is designed for eliminating combat vehicles and military transport vehicles from the battlefield by hitting their sides.





### **Technical data:**

Weight: 45 kg

**Length/height/width:** 45/39/70 cm

RHA penetration: 100 - at a distance of up to 50 metres

**Power supply:**Battery

Anti-handling device:

**Self-destruction:** Programmable

Programmable selectivity: Ability to attack consecutive targets in a column of vehicles

**Durability:**Near explosion of another mine, strong electromagnetic fields

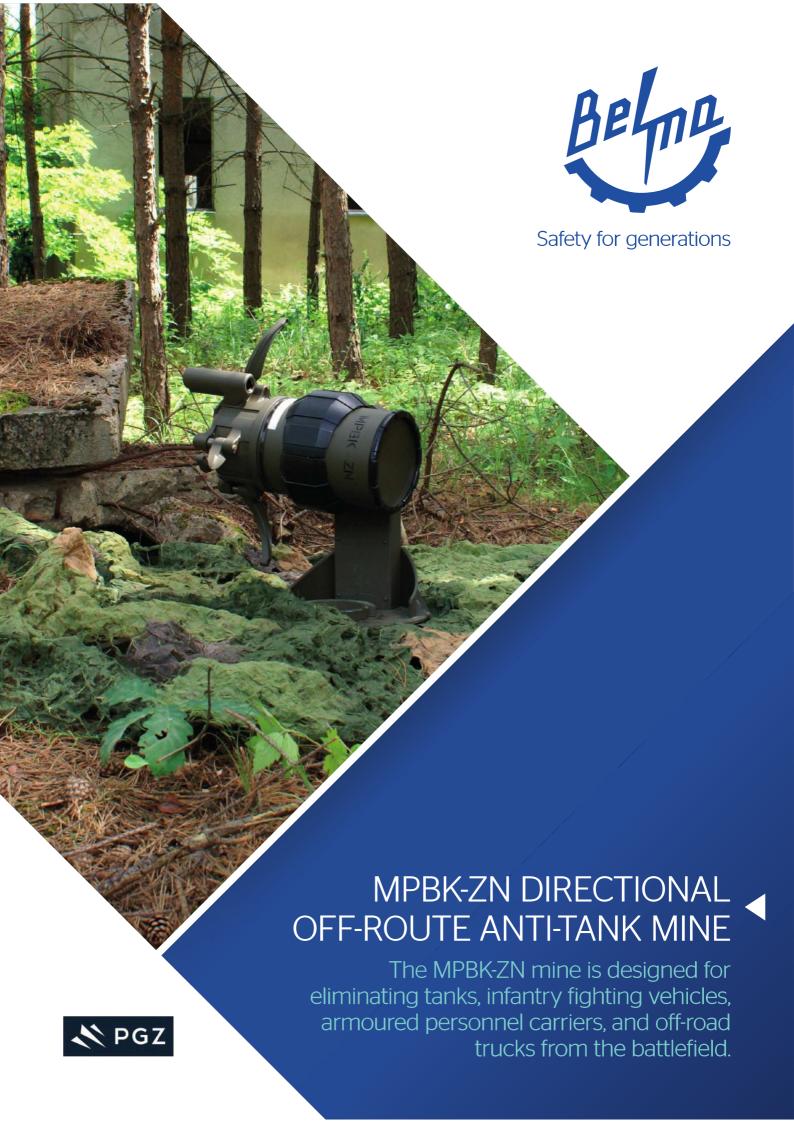
The mine is designed to supplement and increase the effectiveness of various engineered fortifications, particularly in places where using other mines is difficult or aimless (forest roads, hard-surfaced urban areas). The influence fuze connected to acoustic and thermal sensors actuates mine detonation after a vehicle crosses optical axis of the thermal sensor.

If no target is detected, the mine automatically destructs itself after the set time has passed. There are also two models of the MPB-ZN intended for training sapper subunits – the MPB-ZN/Sz, an educational model, and the MPB-ZN/C – a training model.

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### **Technical data:**

Weight: 42 kg

**Length/height/width:** 45/67/45 cm

**RHA** penetration:

100 mm - at a distance of up to 50 metres

**Power supply:**Battery

Anti-handling device:

Yes

**Self-destruction:** 

Programmable

Mode of operation:

Automatic / Controlled (MITL)

Aiming:

Azimuth - 360°; Elevation -  $\pm 2\overline{0}$ °

Sensors:

Acoustic / Thermal

The MPBK-ZN offroute anti-tank mine is equipped with a thermoacoustic influence fuze able to detect presence of military vehicles within the effective range of the mine, identify the type of the vehicle, and locate its position relative to the mine. After the fuze sends a signal, the actuating system turns the EFP warhead toward the target and initiates detonation. The mine is able to effectively hit targets across a few dozen metres and can be used to protect country borders, for defensive operations, delaying actions, protecting retreat of own troops or protecting buildings (e.g. command posts) in areas of troop deployment.

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## MPD BOTTOM MINE

The MPD mine is designed for mining seashore waters. It is suitable for mechanical and manual mine laying from amphibious transport vehicles.





### **Technical data:**

**Weight:** 69 kg

**Size:** 60/27 cm

Fuze:

Influence / magnetic

**Power supply:**Battery

Maximum laying depth:

**Self-destruction:** Yes

Anti-handling device:

MPD mines can be effectively used to neutralise landing vessels and vehicles as well as amphibious fighting vehicles. The mine is fitted with an influence fuze and a self-destruction system. It detects targets above the mine within an area with a 5 m radius; the maximum submergence depth is 5 m. It eliminates vessels with demagnetised hulls from the battlefield as well. It has two independent safety systems that prevent the fuze from automatically switching to combat-ready mode.

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# MR-123 ANTI-TANK SHAPED CHARGE MINE ◀ FOR MANUAL LAYING

The MR-123 manually laid anti-tank mine is designed for eliminating armoured fighting vehicles and military means of transport from the battlefield.





### **Technical data:**

Weight: 3,7 kg

Size (diameter/height): 167/90 cm

**Charge type:** 

Shaped charge (EFP), two-directional

**RHA penetration:** 60 mm

**Fuze type:** 

Magnetic, delayed or instantaneous

**Self-destruction:** 

Programmable

Self-neutralisation:

**CCW** convention compliance:

Is self-destructible, self-neutralisable, detectable

The MR-123 mine is armed with a two-directional shaped charge and fitted with an influence fuze as well as a self-destruction and a self-neutralisation system. The mine is actuated after detection of a vehicle outline moving above it or after a set self-destruction time has passed. The mine has a two-level safety system. There are three models of the MR-123 mine available: MR-123 – the combat model, MR-123/C – a training model, and MR-123/O – a mock-up model. The training models are intended for training sapper squads in laying mines on traditional minefields.

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### **Technical data:**

**Weight:** 

**Length/height/width:** 30/18/15 cm

**RHA penetration:** 

60 mm - at a distance of up to 50 metres

**Power supply:**Battery

Anti-handling device:

**Self-destruction:** Programmable

Programmable selectivity:

Ability to attack consecutive targets in a column of vehicles

Mode of operation: Automatic / Controlled (MITL)

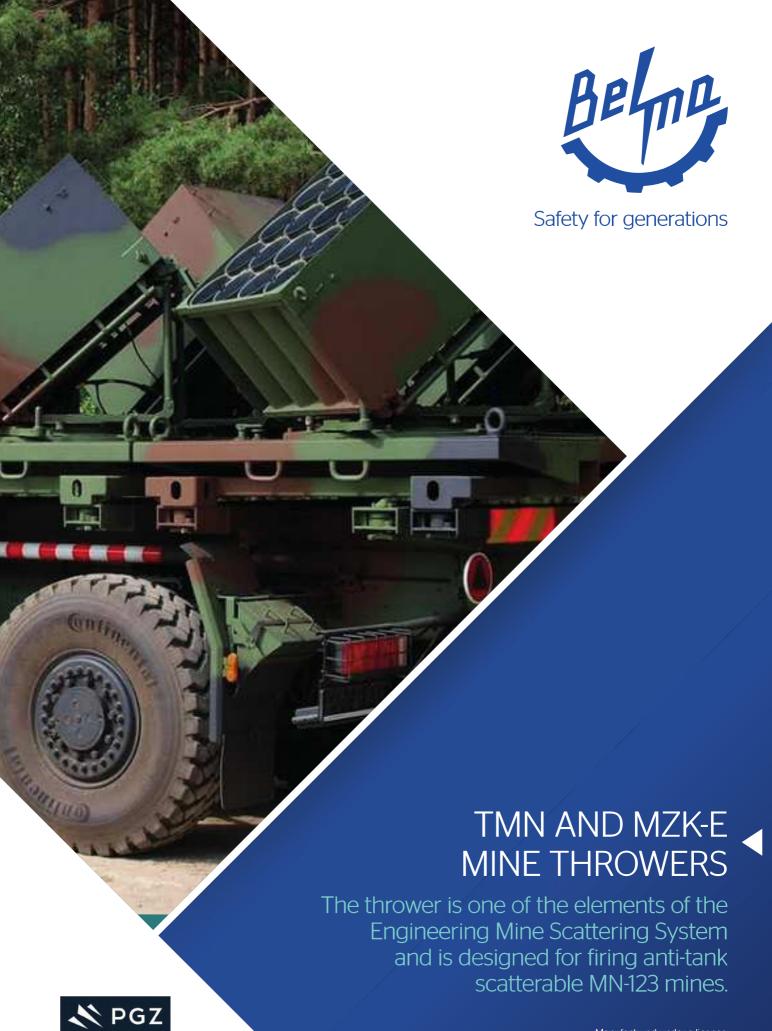
**Sensors:** Acoustic; Thermal

The SPPŁW off-route anti-tank mine is equipped with a thermoacoustic influence fuze able to detect presence of military vehicles within the effective range of the mine. The EFP warhead is able to effectively hit targets across a few dozen metres. The mine can be used to protect country borders, for defensive operations, delaying actions, protecting retreat of own troops, protecting buildings (e.g. command posts) in areas of troop deployment, and for subversive warfare.

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### **Technical data:**

Weight: 360 kg

**Length/height/width:**\_\_\_\_\_\_\_142/90/130 cm

Calibre: 188 mm

**Width of the minefield:** max. 180 m

Throwing directions: Laterally and behind the carrier

Programming SD time of the mines:

Through the control unit

Duration of loading the thrower with mines: 20 minutes

The thrower can be used by subunits of engineering troops to create anti-tank minefields by scattering mines. What makes this product unique is that it has the greatest scattering range among throwers of this type - it can create wider minefields than competing systems. It includes a mechanically coupled set of 20 barrels armed with MN-123 mine clusters. It is connected to a controller that gives control over scattering density of the minefield. A moving carrier with throwers facilitates scattering the mines onto the minefield parallel to the route while maintaining its own safety. The design of the throwers makes it possible to scatter the mines laterally, on both sides of the vehicle, and behind it.

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### UZRGM FUZE FOR HAND GRENADES

The fuze is designed for arming F-1, RG-42, RGO-88, and RGZ-89 hand fragmentation grenades. The two available models are the combat model – UZRGM and the training model – UZRGM-ĆW.





### **Technical data:**

Weight: 0,045 kg

**Length:** 104 mm

**Socket:** Sp 15,45 x 13 zw/"

**Socket length:** 9.6 mm

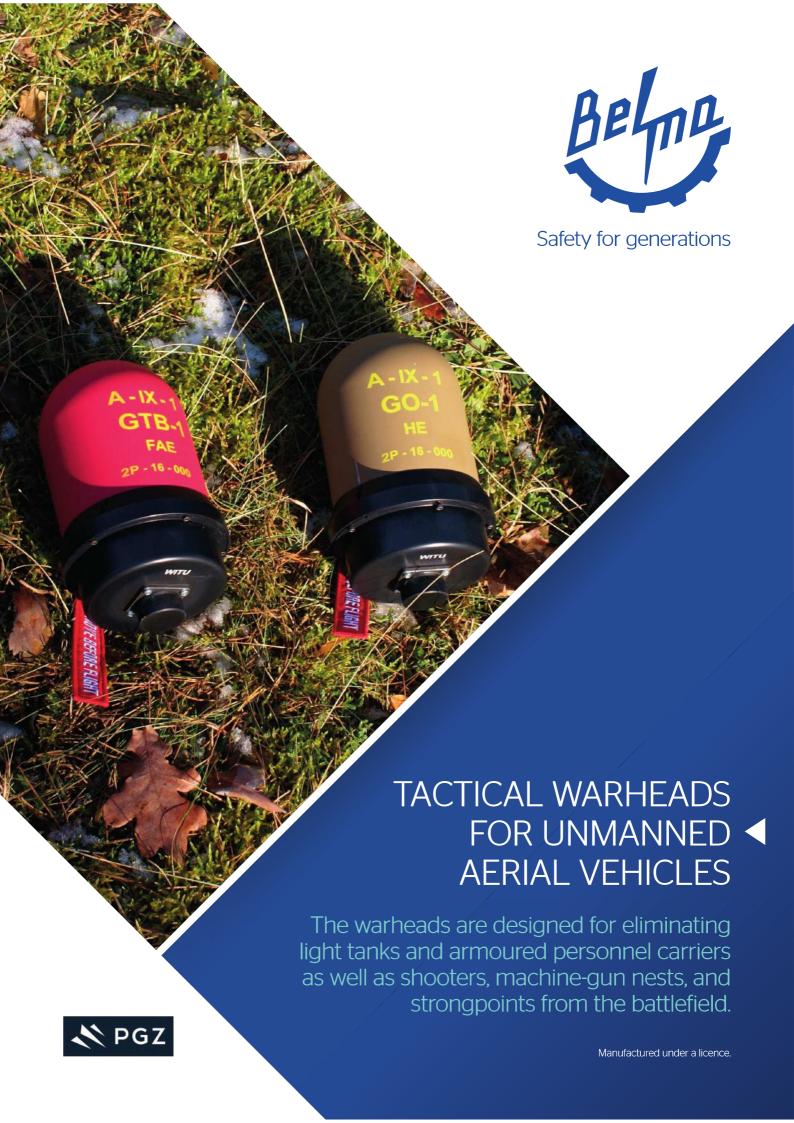
Fuze time delay: 3.2 - 4.0 s.

The UZRGM fuze is designed for arming hand fragmentation grenades that are equipped with the Sp 15.45x13 zw/" special socket. Grenades armed with the UZRGM fuze are characterised by high effectiveness and reliability in all terrain and weather conditions. The UZRGM fuze can be classified as a mechanical delay fuze. It is equipped with an impact mechanism and a pyrotechnical retarder. After the grenade is actuated and the time of the delay has passed, the detonating cap is activated and initiates explosion of the main explosive.

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### **Technical data:**

**Diameter:** 98 mm

**Length:** 205 mm

**Power supply:** 

**Resolution of the daylight camera:** 40 x 480 pix

GO-1 HE high-explosive warhead: Weight:

1,2 kg

**Warhead blast radius:** 12 m

**GK-1 HEAT high-explosive anti-tank warhead: Weight:** 1,08 kg

**Warhead penetration:** 120-150 mm RHA

The warheads can be integrated with a miniature Unmanned Aerial Vehicle (UAV) that is compliant with specific mechanical, ergonomic, electrical, functional and IT requirements as well as those regarding data and signal exchange between the two devices. A UAV armed with the tactical warheads facilitates observation of approaches, guidance, and performance of combat, training, and school fire tasks. They can be assembled and operated by one operator. There are various models of the warheads available: high-explosive, high-explosive anti-tank, training, and educational.

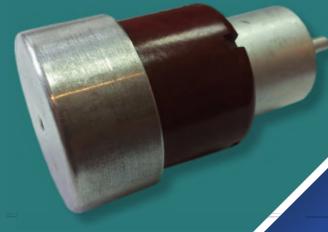
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## WP-7M FUZE FOR PG-7 ANTI-TANK ◀ GRENADES

The WP-7M fuze is designed for arming PG-7 anti-tank grenades projected from hand grenade launchers. It is used to initiate explosion of the grenade after impact with the target.





### **Technical data:**

Size of the head module: 64/23 mm

Size of the bottom module: 75/37 mm

**Socket:** Sp 19,96x1

**Weight:** 0,137 kg

Fuze type: Impact

**Self-destruction:** Yes

WP-7M is a two-module impact fuze armed while flying in the air. It is composed of a head module and a bottom module, which are electrically connected. It is instantly activated after impact with an obstacle. If it does not reach a target within 4-6 seconds of launching it, the self-detonator causes the grenade to explode.

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## WP-9 FUZE FOR PG-9 ANTI-TANK ◀ GRENADES

The WP-9 fuze is designed for arming PG-9 anti-tank grenades projected from SPG-9 heavy anti-tank grenade launchers. It is used to initiate explosion of the grenade after impact with the target.





### **Technical data:**

Size of the head module: 92/23 mm

Size of the bottom module: 75/37 mm

**Socket:** Sp 19,96x1

**Weight:** 0,148 kg

Fuze type: Impact

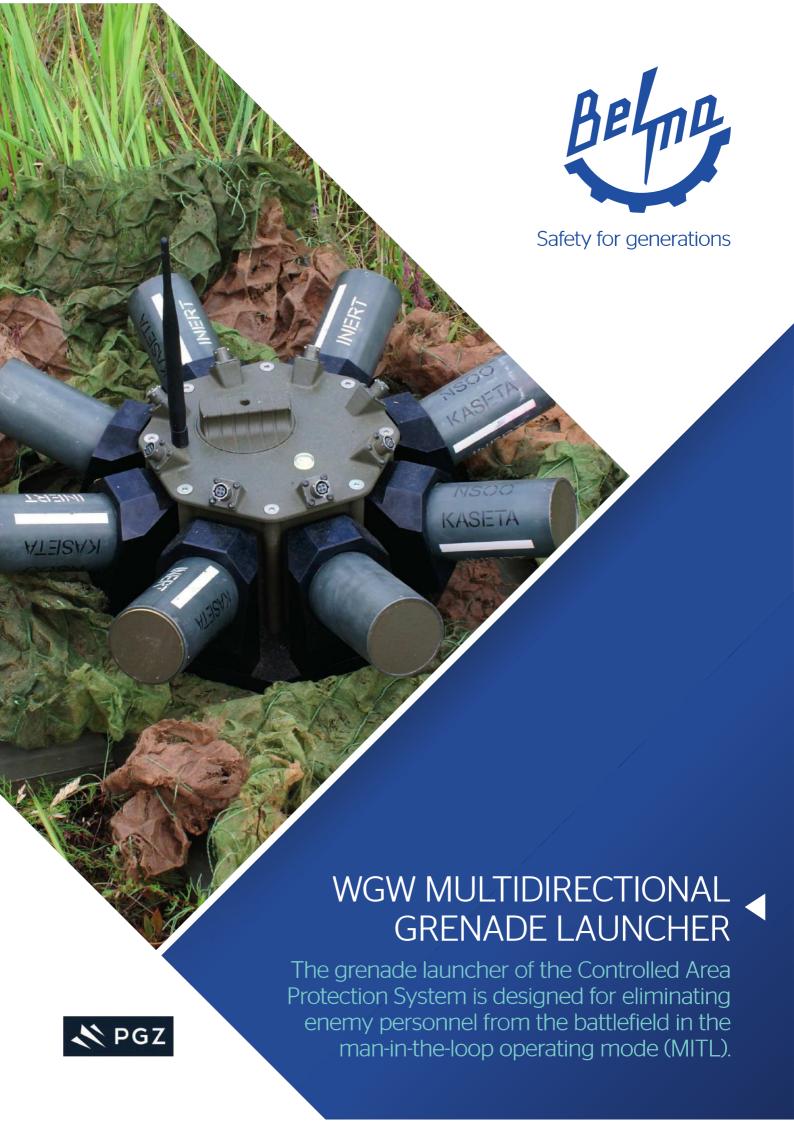
Self-destruction: Yes

WP-9 is a two-module impact fuze armed while flying in the air. It is composed of a head module and a bottom module, which are electrically connected. It is instantly activated after impact with an obstacle. If it does not reach a target within 4-6 seconds of launching it, the self-detonator causes the grenade to explode.

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### **Technical data:**

**Weight:** 16 kg

**Length/height/width:** 40/20/40 cm

**Launching range:** 40 m

Effective area: 8 x (52 x 24 m)

**Anti-handling device:** Yes

**Grenade types:** Fragmentation; Smoke; Stun

Blast radius of a single fragmentation grenade: 12 m

Mode of operation : Controlled (MITL - Man In The Loop)

> Sensors: Disturbance (Trip-over sensors)

The grenade launcher, as part of the Controlled Area Protection System, provides an effective means of protecting critical areas by virtue of remote detection and neutralisation of threats posed by potential enemies or unauthorised persons while not putting own personnel at risk. Detection of enemies by sensors is communicated on the operator's panel. The operator confirms the danger level and actuates the launcher projecting a grenade. The grenade explodes near the place where the target was detected.

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## ZN-97 MAGNETIC FUZE

The ZN-97 influence fuze is designed for arming a wide spectrum of traditional antitank mines that have a standardised Rds 125x5 threaded fuze socket (TM-62M, MPP-B)





#### **Technical data:**

Weight: 1,2 kg

**Diameter:** 163 mm

**Height:** 90 mm

Socket: Rds 125 x 5

Activation system: Influence (passive)

Power supply: Battery

**Self-destruction:** Programmable

**Ant-handling device:** Yes

The fuze is actuated when affected by a local disturbance of the Earth's magnetic field caused by a vehicle that is moving above it. The ZN-97 reacts when it detects the outline of a vehicle above it or within 0.5 m. Mines armed with ZN-97 fuzes can be laid manually or mechanically using self-propelled or towed minelayer vehicles. There is also a training model – ZN-97/Sz – of the ZN-97 fuze designed for training engineering subunits in operation of the fuze and laying mines on traditional minefields.

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